Online ISSN : 2249-4618
Print ISSN : 0975-5888
DOI : 10.17406/GJMRA

Global Journal

of Medical Research: J

Dentistry & Otolaryngology

Dental Stem Cells Harvested

Clinico-Pathological Presentation

Highlights

Variation of Middle Turbinate

Odontogenic Circumscribed Cellulitis

Discovering Thoughts, Inventing Future

VOLUME 18 ISSUE 1 VERSION 1.0

Global Journal of Medical Research: J
Dentistry and Otolaryngology

Global Journal of Medical Research: J
Dentistry and Otolaryngology

Volume 18 Issue 1 (Ver. 1.0)

Open Association of Research Society

Incorporation No.: 0423089
License No.: 42125/022010/1186
Registration No.: 430374
Import-Export Code: 1109007027
Employer Identification Number (EIN):
USA Tax ID: 98-0673427

Global Journals Inc.

*(A Delaware USA Incorporation with "Good Standing"; **Reg. Number: 0423089**)*

Sponsors: Open Association of Research Society
Open Scientific Standards

Publisher's Headquarters office

Global Journals® Headquarters
945th Concord Streets,
Framingham Massachusetts Pin: 01701,
United States of America
USA Toll Free: +001-888-839-7392
USA Toll Free Fax: +001-888-839-7392

Offset Typesetting

Global Journals Incorporated
2nd, Lansdowne, Lansdowne Rd., Croydon-Surrey,
Pin: CR9 2ER, United Kingdom

Packaging & Continental Dispatching

Global Journals Pvt Ltd
E-3130 Sudama Nagar, Near Gopur Square,
Indore, M.P., Pin:452009, India

Find a correspondence nodal officer near you

To find nodal officer of your country, please email us at *local@globaljournals.org*

eContacts

Press Inquiries: *press@globaljournals.org*
Investor Inquiries: *investors@globaljournals.org*
Technical Support: *technology@globaljournals.org*
Media & Releases: *media@globaljournals.org*

Pricing (Excluding Air Parcel Charges):

Yearly Subscription (Personal & Institutional)
250 USD (B/W) & 350 USD (Color)

Editorial Board

Global Journal of Medical Research

Dr. Han-Xiang Deng

MD., Ph.D
Associate Professor and Research Department
Division of Neuromuscular Medicine
Davee Department of Neurology and Clinical Neurosciences
Northwestern University Feinberg School of Medicine
Web: neurology.northwestern.edu/faculty/deng.html

Dr. Pina C. Sanelli

Associate Professor of Radiology
Associate Professor of Public Health
Weill Cornell Medical College
Associate Attending Radiologist
NewYork-Presbyterian Hospital
MRI, MRA, CT, and CTA
Neuroradiology and Diagnostic Radiology
M.D., State University of New York at Buffalo,
School of Medicine and Biomedical Sciences
Web: weillcornell.org/pinasanelli/

Dr. Roberto Sanchez

Associate Professor
Department of Structural and Chemical Biology
Mount Sinai School of Medicine
Ph.D., The Rockefeller University
Web: mountsinai.org/

Dr. Michael R. Rudnick

M.D., FACP
Associate Professor of Medicine
Chief, Renal Electrolyte and Hypertension Division (PMC)
Penn Medicine, University of Pennsylvania
Presbyterian Medical Center, Philadelphia
Nephrology and Internal Medicine
Certified by the American Board of Internal Medicine
Web: uphs.upenn.edu/

Dr. Feng Feng

Boston University
Microbiology
72 East Concord Street R702
Duke University
United States of America

Dr. Seung-Yup Ku

M.D., Ph.D., Seoul National University Medical College,
Seoul, Korea Department of Obstetrics and Gynecology
Seoul National University Hospital, Seoul, Korea

Dr. Hrushikesh Aphale

MDS- Orthodontics and Dentofacial Orthopedics.
Fellow- World Federation of Orthodontist, USA.

Santhosh Kumar

Reader, Department of Periodontology,
Manipal University, Manipal

Gaurav Singhal

Master of Tropical Veterinary Sciences, currently pursuing Ph.D in Medicine

Dr. Aarti Garg

Bachelor of Dental Surgery (B.D.S.) M.D.S. in Pedodontics and Preventive Dentistr Pursuing Phd in Dentistry

Sabreena Safuan

Ph.D (Pathology) MSc (Molecular Pathology and Toxicology) BSc (Biomedicine)

Getahun Asebe

Veterinary medicine, Infectious diseases, Veterinary Public health, Animal Science

Dr. Suraj Agarwal

Bachelor of dental Surgery Master of dental Surgery in Oromaxillofacial Radiology.
Diploma in Forensic Science & Oodntology

Osama Alali

PhD in Orthodontics, Department of Orthodontics, School of Dentistry, University of Damascus. Damascus, Syria. 2013 Masters Degree in Orthodontics.

Prabudh Goel

MCh (Pediatric Surgery, Gold Medalist), FISPU, FICS-IS

Raouf Hajji

MD, Specialty Assistant Professor in Internal Medicine

Surekha Damineni

Ph.D with Post Doctoral in Cancer Genetics

Arundhati Biswas

MBBS, MS (General Surgery), FCPS, MCh, DNB (Neurosurgery)

Rui Pedro Pereira de Almeida

Ph.D Student in Health Sciences program, MSc in Quality Management in Healthcare Facilities

Dr. Sunanda Sharma

B.V.Sc.& AH, M.V.Sc (Animal Reproduction, Obstetrics & gynaecology), Ph.D.(Animal Reproduction, Obstetrics & gynaecology)

Shahanawaz SD

Master of Physiotherapy in Neurology PhD- Pursuing in Neuro Physiotherapy Master of Physiotherapy in Hospital Management

Dr. Shabana Naz Shah

PhD. in Pharmaceutical Chemistry

Vaishnavi V.K Vedam

Master of dental surgery oral pathology

Tariq Aziz

PhD Biotechnology in Progress

Contents of the Issue

Global Journal of Medical Research: J
Dentistry & Otolaryngology
Volume 18 Issue 1 Version 1.0 Year 2018
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Chronic Rhinosinusitis in a Patient with a Rare Anatomical Variation of Middle Turbinate: A Case Report

By Othman Alobaid, Abdulrahman Alfayez, Dr. Riyadh A. Alhedaithy & Saad Aldegather
King Saud Bin Abdulaziz University for Health Sciences

Abstract- A secondary middle turbinate is considered a rare anatomical variation of the middle turbinate. Here, we present a case of young lady who presented to our clinic with signs and symptoms of chronic rhinosinusitis and headach. On nasal endoscopy and CT sinuses, she was found to have a left secondary middle turbinate, obstructing the left osteomeatal complex. Functional endoscopic sinus surgery was performed to the patient with excellent postoperative results and no evidence of recurrence of her symptoms during a three month follow up.

Keywords: *rhinosinusitis, secondary, double, middle, turbinate.*

GJMR-J Classification: *NLMC Code: WV 140*

Strictly as per the compliance and regulations of:

Chronic Rhinosinusitis in a Patient with a Rare Anatomical Variation of Middle Turbinate: A Case Report

Othman Alobaid [α], Abdulrahman Alfayez [σ], Dr. Riyadh A. Alhedaithy [ρ] & Saad Aldegather [ω]

Abstract- **A secondary middle turbinate is considered a rare anatomical variation of the middle turbinate. Here, we present a case of young lady who presented to our clinic with signs and symptoms of chronic rhinosinusitis and headach. On nasal endoscopy and CT sinuses, she was found to have a left secondary middle turbinate, obstructing the left osteomeatal complex. Functional endoscopic sinus surgery was performed to the patient with excellent postoperative results and no evidence of recurrence of her symptoms during a three month follow up.**

Keywords: rhinosinusitis, secondary, double, middle, turbinate.

I. Introduction

There are usually three nasal turbinates in each nasal cavity. The middle and superior turbinates are part of the ethmoid bone, while inferior turbinate is a separate bone. Rarely the fourth supreme turbinate may also present above the superior turbinate [1]. The precursor structures of nasal turbinates appear between the 8th and 10th weeks of fetal life and are the ethmoturbinal and maxilloturbinal {2,3}.Nasal turbinates are derived from several outgrowths of the foetal lateral nasal wall These outgrowths form a group of ridges known as “ethmoturbinals”. The middle turbinate develops from the third one [4]. Its anterior portion inserts into the ascending process of the maxilla and the posteromedial margin of the agger nasi cells. Its superior insertion is to the lateral edge of the cribriform plate. The posterior portion is oriented horizontally and attaches to the ethmoid crest of the perpendicular plate of the palatine bone {5}. The middle turbinate plays a functional role in the nasal physiology, including lamination of airflow, humidification of inspired air and its deflection superiorly towards the olfactory epithelium. Nasal and paranasal sinus mucosal lining produce secretions that are moved to the nasopharynxalong the surface of middle turbinate. Thus surface and dimensions of middle turbinate are crucial for maintenance of normal nasal physiology [6]. There are different anatomic variations of the middle turbinates, including paradoxical curvature, pneumatized, bifurcate, trifurcate, secondary and accessory [4-7}. The anatomical variations may cause specific sinonasal symptoms such as migraine-like headache, smell disorders and nasal obstruction [8]. Here we report a case of a patient who presented with signs and symptoms of chronic rhinosinusitis without nasal polyposis and found to have a secondary middle turbinate.

II. Case Presentation

The present case is a 28 years old female who is known to have allergic rhinitis. She presented to our clinic with symptoms of chronic rhinosinusitis, specifically nasal obstruction, decrease smell and facial pain. Nasal examination revealed congested nasal mucosa with mild deviated nasal septum (DNS) and hypertrophy of the left middle turbinate. However, no nasal polyps were seen. A diagnosis of chronic rhinosinusitis with DNS has been made and the management plan was discussed with the patient. It included a medical therapy consisted of normal saline nasal spray and mometasone furoate nasal spray. However, no improvement has been noticed subjectively by the patient after a three months of the medical therapy. Therefore, a CT paranasal sinus has been ordered to the patient. It showed mildly deviated nasal septum, mucosal thickening of the maxillary and ethmoid sinuses, in addition to a secondary middle turbinate in the left side obstructing the osteomeatal complex **(Figure 1)**. The patient then underwent limited functional endoscopic sinus surgery (FESS), in addition to septoturbinoplasty. During the intraoperative examination, the left secondary middle turbinate was identified **(Figure 2)** and then with the use of microdebrider, it was resected to improve the drainage of the osteomeatal complex. Postoperatively, the patient’s symptoms improved significantly with no recurrence of her symptoms during a three months follow up period.

Author α σ ω: Collage of Medicine, King Saud Bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia.
e-mail: othman.m.obaid@gmail.com
Author ρ: Division of Otolaryngology – Head and Neck Surgery, Department of Surgery, King Abdulaziz Medical City, National Guard Health Affairs, Riyadh, Saudi Arabia. e-mail: alhedaithy@hotmail.com

Fig. 1: A coronal CT scan of paranasal sinuses shows mucosal thinking of the left maxillary sinus, partial opacification of the ethmoid sinuses, and a secondary middle turbinate in the left side obstructing the left osteomeatal complex

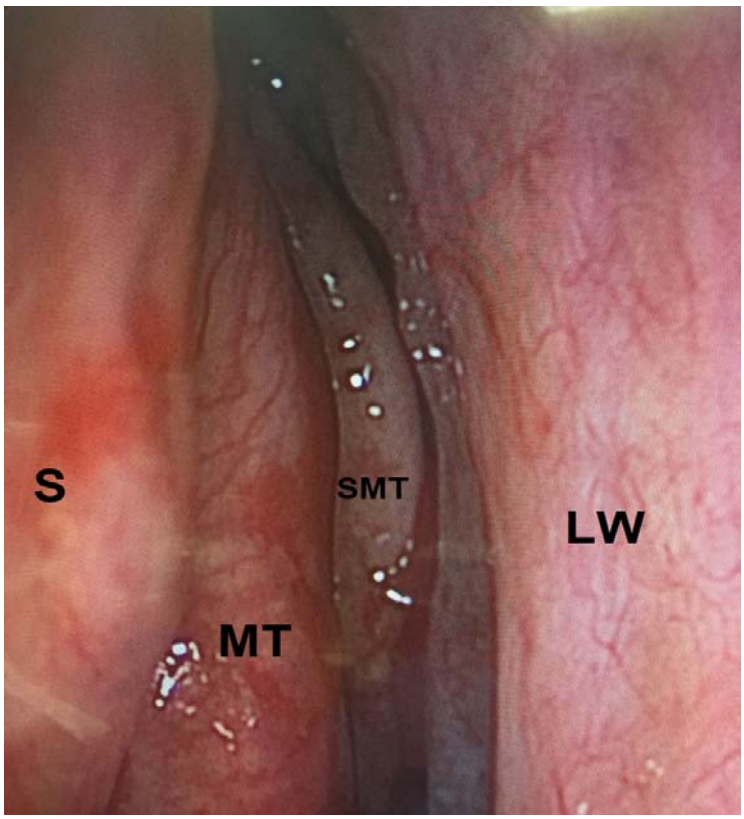


Fig. 2: An intraoperative view of the left nasal cavity shows the Septum (**S**) medially, Middle Turbinate (**MT**), Secondary Middle Turbinate (**SMT**), and the Lateral Wall of Nasal Cavity (**LW**)

III. Discussion

Middle turbinate forms the medial wall of the ethmoid sinus, there are different types of middle turbinates, including pneumatized (concha bullosa), paradoxally curved, bifurcate, trifurcate, secondary and accessory. Accessory middle turbinate is known as an uncinate process that is medially bent with an anterior fold to an extend greater than usual, this makes it look like two middle turbinate [7]. It is different from the secondary middle turbinate because of its distinct developmental origin [7]. According to Bae S and Lim S if the normal uncinate process is present in a patient with a doubled middle turbinate, the term accessory middle turbinate is appropriate. in contrast, if a turbinate like structure originates from the inferior turbinate and the uncinate process is absent, the term bifid inferior turbinate is appropriate [9].In a study by Murat Ozcan et al the incidence of accessory middle turbinate was found to be 6.8% [2]. Accessory middle turbinate may appears as an additional middle turbinate during endoscopic examination. Symptomatic accessory middle turbinate in adult commanly reported but in pediatric has not been reported until Andrew Chang, Seckin O Ulualp (2016) reported their case [10].secondary middle turbinate is a projection of part of bone which is covered by soft tissue from the middle meatus lateral wall [11]. It is generally located posterosuperior to infundibulum and then curves medially and superiorly. Occasionally, it might protrude inferomedially and be mistaken for an accessory middle turbinate [12-13]. Khanobthamchai et al (1991) were the first to describe that secondary middle turbinate, was an incomplete anterior wall of bulla ethmoidalis [14]. The incidence has been reported to be 1.5% by Khanobthamchai et al [14], 6.8% by Aykut et al [15] and 0.8% by Aksungur et al [16] Aksungur et al suggested that secondary middle turbinate might be an additional turbinate originating embryologically from a section of a frontal ridge [16]. The secondary middle turbinate can be mistaken for a polyp or an osteoma at endoscopical examination [17]. Usually SMT is reported to be bilateral in allcases. But in dr.Nebil ARK, SMT was detected unilaterally {18}. According to Apaydın et al., superomedially projected secondary middle turbinate has no clinical significance. However, inferiorly projected secondary middle turbinate, especially if hypertrophied and pneumatised, may narrow the ostiomeatal unit and predispose to inflammatory sinus disease it is a rare nasal cavity variation, where it accounts for 0.8% to 6.8% of cases [11-16-19]. In other hand some studies revealed that complaining of frontal headache in association with sensation of nasal obstruction were frequently observed in 92.8% of their patients with such a variation [16]. The theory behind developing symptoms in SMT like frontal headach and rhinosinusitis. Frontal and periorbital headacheis due to pressure points within the nose and suggested that headaches and facial pain could occur due to contact between the turbinate and other regions of the nasal cavity. Wolff's results showed that stimulation of various intra-nasal mucosal regions caused pain which was felt in the cutaneous distribution of the ophthalmic (V1) or maxillary (V2) division of the trigeminal nerve [20]. Stammberger and Wolf found that mucosal contact could cause headache via substance P (SP), a neuropeptide released from the nasal mucosa. [21] And for rhinosinusitis, Sinonasal anatomical variants of middle turbinate and nasal septum, being more common in the osteomeatal complex OMC region, are responsible for predisposing to recurrent attacks of rhinosinusitis [22].

In the present case, a secondary middle turbinate leading to chronic rhinosinusitis and headache was diagnosed based on nasal endoscopy and CT sinuses and managed successfully by functional endoscopic sinus surgery.

IV. Conclusion

Although secondary middle turbinate is considered a rare anatomical variation, it might lead to the development of chronic rhinosinusitis which has a significant impact on the patient. Surgeons should be aware of this entity before performing endoscopic sinus surgery to ensure a safe and effective surgery.

References Références Referencias

1. Aydil U, Ozelik T, Unilateral agenesis of middle nasal turbinate *J Laryngol Otol* 2010 124(4): 447-49.
2. Murat Ozcan K, Selcuk A, Ozcan I, Akdogan O, Dere H. Anatomical variations of nasal turbinates. The journal of craniofacial surgery 2008:19: 1678-1682.
3. Neskey D, Eloy JA, Casiano RR. Nasal, septal, and turbinate anatomy and embryology. Otolaryngol Clin North 2009; 42: 193–205.
4. Braun H, Stammberger H. Pneumatization of turbinates. Laryngoscope 2003; 113: 668-72.4.
5. *Levine HW, Clemente MP. Sinus Surgery: Endoscopic and Microscopic Approaches. New York: Thieme;* 2005.
6. Kawatra D, Maheshwari D, Saxena D, Varshney D. Bilateral Accessory Middle Turbinate: A Rare Anatomical Varaition. IOSR Journal of Dental and Medical Sciences. 2014; 13(10): 20-22.
7. Lin YL, Lin YS, Su WF, et al. A secondary middle turbinate co-existing with an accessory middle turbinate: an unusual combination of two anatomic variations. Acta Otolaryngol; 2006: 126: 429-31.
8. Levine HL. Otorhinolaryngologic causes of headache. Med Clin North Am. 1991; 75: 677–692.
9. Bae S, Lim S. Accessory middle turbinate. Otolaryngology–Head and Neck Surgery 2010; 142: 770-771.

10. Andrew Chang1, Seckin O Ulualp1, 2. A rare nasal cavity mass in a child: Accessory middle turbinate. SAGE Open Medical Case Reports. 2016; 4:20503 13X16672152.
11. AdilOzturk[a] NecatAlataş[b] EbruOzturk[a] S ZekiZiylan[a]. First secondary middle turbinate. European Journal of Radiology Extra. 2004.09.015.
12. Aksungur EH, Bicakci K, Inal M, Akgul E, Binokay F, Aydogan B, et al. CT demonstration of accessory nasal turbinates: secondary middle turbinate and bifid inferior turbinate. Eur J Radiol 1999; /31: /174 _/ 6.
13. Apaydin FD, Duce MN, Yildiz A, Egilmez H, Ozer C, Talas UD. Inferomedially projecting pneumatised secondary middle turbinate. Eur J Radiol 2002; /43: / 42_/4.
14. Khanobthamchai K, Shankar L, Hawke M, Bingham B. The secondary middle turbinate. J Otolaryngol 1991; 20: 412- 413.
15. Aykut M, Gümüsburun E, Müderrïs S, Adigüzel E. The secondary nasal middle concha. Surg Radiol Anat 1994; 16:307-309.
16. Aksungur EH, Bıçakçı K, İnal M, et al. CT demonstration of accessory nasal turbinates: secondary middle turbinate and bifid inferior turbinate. Eur J Radiol 1999; 31:174-176.
17. Borligegowda Viswanatha*, Suprabha Munnur Haridas, Maliyappanahalli Siddappa Vijayashree. Rare Anatomical Variations of Nasal Turbinates: A Prospective Study. Scientific & Academic Publishing : 2017, 6(5): 59-63.
18. Nebil ARK, MD; 1 Davut AKTAS, MD; 1 Turker YİLMAZ, MD; 1 Hanifi KURTARAN, MD. UNILATERAL SECONDARY MIDDLE TURBINATE WITH SINUSITIS. *KBB-Forum 2009; 8 (2).*
19. Jeong. Choi JH. Frontal sinusitis caused by first and second secondary middle turbinates co-existing with an accessory middle turbinate. Jpn J Radiol 2013; 31: 352-356.
20. Wolff HG. The nasal, paranasal, and aural structures as sources of headache and other pain. In: Wolff HG, editor. Headache and other head pain. New York: Oxford University Press; 1948. p. 532-60.
21. Stammberger H, Wolf G. Headaches and sinus disease: the endoscopic approach. Ann Otol Rhinol Laryngol Suppl 1988; 97: 3-23.
22. Kawatra D, Maheshwari D, Saxena D, Varshney D. Bilateral Accessory Middle Turbinate: A Rare Anatomical Varaition. IOSR Journal of Dental and Medical Sciences. 2014; 13(10): 20-22.

Global Journal of Medical Research: J
Dentistry & Otolaryngology
Volume 18 Issue 1 Version 1.0 Year 2018
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Correlation between Work Duration of Gas Station Operators with Mucociliary Transport Time, Hair Pb Level, and Nasal Cytogram

By Riskiana Djamin, Novimaryana Drakel, Sutji Pratiwi Rahardjo, Abdul Qadar Punagi, Satriono, Idham Jaya Ganda & Mansyur Arief

Hasanuddin University

Abstract- Gas station operators are groups of workers exposed to the risk of dangerous chemical compounds, particularly lead from gasoline and vehicle gas emission that are waiting for a refuelling queue or a vehicle that will depart after completing the refuelling. The research aimed at investigating the correlation between work duration of gas station operators with mucociliary transport time, hair Pb level, and nasal cytogram. The research used the analytic observational method with the cross sectional design, was conducted to the operators of gas station in Tamalanrea and in Gunung Bawakaraeng street from August 2017 until September 2017 with 30 people as total samples. Sample divided into two groups, gas station operator with work duration $<$ 1 year for 15 people and gas station operator with work duration $\geq$ 1 year for 15 people and each sample was underwent mucociliary transport time examination, hair Pb level examination, and nasal mucosa cytogram examination. The research result indicates that the significant correlation between work duration and mucociliary transport time with p value $<$0.05 and OR value=11. There is a significant correlation between work duration and Pb hair level with p value $<$0.05 and OR value = 9.3. There is no significant correlation between work duration and eosinophil and neutrophil count with p value $>$ 0.05.

Keywords: *work duration, mucociciliary transport time, lead (Pb), nasal cytogram.*

GJMR-J Classification: *NLMC Code: WR 345*

Strictly as per the compliance and regulations of:

Correlation between Work Duration of Gas Station Operators with Mucociliary Transport Time, Hair Pb Level, and Nasal Cytogram

Riskiana Djamin [α], Novimaryana Drakel [σ], Sutji Pratiwi Rahardjo [ρ], Abdul Qadar Punagi [ω], Satriono [¥], Idham Jaya Ganda [§] & Mansyur Arief [χ]

Abstract- Gas station operators are groups of workers exposed to the risk of dangerous chemical compounds, particularly lead from gasoline and vehicle gas emission that are waiting for a refuelling queue or a vehicle that will depart after completing the refuelling. The research aimed at investigating the correlation between work duration of gas station operators with mucociliary transport time, hair Pb level, and nasal cytogram. The research used the analytic observational method with the cross sectional design, was conducted to the operators of gas station in Tamalanrea and in Gunung Bawakaraeng street from August 2017 until September 2017 with 30 people as total samples. Sample divided into two groups, gas station operator with work duration < 1 year for 15 people and gas station operator with work duration ≥ 1 year for 15 people and each sample was underwent mucociliary transport time examination, hair Pb level examination, and nasal mucosa cytogram examination. The research result indicates that the significant correlation between work duration and mucociliary transport time with p value <0.05 and OR value=11. There is a significant correlation between work duration and Pb hair level with p value <0.05 and OR value = 9.3. There is no significant correlation between work duration and eosinophil and neutrophil count with p value > 0.05. It can be concluded that the longer work duration as a gas station operator, the higher risk of mucociliary transport time disruption and risk of lead exposure will happen. There is no significant correlation between work duration with nasal cytogram.

Keywords: work duration, mucocicliary transport time, lead (Pb), nasal cytogram.

I. Introduction

Nose and paranasalis sinus are the organs that play an important role as the front line of the body's defence in the lower air way to the microorganism and hazardous materials [1]. Its effectiveness depends on the integrity of mucociliary system called the mucociliary transport system [2]. It consists of ciliary cells of the respiratory epithelium, mucous – producing glands and mucous membranes produced by goblet cells in epithelial and submucosal seromucinous glands. [3].

According to Waguespack (1995), several conditions which affect mucociliary transport were physiologic factor, air pollution, smoking, congenital disorder, rhinitis allergy, viral infection, bacterial infection, topical drugs, systemic drugs, preservatives, and surgery. [4].

Gas station is one of the places where pollution and discharge of gas or waste from vehicles that contained heavy metals such as lead or Plumbum (Pb) occurs, where Pb is the most dominant pollutant in the gas station [5]. Pb level in the air around the gas station is likely to be sucked thorough the air or even attached to the body tissue especially the skin (hair) [6]. Analysis of lead in hair has more advantages, because hair has longer memory period and even a permanent result. Head hair grows at an average speed of half an inch (1 inch = 2.54 centimeters) per month. Therefore, three inches of human hair can tell the history of the human body for six months [7]. Gas station position which near the highway makes it easier for officers to be exposed to lead pollutants from the smoke of the vehicles on the highway [8].

The Regional Environmental Agency has conducted a study about lead level at several points in Makassar in 2013, and the results found that the highest lead level is on the Ratulangi street with 1.319 $\mu g/Nm^3$ and the lowest is on Monginsidi street with 0,374 $\mu g/Nm^3$[9]. Based on the results of Makassar Centre for Health and Occupational Safety (COHS) study about air quality monitoring in several points of vehicle's traffic, it can be seen that in the last three years, lead is still polluting Makassar even though gasoline without lead has been applied, however the pollution remains occur. In 2012, concentration of lead in the air was 0.528 $\mu g/Nm^3$ and in 2013, concentration of lead in the air became 0.592 $\mu g/Nm^3$ [9].

II. Materials and Method

a) Location and Time

The study was conducted at Tamalanrea gas station and gas station of Gunung Bawakaraeng street in Makassar, South Sulawesi Province, for 1 month from August 2017 until September 2017.

Author α σ ρ ω: Department of Ear Nose Throat Head and Neck, Faculty of medicine, Hasanuddin University, Makassar, Indonesia.
e-mail: riskiana25@yahoo.com
Author ¥ §: Department of Biostatistic, Faculty of medicine, Hasanuddin University, Makassar, Indonesia.
Author χ: Department of Clinical pathology, Faculty of medicine, Hasanuddin University, Makassar, Indonesia. Wahidin Sudirohusodo Hospital Makassar-Indonesia.

b) Population Dan Sample

The population is Tamalanrea gas station operators and gas operators of Gunung Bawakaraeng street in Makassar. Samples are the entire affordable population that met the inclusion criteria.

c) Design and Sampling

This is an observational analytic study with cross sectional design. Samples were taken at random, every gas station operators who fulfilled the study requirement, the identity will be recorded and then anamnesis and physical examination will be taken. Each samples will undergo mucociliary transport time examination using saccharin test, hair Pb level examination using Atomic Absorption Spectrometry (AAS), and nasal cytogram examination to assess eosinophil and neutrophil.

d) Data Analysis Technique

The collected data is processed and presented in the form of tables and graphs. Data processing is analysed with statistical test using SPSS 22.0 version with unpaired t test and significance at the $p<0.05$ level.

III. Results

An observational analytic study was conducted with cross sectional study design to determine the correlation between work duration of gas station operators with mucociliary transport time, hair Pb level, eosinophil and neutrophil count in nasal mucosa. This study was conducted in Tamalanrea gas station and in Gunung Bawakaraeng street in Makassar, South Sulawesi Province. For 1 month, from August 2017 until September 2017. Samples number are 30 people, divided into two groups, 15 gas station operators with work duration < 1 year and 15 gas station operators for work duration ≥ 1 year. The highest number of samples at age 15-23 years old are 23 people (76.7%), 18 women (60%) and 12 men (40%), 10 smokers (33.3 %) and 4 people (13.33%) with atopic history. (Table 1)

Table 1: Sample Characteristics

Categories	Frequency (n)	Percentage (%)
Age 15 – 25 years old 26 – 35 years old	 23 7	 76,7 23,3
Gender Men Women	 12 18	 40,0 60,0
Work Duration < 1 year ≥ 1 year	 15 15	 50,0 50,0
Smoking History Yes No	 10 20	 33,3 66,7
Atopic History Yes No	 4 26	 13,33 86,67

Source: Primary Data, 2017

Unpaired t test result showed a significant correlation between mucociliary transport time with work duration < 1 year and ≥ 1 year with p value=0,01 ($p<0.05$). There are 4 people in a group with work duration < 1 year (13.33%) who experienced the disorder, 11 normal people (36.67 %), and mean value 8.48 (SD±4.49). while in the work duration ≥ 1 year group, there are 3 normal people (10%), 12 people (40%) experienced the disorder and mean value 14.68 (SD±3.39). (Table 2)

Table 2: Comparison of Mucociliary Transport Time (MTT) with work duration in gas station operators

Categories	Mucociliary Transport Time (MTT)				Mean±SD	OR	p
	Disorder		Normal				
	n	%	n	%			
Work Duration < 1 Year	4	13,33	11	36,67	8,48±4,49	11**	0,01*
Work Duration ≥ 1 Year	12	40	3	10	14,21±4,07		

** Unpaired t test, ** Chi square test*

Comparison of Pb level analysis in the gas station operators with work duration between < 1 year and ≥ 1 year using unpaired t test demonstrated a significant correlation with p value=0.001 (p<0.05). There is 1 person (3,33%) in work duration < 1 year group with abnormal Pb level, 14 normal people (46.67%) and mean value 6.45 (SD±2.14). In work duration ≥ 1 year group, there are 6 people (20 %) with abnormal Pb level, 9 people (30%) with normal Pb level and mean value 10.92 (SD±1.89). (Table 3)

Table 3: Comparison of Pb Level in Gas Station Operators in Makassar

Categories	Lead Level (Pb)				Mean±SD	OR	p
	Not Normal		Normal				
	n	%	n	%			
Work Duration < 1 Year	1	3,33	14	46,67	6,45±2,14	9**	< 0,001*
Work Duration ≥ 1 Year	6	20	9	30	10,92±1,89		

** Unpaired t test, ** Chi square test*

Comparison of eosinophil count in nasal mucosa analysis in the gas station operators in Makassar with work duration between < 1 year and ≥ 1 year using fisher test shows no significant correlation with p value p=0,29 (p>0,05). There is 1 person (3,33%) in work duration < 1 year group with abnormal eosinophil count and 14 people (46,67%) with normal count. In work duration ≥ 1 year group, there are 3 people (10 %) with abnormal eosinophil count and 12 people (40%) with normal eosinophil count. (Table 4)

Table 4: Comparison of eosinophil and neutrophil count of nasal mucosa in gas station operators

Categories	Eosinophil				p	Neutrophil				p
	Normal		Not Normal			Normal		Not Normal		
	n	%	n	%		n	%	n	%	
Work Duration < 1 Year	14	46,67	1	3,33	0,29*	12	40	3	10	0,21*
Work Duration ≥ 1 Year	12	40	3	10		9	30	6	20	

**Fisher test*

The result of fisher test analysis shows no significant correlation between neutrophil in nasal mucosa of gas station operators in Makassar with p value=0,21 (p>0,05). There are 3 people (10%) in work duration < 1 year with abnormal neutrophil count and 12 normal people (40%). In work duration ≥ 1 year group, there are 6 people (20 %) with abnormal neutrophil count and 9 people (30%) with normal neutrophil count. (Table 4)

IV. Discussion

The major sample characteristics according to age is 15-23 years old with 23 people (76.7%), With the plenty amount of women than men, i.e. 18 people (60%). Munir D, 2010 stated that there was no significant difference in MCT time based on gender [10]. The influence of age and gender on MCT time is still not known clearly. Some researchers say that age and gender have no effect on the speed of mucociliary transport. Prijanto, 2002 suggested that nasal mucociliary transport is related to age, i.e. older age has a slower mucociliary transport rate than younger age. This is due to the possibility that older people are more exposed to air pollution [11].

The result of mucociliary transport time (MTT) comparison analysis between gas station operators with work duration <1 year and ≥ 1 year showed a significant correlation by using unpaired t test with p value = 0.01 (p <0.05) and mean value 8.48 (SD ± 4.49) for work duration <1 year group, and in work duration ≥ 1 year group, the mean value was 14.68 (SD ± 3.39). In work duration <1 year group, there are 4 people (13.33%) who experienced the disorder, this may be caused by the history of smoking and allergies. However, in the work duration ≥ 1 year group there are 3 normal people (10%), this may be caused by the use of maximum protective equipment and immune system of the operators. (Figure 1)

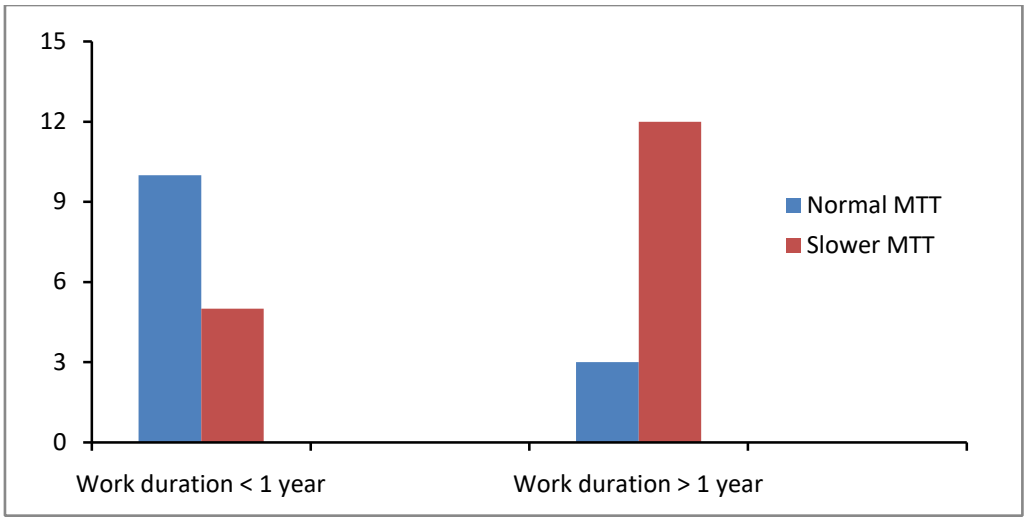


Fig. 1: Comparison of Mucociliary Transport Time (MTT) between gas station operators with work duration < 1 year and ≥ 1 year

Smoking can affect mucociliary transport time. This is due to the ciliostatic effects of tobacco smoke. Prolongation of mucociliary transport time may be caused by a decrease in the amount of cilia or mucus viscoelasticity changes. In addition, increased mucociliary transport time was also associated with an increase in smoking duration where subjects who smoked more than 5 years had a slower mucociliary transport time [12]. In the case of a very long rhinitis allergy, elongation of mucociliary transport time occurs and associated with alternation in nasal mucus flow features [13].

The result analysis of Pb level in gas station operator in Makassar between work duration <1 year and ≥ 1 year shows significant correlation by using unpaired t test with p value = 0.001 (p <0.05) and mean value 6.45 (SD ± 2.14) while mean value 10.92 (SD ± 1.89) for work duration ≥ 1 year group. In work duration <1 year group there is only 1 person (3.33%) with abnormal level of Pb, this may be due to the lack use of protective equipment, food and drinks or other factors. Poisoning caused by Pb metal compounds can occur due to the metal compounds entering the body. The process entry of Pb in the body can be through several routes, such as food and drink, air, permeation or penetration of the membrane or skin layer [6].

In the work duration ≥ 1 year group there are 9 people (30%) with normal Pb level, this may be due to the Threshold Limit Level of Pb at the gas station in Makassar below the mean value and there are 6 people (20%) with abnormal Pb level. Gas station operators who do not use protection equipment such as masks and gloves are susceptible to exposure of lead particles that came out directly from the gas waste-pipes and inhaled gasoline vapour at a higher rate compared to operators using protective equipment [6].

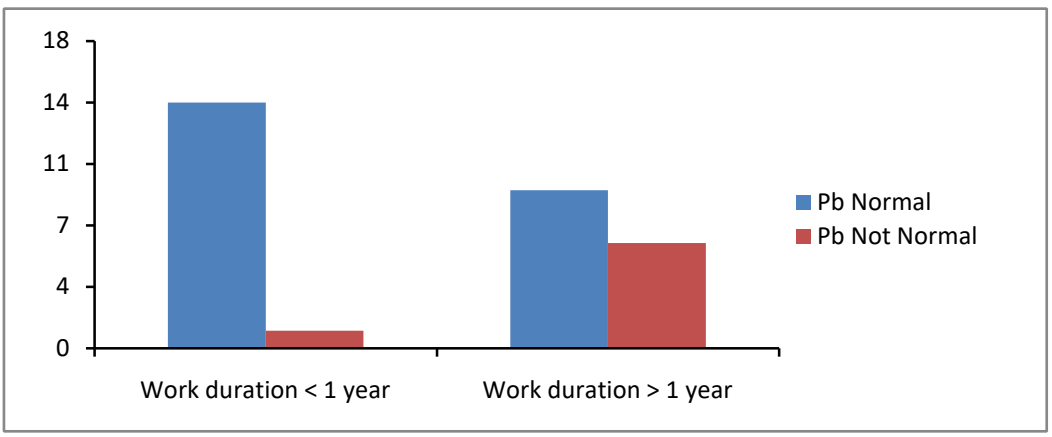


Fig. 2: Comparison of Pb level between gas station operators with work duration < 1 year and ≥ 1 year

The results of fisher test analysis showed no significant correlation of work duration with eosinophil and neutrophil count in nasal mucosa of gas station operators in Makassar, where p=0.29 (p>0,05) for eosinophil and p=0,21 (p>0,05) for neutrophil. Zachariah 2015. suggested that there is no significant correlation between the mass of work with eosinophil and neutrophil. Neutrophils are short-lived cells with a

half-life in the blood between 6-7 hours and lifespan between 1-4 days in connective tissue. Neutrophils form a defence against the invasion of microorganisms, especially bacteria. Neutrophils are active phagocytes against small particles and are called as microphages to differentiate them from macrophages which are larger cells. Eosinophils can survive in the blood circulation for 8-12 hours, and last longer about 8-12 days in the tissue if there is no stimulation. [14]

V. Conclusion

There is a significant correlation between work duration of gas station operators with mucociliary transport time and Pb level. The longer the work duration of gas station operators are the higher risk to have slower mucociliary transport time and risk of lead exposure.

There is no significant correlation between work duration with eosinophil and neutrophil.

References Références Referencias

1. Mangunkusumo E, Soetjipto D. Sinusitis. 2016. Dalam Buku Ajar Ilmu Kesehatan Telinga Hidung Tenggorok Kepala dan Leher. Edisi Ke-7. Fakultas Kedokteran Universitas Indonesia. Jakarta.
2. Adams GL, Boies LR, Higler PA. 2015. Boeis buku ajar penyakit THT, Edisi 6, Jakarta, 173-89.
3. Dhingra PL. 2014. Disease of Ear, Nose and Throat, 9th edition.
4. Weguespack R. 1995. Mucocyliari clearance patterns following endoscopic sinus surgery, laryngoscope, 105: 1-40.
5. Roza, V., Mirna, I., & Anita, S. 2015. Korelasi Konsentrasi Particulate Matter (PM10) di Udara dan Kandungan Timbal (Pb) Dalam Rambut Petugas SPBU di Kota Pekanbaru. Jurnal Dinamika Lingkungan Indonesia. Volume 2. No. 1. Hal. 52-60.
6. Palar H. 2012. Pencemaran dan toksikologi Logam Berat. Edisi 5, Rineka Cipta, Jakarta, 10-92.
7. Sanna EL, Vargiu I, Rossetti E, Vallascas, Floris G. Corelation between blood and hair lead levels in boys and girls of Sardinia (Italy). 2007. Journal of Anthropological Sciences. 2007; 85: 173-81.
8. Badan Lingkungan Hidup Sulawesi Selatan. 2013. Data Evaluasi Kualitas Udara Perkotaan. Makassar.
9. Fardiaz Srikandi. 2014. Polusi Air & Udara. Cetakan Ke-14. Penerbit Kanisius. Yogyakarta.
10. Munir, D. 2010. Waktu Bersihan Mukosiliar pada Pasien Rinosinusitis Kronis. Majalah Kedokteran Indonesia. Vol. 60, No. 11.
11. Prijanto S. Roestiniadi. 1992. Nasal Mucocilliary Transpor of Patients Attending Patients Departement of Teh Dr. Soetomo Hospital. *Orli*; XXIII.
12. Baby MK, et al. 2014. Effect of cigarette smoking on nasal mucociliary clearance: A comparative analysis using saccharin test. Lung India.
13. Hermelingmeier KE, et al. 2012. Nasal irrigation as an adjunctive treatment in allergic rhinitis: A systematic review and meta-analysis. American Journal of Rhinology & Allergy.
14. Zachariah K. 2015. The correlation between formaldehyde exposure and nasal swab eosinophil and neutrophil in tire cord industry workers. Majalah Kedokteran Indonesia.

This page is intentionally left blank

Global Journal of Medical Research: J
Dentistry & Otolaryngology
Volume 18 Issue 1 Version 1.0 Year 2018
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

A Clinico-Pathological Presentation of Solitary Thyroid Nodule

By Dr. Ishank Jaiswal, Dr. Nicola C. Lyngdoh, Vidhiyaveeran, Rituparnasaha, Roshan Ali, Markhia Bhuphang & Pulokkutum

Regional Institute of Medical Sciences

Abstract- *Background:* Thyroid nodules represent a difficult diagnostic problem. They are quite common in the population, while clinically apparent thyroid cancer the principal concern of both patient and physician is comparatively rare.

Materials and method: We prospectively evaluated the clinical and pathological profile of 50 consecutive patients presenting with solitary thyroid nodule.

Results: Most common age group was 30-39 years (4th decade) with a female: male ratio=6:1. Overall malignancy rate was 32%. The diagnostic assessment by Fine needle aspiration cytology in this study produces sensitivity of 92.71%, specificity of 78.26%, positive predictive value of 83.33% and negative predictive value of 90% thereby having an overall accuracy of 86%. Histopathological examination remains the gold standard for final accurate diagnosis.

Keywords: *solitary thyroid nodule, fine needle aspiration cytology (FNAC), histopathological examination (HPE).*

GJMR-J Classification: *NLMC Code: WK 200*

Strictly as per the compliance and regulations of:

A Clinico-Pathological Presentation of Solitary Thyroid Nodule

Dr. Ishank Jaiswal [α], Dr. Nicola C. Lyngdoh [σ], Vidhiyaveeran [ρ], Rituparnasaha [ω], Roshan Ali [¥], Markhia Bhuphang [§] & Pulokkutum [χ]

Abstract- Background: Thyroid nodules represent a difficult diagnostic problem. They are quite common in the population, while clinically apparent thyroid cancer the principal concern of both patient and physician is comparatively rare.

Materials and method: We prospectively evaluated the clinical and pathological profile of 50 consecutive patients presenting with solitary thyroid nodule.

Results: Most common age group was 30-39 years (4th decade) with a female: male ratio=6:1. Overall malignancy rate was 32%. The diagnostic assessment by Fine needle aspiration cytology in this study produces sensitivity of 92.71%, specificity of 78.26%, positive predictive value of 83.33% and negative predictive value of 90% thereby having an overall accuracy of 86%. Histopathological examination remains the gold standard for final accurate diagnosis.

Keywords: solitary thyroid nodule, fine needle aspiration cytology (FNAC), histopathological examination (HPE).

I. Introduction

A solitary thyroid nodule is a palpable discrete swelling within an otherwise apparently normal thyroid gland. Though it is a common disorder of the thyroid gland, it is less prevalent among children. Childhood thyroid nodules need special attention due to higher incidence of malignancy as compared to adults. Differential diagnosis of a thyroid nodule is crucial as malignancy necessitates surgery; while strict follow up is necessary in benign cases.[1]Fine needle aspiration cytology (FNAC) is a cost effective procedure that provides specific diagnosis rapidly with minimal complications. Our objectives were to study the demographic descriptions, clinical, cytological, histo-pathological profile and correlation of cytological finding with that of histological, of patients with solitary thyroid nodule attending our tertiary referral centre.

II. Materials and Methods

Fifty consecutive patients irrespective of age, sex, religion and socio-economic status with solitary thyroid nodule admitted in the department of Otorhinolaryngology, Regional Institute of Medical Sciences, Imphal between August 2015 to September 2017 were prospectively studied.

Every patient was meticulously worked up with a thorough history taking and clinical examination followed by routine laboratory investigations and investigations specific to thyroid like thyroid hormone assay, Fine needle aspiration cytology (FNAC) and Ultrasonography (USG) of the thyroid. Post operatively the thyroidectomy specimens were sent for Histopathological Examination (HPE).

III. Results and Observation

The age of the patients ranged from 15 to 70 years. The youngest patient was a 15 year old male while the oldest was a 70 year male. The female to male ratio was 6.1:1.25; (50%) cases presented with swelling with duration of less than 1 year while 3(6%) cases had duration of 9-10 year. The shortest duration of swelling was 2 months which was diagnosed as follicular adenoma, while the longest was for 10 years which was diagnosed as colloid goiter.

All the 50 patients came with chief complaint of swelling in front of the neck of whom 46(92%) had a gradual increase in size while in 4(8%) cases there was rapid increase in size. There was Dysphagia in 2(4%) cases. Associated pain, difficulty in breathing, hoarseness, decreased appetite, weight loss and cervical lymphadenopathy were seen in a 70 year old male patient who was diagnosed as papillary carcinoma. Firm consistency was observed in 38(78%) cases of which maximum were of colloid goiter while other varieties of consistency (soft/cystic) in follicular adenoma, papillary carcinoma, hashimoto's thyroiditis and Hurthle's neoplasm were also seen. One case had hard consistency with metastatic lymphadenopathy.

In FNAC 30 (60%) cases were found to be colloid goiter while papillary carcinoma was seen in 9 (18%) cases. There were 7 (14%) cases with follicular neoplasm, 2 (4%) cases of Hurthle's neoplasm and 1 (2%) each of Hashimoto's and Lymphocytic thyroiditis. On Ultrasonography 30 (60%) cases were of cystic nature while 12 (24%) were solid and 8 (16%) cases were of suspicious malignancy. On Histopathological examination of the operated tissues 27 (54%) cases were colloid in nature, 11 (22%) cases were papillary carcinoma while 3 (6%) cases were of papillary-follicular variant. There was also a case of squamous carcinoma

Author α: Post Graduate Trainee, Department of Otorhinolaryngology, Regional Institute of Medical Sciences, Imphal, Manipur, India.
e-mail: jaiswalishank@gmail.com
Author σ: Associate Professor, Department of Otorhinolaryngology, Regional Institute of Medical Sciences, Imphal, Manipur, India.
e-mail: nclyngdoh@gmail.com

in a female patient of 26 years who was diagnosed as colloid nodule on FNAC. Most of the solid findings and suspicious cases of malignancy on ultrasonography were found to be papillary carcinoma and follicular adenoma on HPE. Majority of cystic findings on Ultrasonography were colloid goiter in nature.

Table 1: Characteristics of the patients presented with clinical solitary thyroid nodule

Age Distribution		
Age in years	No. of cases	Percentages (%)
0-9	0	0%
10-19	7	14%
20-29	8	16%
30-39	17	34%
40-49	8	16%
50-59	4	8%
60-69	5	10%
70 & above	1	2%
Sex Distribution		
Sex	No. of cases	Percentage (%)
Male	7	14%
Female	43	86%
Duration of Swelling		
Duration (months)	No. of cases	Percentage (%)
0-12	25	50%
13-24	10	20%
25-36	6	12%
37-48	4	8%
49-60	1	2%
61-72	1	2%
73-108	0	0%
109-120	3	6%
Symptoms of Patient		
Symptoms	No. of cases	Percentage (%)
Swelling	50	100%
Gradual progression	46	92%
Rapid progression	4	8%
Associated pain	1	2%
Dysphagia	2	4%
Difficulty in breathing	1	2%
Hoarseness	1	2%
Decrease appetite	1	2%
Weight loss	1	2%
Lymphadenopathy	1	2%
Location of Swelling		
Location	No. of cases	Percentage (%)
Right lobe	22	44%
Left lobe	18	36%
Isthmus	10	20%
Consistency of Swelling		
Consistency	No. of cases	Percentage (%)
Cystic	3	6%
Soft	8	16%
Firm	38	76%
Hard	1	2%

Table 2: Investigations Reports

FNAC Results		
Cytology	No. of cases	Percentage (%)
Colloid Goiter	30	60%
Papillary Carcinoma	9	18%
Follicular Carcinoma	7	14%
Hashimoto's Thyroiditis	1	2%
Hurthle's Neoplasm	2	4%
Lymphocytic Thyroiditis	1	2%
Ultrasound Results		
Ultrasound	No. of cases	Percentage (%)
Cystic	30	60%
Solid	12	24%
Suspected Malignancy	8	16%
Histopathological Results (HPE)		
HPE	No. of cases	Percentage (%)
Colloid Goitre	27	54%
Papillary Carcinoma	14	28%
Follicular Adenoma	6	12%
Follicular Carcinoma	0	0
Hashimoto's Thyroiditis	1	2%
Hurthle's Carcinoma	1	2%
Squamous Cell Carcinoma	1	2%

Out of 30 patients of colloid nodule on FNAC, 27 cases were found to be colloid goiter on HPE. The remaining turned out to be papillary carcinoma and squamous cell carcinoma in 1 case. All cases of papillary carcinoma on FNAC were diagnosed to be the same on HPE.

Hashimoto's and Hurthle's cases were almost same in both examinations. All except one case of follicular neoplasm on FNAC turned out to be follicular adenoma on HPE. There was significantly more occurrence of malignancy at both the extremes of age, a rate of 42.85% below 20 years and 33.33% above 60 years. The youngest patient was a 15 year old male and the oldest 70 year old patient and both were diagnosed as papillary carcinoma.

Table 3: Comparison of FNAC/HPE reports

Type	FNAC (%)	Subdivision	HPE	%
Colloid Goitre	30 (60%)		27	54%
Papillary Carcinoma	9 (18%)		14	28%
Follicular Neoplasm	7 (14%)	Follicular Adenoma	6	12%
		Follicular Carcinoma	0	
Hashimoto's Thyroiditis	1 (2%)		1	2%
Hurthle's Neoplasm	2 (4%)	Hurthle's Carcinoma	1	2%
Lymphocytic Thyroiditis	1 (2%)			
Squamous Carcinoma			1	2%

Table 4: Carcinoma occurrence in Male/Female with correlation between age and malignancy

Female	No. of cases	Percentage %	Male	No. of cases	Percentage %
Malignant	13	30.2%	Malignant	3	42.8%
Benign	30	69.8%	Benign	4	57.2%
Age group		Total cases	Malignancy		Percentage
< 20 years		7	3		42.85%
>60 years		6	2		33.33%
20-60 years		37	6		16.21%

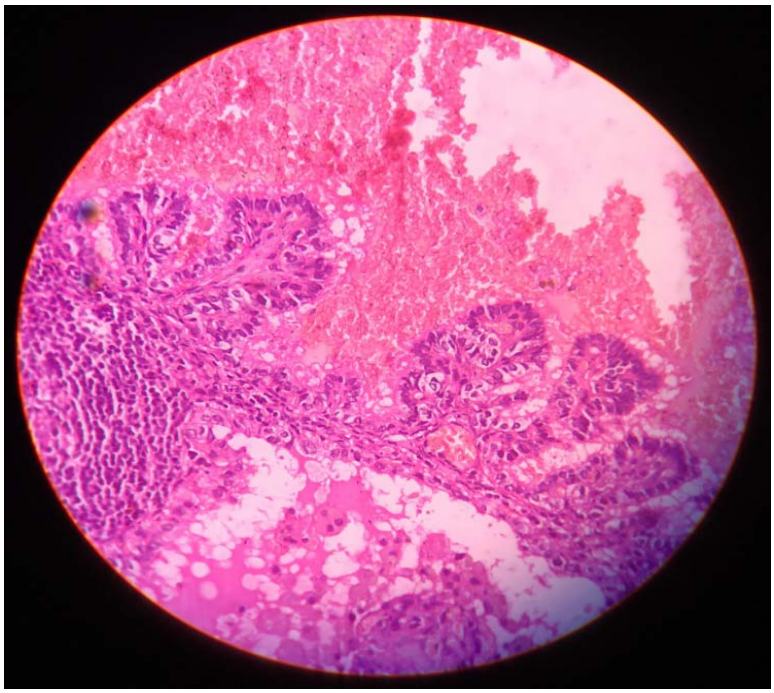


Fig. 1: HPE under high magnification (40x) view shows cellular smear with cells arranged in papillary architecture having enlarged round to ovoid nuclei with nuclear overcrowding, overlapping and having fine granular powdery chromatin; suggestive of a papillary carcinoma

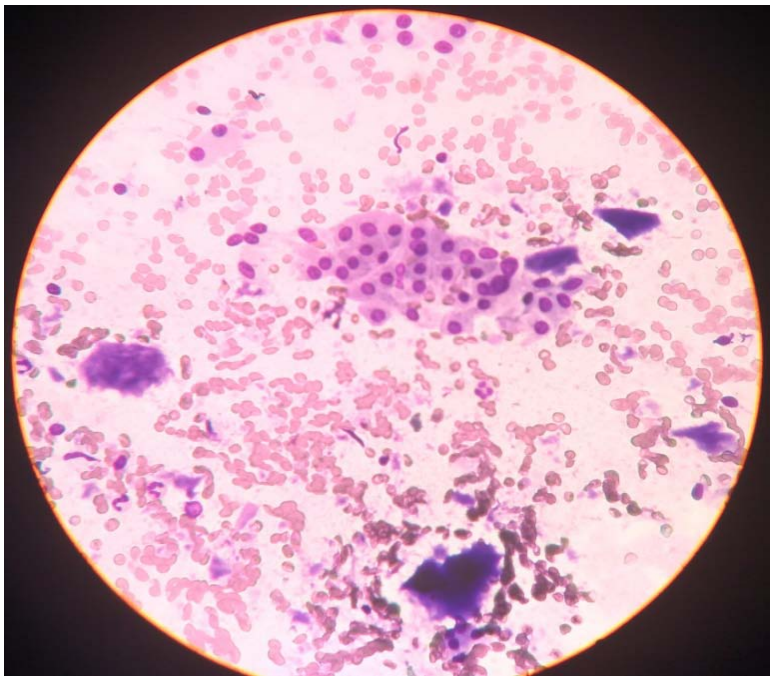


Fig. 2: FNAC smear under high magnification (40x) shows benign follicular cells arranged in clusters in a background of thin and thick colloid; suggestive of colloid goiter

IV. Discussion

In the present study, the maximum number of cases occur in the age group of 30-39 years, i.e. 4th decade of life. Other studies also reported a higher incidence in the 3rd and 4th decade age group. [2,3,4]

Several studies have highlighted the greater risk of malignancy in thyroid nodules in younger age group and older age-group people.[5,6] Several studies have highlighted the greater risk of malignancy in thyroid nodules in younger age group and older age-group people. Similar findings noted in our study. Female: Male ratio was 6.1:1, comparable to other literature.[2,3,7] The overall malignancy rate was 32%, similar to older literature.[8,9]

The most common presenting feature was swelling in the neck seen in all 50 cases (100%). This correlates with the observance made by other authors.[4,7,10] There was a gradual increase in size of the solitary thyroid nodule in 46 (92%) cases, while 4 (8%) cases had rapid progression. Dysphagia noted in 2 cases of papillary carcinoma and follicular adenoma. Associated pain with hoarseness, weight loss, difficulty in breathing, decreased appetite, and cervical lymphadenopathy was seen in 70 -year -old patient with papillary carcinoma. All these clinical indicators suggestive of malignancy reported in other studies. [8,11]

The presence of nodule on the right lobe was in 22 (44%) cases, 18 (36%) in the left lobe and 10 (20%) in the isthmus. Similar findings reported by another author.[10] Firm consistency felt in 38 (76%) cases, cystic in 3 (6%) cases and soft in 8 (16%) cases. An elderly patient with hard nodule diagnosed as papillary carcinoma. Similar observations found in other studies.[4,6]

The diagnostic assessment by FNAC in this study produces a sensitivity of 92.71%, specificity of 78.26%, a positive predictive value of 83.33% and negative predictive value of 90%.The accuracy of FNAC found to be 86%. This finding was comparable to other studies.[6,12]

Histopathological examination (HPE) revealed a colloid occurrence in 54%, papillary carcinoma in 28%, follicular adenoma in 12%, 2% each in Hashimoto's and Hurthle's. These findings tally with that of other studies. The percentage of malignancy in our study was 29% whereas other series reported 8-37%.[12,13] The most common finding in FNAC in our study is colloid goiter which accounts for almost 60%, which is consistent with the other studies. [14]Out of total 14 cases of papillary carcinoma cases diagnosed from HPE, almost 9(64.3%) cases were identified in FNAC also. This shows there is a chance of false negativity for papillary carcinoma, should always be kept in mind. It is consistent with the study conducted by Sukumaran et al.[15]

V. Conclusion

The incidence is highest in the 4th decade of life. The rates of malignancy in extremes of age group are significantly higher than other general population. The incidence of a solitary thyroid nodule is much higher in female (F: M-6.1:1).

The most common mode of presentation is swelling in the neck with a majority of (92%) patients giving a history of gradual progression of size. Location of the nodule was slightly more on the right (44%) as compared to the left lobe and isthmus and most nodules presented with a firm consistency.

FNAC was found to be not only an easy and inexpensive mode of diagnosis but, also a highly accurate means of investigation with an accuracy of 86% in this study. Histopathological examination remains the gold standard for the final correct diagnosis of a solitary thyroid nodule.

References Références Referencias

1. Stergiois AP, Marina K, Auraam A. Thyroid nodule-stepwise diagnosis and management. Hormones 2007; 6(2): 101-119.
2. Kumar A, Ahuja MMS, Chattopadhya TK, Padhya AK, Gupta AK, Kapila K, Goel AK and Karmakar MG. Fine needle aspiration cytology, sonography and radionuclide scanning in solitary thyroid nodule. JAssocPhysicians1992; 40: 302-7.
3. Mandrekar SRS, Nadkarni NS, Pinto RGW, Menezee S. Role of fine needle aspiration cytology as the initial modality in the investigation of thyroid nodules. Acta Cytol1995; 39(5): 898-904.
4. Ananthakrishnan N, Madhava Rao K, Narashima R, Veliath AJ. Problems and limitatins with FNAC of solitary thyroid nodules. ANZ J Surg 2008; 60(1): 35-9.
5. George LAF, Victor GL. Thyroid disease. In: Stephen A, Falk editor, Endocrinology, Surgery, Nuclear medicine and Radiotherapy. Philadelphia: Lippincott Raven publishers; 1997.p. 411-429.
6. Paul RM, Malcolm HW. Approach to thyroid nodules. In; Clark-Duh-Kelsebew editor, Textbook of Endocrine surgery. Philadelphia: Elsevier Saunders Publishers; 1996. p. 85-91.
7. Bouvet M, Feldman JI, Gill GN, Dillman WH, Nahum AM, Russack V, Robbins KT. Surgical management of the thyroid nodule, patient selection based on the results of fine needle aspiration cytology. Laryngoscope 1992; 102: 1353-6.
8. Ashok RS. Controversies in management of thyroid nodule. Laryngoscope 2000; 110: 183-5.
9. Kamaljit K, Nishi S, Bapna AS, Pradeep M. A comparative study of FNAC, USG and Radio nucleotide scan in the management of solitary thyroid nodule: A prospective analysis of 50 cases. Indian JOtolaryngolHead Neck Surg 2002; 54(2): 96.
10. Amjad I, Muhammed I, Nisar A, Javed A and Javed Z: Management of solitary thyroid nodule. Postgrad MedJ 2005; 19(1): 1-2.
11. Barroeta JE, Wang H, Shiina N, Gupta PK, Livolsi VA and Baloch ZW. Fine needle aspiration of multiple thyroid nodule justified? EndocrPathol 2006; 17(1): 61-6.
12. Cusick EL, Mac-Intosh CA, Zygmunt HK, Williams VM, Matheson NA. Management of Isolated thyroid swelling: a perspective six year study of fine needle aspiration cytology in diagnosis. Brit MedJ 1990; 301: 318-321.
13. Ali Z. New insight into the diagnosis and management of thyroid nodules. ShirazEMedJ 2005; 6(1, 2): 1-2.

15. Sukumaran R, Kattor J, Pillai KR, Ramadas PT, Nayak N, Somanathan T, George NA, Sebastian P. Fine Needle Aspiration Cytology of Thyroid Lesions and its Correlation with histopathology in a series of 248 patients. Indian J SurgOncol 2014; 5(3): 237-241.

Global Journal of Medical Research: J
Dentistry & Otolaryngology
Volume 18 Issue 1 Version 1.0 Year 2018
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Use of Dental Stem Cells Harvested from a Tooth or Follicle

By Saleha Shah

Abstract- Regenerative medicine is gaining popularity and inspires dentists to follow evidence-based literature for educating the parents about collecting, storing, sustainability and utility of dental stem cells about autologous regenerative therapies. Stem cells are present intrinsically in the apical papilla or dental pulp cells for treatment associated to regenerative endodontics.[1, 2, 3]

GJMR-J Classification: *NLMC Code: WU 21*

Strictly as per the compliance and regulations of:

Use of Dental Stem Cells Harvested from a Tooth or Follicle

Saleha Shah

Abstract- Regenerative medicine is gaining popularity and inspires dentists to follow evidence-based literature for educating the parents about collecting, storing, sustainability and utility of dental stem cells about autologous regenerative therapies. Stem cells are present intrinsically in the apical papilla or dental pulp cells for treatment associated to regenerative endodontics.[1, 2, 3]

Introduction

Stem cells are pluripotent cells which can divide and increase for a protracted period and differentiate into specialized cell types and tissues of a wide variety. Dental stem cells are a subset of adult mesenchymal stem cells which proliferate rapidly and differentiate into many cell lines.[4]

Adult stem cell therapy applies to medical presentations as metabolic disorders, bone marrow transplant for hematopoietic cancers and congenital immunodeficiency syndromes. It is undergoing clinical testing for diabetes, brain trauma/ spinal cord injuries and Parkinson's disease among other conditions.[5, 6]

The oral health applications of stem cells include dental and periodontal tissue regeneration, craniofacial structure repair (cleft lip/palate) and wound healing.[7] They are derived from various sources such as preserved umbilical cord blood, pulp tissue of exfoliating primary teeth, fibroblasts from oral mucosa,[8] periodontal ligaments, surgically removed third molars[9] and gingival fibroblasts.[2, 9, 10] They are secured and stored for conserving their proliferation and differentiation potential.[11, 12] Since these dental stem cells are not very stable and lead to in vivo tumours,[2] more studies are required to assess their safety and efficacy prior to initiating clinical trials in humans.[11, 12]

Modern regenerative endodontics is augmented by newer techniques including tissue engineering and regenerative medicine.[13] Stem cell transplantation and cell homing strategies are applicable to pulp regeneration. Stem cells are isolated, expanded, seeded and transplanted into the scaffold. Cell homing achieve tissue repair/regeneration by replacing the necrotic, inflamed or injured pulpal tissue with a regenerated pulp-like tissue by recruiting endogenous cells via signaling molecules. Compared with stem cell transplantation, cell homing strategies do not need to isolate and manipulate stem cells in vitro.[14, 15, 16]

Author: *e-mail: saleha.shah@aku.edu*

An example of cell homing strategy is pulp revascularization of immature teeth. Histologically most of the tissues formed in suc cases are unlike pulp like tissue and comprise of cementum, periodontal, and bone-like tissues.[17] Additional studies are required to increase the success rate of pulp revascularization in immature teeth, facilitate the formation of pulp-like tissues and applying cell homing in mature teeth.

The first prerequisite for promoting pulpal regeneration include disinfection of the pulp space and dentinal walls via different root canal disinfectants including intracanal medication with antibiotics, ultrasonic-assisted irrigation, EndoVac apical negative-pressure system of irrigation and laser irradiation. [18]

Another precondition for pulp regeneration is the proper size of the apical foramen, especially in mature teeth with closed apex in adults. An apical foramen too small in size will affect both the migration of endogenous cells as well as neovascularization and re-innervation during regeneration. A minimum of 1.1 mm apical foramen is necessary to obtain revascularization.[19]

Morphologically the regenerated tissues should encompass connective tissues for new dentin formation at a controlled rate similar to healthy pulp, display cell density, and architecture as the natural tissue, and have innervation and vascularization.[20] Vascularization and innervation are vital pulpal characteristics hence the new regenerated blood vessels must connect with the periapical or bone marrow tissues around the teeth to receive a regular blood flow from circulation, nutrient supply and sense hot/cold stimulation and pain during infection. [21]

An area of concern for homing cell strategy is the source of stem. They are derived from dental pulp stem cells (DPSCs), apical papilla (SCAP), bone marrow stem cells (BMSCs), periodontal ligament cells migrating to the root canal by chemokines and others.[22]

To conclude; even though some experimental and clinical studies yield pulp-like vascularized tissue; the information about the function of this tissue is insufficient. Hence further studies are required to succeed in functional pulp regeneration.

References Références Referencias

1. Conde MC, Chisini LA, Demarco FF, et al. Stem cell based pulp tissue engineering: Variables enrolled in translation from the bench to the bedside, a

systematic review of literature. Int Endod J 2016; 49(6):543-50.
2. Yang J, Yuan G, Chen Z. Pulp regeneration: Current approaches and future challenges. Front Physiol 2016; 7:58.
3. Hynes K, Menichanin D, Bright R, et al. Induced pluripotent stem cells: A new frontier for stem cells in dentistry. J Dent Res 2015; 94(11):1508-15.
4. Govindasamy V, Ronald VS, Abdullah AN, et al. Differentiationof dental pulp stem cells into islet-like aggregates. J Dent Res 2011; 90(5):626-52.
5. Nourbakhsh N, Soleimani M, Taghipour Z, et al. Induced in vitro differentiation of neural-like cells from human exfoliated deciduous teeth-derived stem cells. Int J Dev Biol 2011; 55(2):189-95.
6. Kadar K, Kiraly M, Porcsalmy B, et al. Differentiation potential of stem cells from human dental origin – Promise for tissue engineering. J Physiol Pharmacol 2009; 60(suppl 7):167-75.
7. Nishino Y, Yamada Y, Ebisawa K, et al. Stem cells from human exfoliated deciduous teeth (SHED) enhance wound healing and the possibility of novel cell therapy. Cytotherapy 2011; 13(5):598-605.
8. Miyoshi K, Tsuji D, Kudoh K, et al. Generation of human induced pluripotent stem cells from oral mucosa. J Biosci Bioeng 2010; 110(3):345-50.
9. Wada N, Wang B, Lin NH, Laslett AL, et al. Induced pluripotent stem cell lines derived from human gingival fibroblasts and periodontal ligament fibroblasts. J Periodontal Res 2011;46(4): 438-47.
10. Eslaminejad MB, Vahabi S, Shariati M, Nazarian H. In vitro growth and characterization of stem cells from human dental pulp of deciduous versus permanent teeth. J Dent (Tehran) 010; 7(4):185-95.
11. Perry BC, Zhou D, Wu X, et al. Collection, cryopreservation, and characterization of human dental pulp-derived mesenchymal stem cells for banking and clinical use. Tissue Eng Part C Methods 2008;14(2):149-56.
12. Yildirim S, Zibandeh N, Genc D, Ozcan EM, Goker K, Akkoc T. The comparison of the immunologic properties of stem cells isolated from human exfoliated deciduous teeth, dental pulp, and dental follicles. Stem Cells Int 2016; 2016:4682875. Available at: "https://www. hindawi.com/journals/sci/2016/4682875/". Accessed June 9, 2017. (Archived by WebCite® at: "http://www.webcitation.org/6tkJoR5zd").
13. Nakashima, M., and Iohara, K. (2011). Regeneration of dental pulp by stem cells.Adv. Dent. Res. 23, 313–319. doi: 10.1177/0022034511405323.
14. Sun, H. H., Chen, B., Zhu, Q. L., Kong, H., Li, Q. H., Gao, L. N., et al. (2014). Investigation of dental pulp stem cells isolated from discarded human teeth extracted due to aggressive periodontitis. Biomaterials 35, 9459–9472. doi: 10.1016/j.biomaterials.2014.08.003.
15. Yang, J. W., Zhang, Y. F., Wan, C. Y., Sun, Z. Y., Nie, S., Jian, S. J., et al. (2015a). Autophagy in SDF-1α-mediated DPSC migration and pulp regeneration. Biomaterials 44, 11–23. doi: 10.1016/j.biomaterials.2014.12.006.
16. Yang, J. W., Zhang, Y. F., Sun, Z. Y., Song, G. T., and Chen, Z. (2015b). Dental pulp tissue engineering with bFGF-incorporated silk fibroin scaffolds. J. Biomater. Appl. 30, 221–229. doi: 10.1177/0885328215577296.
17. Thibodeau, B., and Trope, M. (2007). Pulp revascularization of a necrotic infected immature permanent tooth: case report and review of the literature. Pediatr. Dent. 29, 47–50.
18. Fouad, A. F. (2011). The microbial challenge to pulp regeneration. Adv. Dent. Res. 23, 285–289. doi: 10.1177/0022034511405388.
19. Kling, M., Cvek, M., and Mejare, I. (1986). Rate and predictability of pulp revascularization in therapeutically reimplanted permanent incisors. Endod. Dent. Traumatol. 2, 83–89. doi: 10.1111/j.1600-9657.1986.tb00132.x.
20. Fawzy El-Sayed, K. M., Jakusz, K., Jochens, A., Dörfer, C., and Schwendicke, F. (2015). Stem Cell transplantaion for pulpal regeneration: a systematic review. Tissue Eng. Part B Rev. 21, 451–460. doi: 10.1089/ten.teb.2014.0675.
21. Kökten, T., Bécavin, T., Keller, L., Weickert, J. L., Kuchler-Bopp, S., and Lesot, H. (2014). Immunomodulation stimulates the innervation of engineered tooth organ. PLoS ONE 9:e86011. doi: 10.1371/journal.pone.0086011.
22. Zhou, J., Shi, S., Shi, Y., Xie, H., Chen, L., He, Y., et al. (2011). Role of bone marrow-derived progenitor cells in the maintenance and regeneration of dental mesenchymal tissues. J. Cell. Physiol. 226, 2081–2090. doi: 10.1002/jcp.22538.
23. Shi, S., Bartold, P. M., Miura, M., Seo, B. M., Robey, P. G., and Gronthos,S. (2005). The efficacy of mesenchymal stem cells to regenerate and repair dental structures. Orthod. Craniofac. Res. 8, 191–199. doi: 10.1111/j.1601- 6343.2005.00331.x

Global Journal of Medical Research: J
Dentistry & Otolaryngology
Volume 18 Issue 1 Version 1.0 Year 2018
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Amoxicillin-Metronidazole vs Spiramycin-Metronidazole in the Treatment of Odontogenic Circumscribed Cellulitis: Randomized Clinical Trial in Odontostomatology

By Bengondo Messanga Charles, Ntep Ntep David Bienvenue, Bola Siafa Antoine, Nnanga Nga Emmanuel & Onana Jules

Yaounde University

Abstract- *Introduction:* In clinical practice, amoxicillinmetronidazole is widely used in the treatment of odontogenic infections. Therefore, this study was designed to generate data to support its use. This demonstrated the clinical efficacy of the amoxicillin-metronidazole combination compared with the spiramycin-metronidazole combination in subjects with odontogenic circumscribed cellulitis. The clinical trial was supplemented by an evaluation of the compliance and tolerability of the antibiotics under study.

Methodology: This was a randomized, parallel, comparative, double-blind clinical trial. This study evaluated the efficacy, tolerability, and compliance of amoxicillin-metronidazole and spiramycin-metronidazole combinations in adult subjects with odontogenic circumscribed cellulitis.Subjects were reassessed after three, five and seven days. At the end of the treatment, the patients were classified in (clinical success) or "failure".

Keywords: *cellulitis, amoxicillin, spiramycin, metronidazole, per-protocol, intent to treat.*

GJMR-J Classification: *NLMC Code: WU 141.5.O2*

Amoxicillin-Metronidazole vs Spiramycin-Metronidazole in the Treatment of Odontogenic Circumscribed Cellulitis: Randomized Clinical Trial in Odontostomatology

Bengondo Messanga Charles [α], Ntep Ntep David Bienvenue [α], Bola Siafa Antoine [σ], Nnanga Nga Emmanuel [ρ] & Onana Jules [α]

Abstract- Introduction: In clinical practice, amoxicillin-metronidazole is widely used in the treatment of odontogenic infections. Therefore, this study was designed to generate data to support its use. This demonstrated the clinical efficacy of the amoxicillin-metronidazole combination compared with the spiramycin-metronidazole combination in subjects with odontogenic circumscribed cellulitis. The clinical trial was supplemented by an evaluation of the compliance and tolerability of the antibiotics under study.

Methodology: This was a randomized, parallel, comparative, double-blind clinical trial .This study evaluated the efficacy, tolerability, and compliance of amoxicillin-metronidazole and spiramycin -metronidazole combinations in adult subjects with odontogenic circumscribed cellulitis.Subjects were reassessed after three, five and seven days. At the end of the treatment, the patients were classified in (clinical success) or "failure".

Results: The study was conducted on 81 patients in intention-to-treat analysis and 61 patients in per-protocol analysis .In intent to treat; the clinical success of amoxicillin-metronidazole, spiramycin- metronidazole combinations was greater than 90% in the treatment of serous circumscribed cellulitis. Clinical tolerance and compliance were not different from one group to another.

Conclusion: The non-inferiority of amoxicillin-metronidazole combination compared to spiramycin-metronidazole combination was demonstrated in intention-to-treat and per-protocol analysis.

Keywords: cellulitis, amoxicillin, spiramycin, metronidazole, per-protocol, intent to treat.

Résumé- Introduction: En critique clinique (critique clinique), l'association amoxicilline-métronidazole est largement utilisé dans le traitement des infections odontogènes. Par conséquent, cette étude était conçue pour générer des données à l'appui de son utilisation. Il s'agissait de démontrer l'efficacité clinique de l'association amoxicilline-métronidazole par rapport à l'association spiramycine-métronidazole chez les sujets ayant une cellulite circonscrite odontogène. L'essai clinique était complété par une évaluation de l'observance et de la tolérance des antibiotiques à l'étude.

Méthodologie : Il s'agissait d'un essai clinique, randomisée, parallèle, en double insu. Cette étude évaluait l'efficacité, la tolérance et l'observance des associations amoxicilline-métronidazole et spiramycine-métronidazole chez des sujets adultes victimes d'une cellulite circonscrites odontogènes. Les sujets étaient réévalués après trois, cinq et sept jours. A la fin du traitement, les patient's ont été classés en (succès clinique) ou « échec ».

Résultats : L'étude a été menée sur 81 patients en analyse en intention de traiter et 61 patients en analyse per-protocole. En intention de traiter, le succès clinique des associations amoxicilline-métronidazole, spiramycine-métronidazole était supérieure à 90 % dans le traitement des cellulites circonscrites séreuses. La tolérance clinique et l'observance n'étaient pas différentes d'un groupe à un autre.

Conclusion: La non-inferiority de l'association amoxicilline-métronidazole par rapport à l'association spiramycine-métronidazole a été démontrée en analyse en intention de traiter et en per-protocole.

Mots clés: Cellulite, amoxicilline, spiramycine, métronidazole, per-protocole, intention de traiter.

I. Introduction

Among dental emergencies that the odontosto matologist has to face in his daily practice, circumscribed cellulitis of dental origin play an important role because of the pain they cause and especially the speed with which they can appear and develop.[1] It is an infection of the cellular spaces of the face whose origin is a dental, peri-dental organ.[2,3]

Decreasing since the advent of antibiotics,[1] they are still common in developing countries such as Cameroon with a prevalence of 7.4% .[2,4] Cellulitis can be divided into two groups: diffuse cellulitis often serious, sometimes life-threatening and cellulitis circumscribed, less formidable. Their medication management is poorly codified in our context because it is based on the sole bacteriological presumption.[5] The consequence that follows is the advent of bacterial resistance.

Thus, the *French Agency for Sanitary Safety of Health Products* (AFSSAPS) recommends first-line

Author α: Odontostomatology and Maxillofacial Surgery Department of the Yaoundé University Teaching and Hospital Center.
e-mail: ntep.david@yahoo.com
Author σ: Oto-Rhino-Laryngology Department of the Yaoundé University Teaching and Hospital Center.
Author ρ: Department of Galenic Pharmacy and Pharmaceutical Legislation of the University of Yaounde I.

monotherapy and second-line combination antibiotics according to the severity of infection.[6,7] Among other recommended combinations, amoxicillin/metronidazole combination has bacteriological and pharmacokinetic characteristics to consider its use in circumscribed cellulitis of dental origin.[8,9] Also in a precarious economic and social environment, the use of this combination should reduce the cost of taking care of odontogenic cellulitis because it is accessible and inexpensive.

In the current, we tested the hypothesis of the non-inferiority of the amoxicillin / metronidazole combination compared to the spiramycin / metronidazole combination in the treatment of odontogenic circumscribed cellulitis. The objective of this study was therefore to evaluate in a clinical study, the efficacy, safety and compliance of the oral amoxicillin- metronidazole combination and of another reference association, namely the spiramycin / metronidazole combination.

II. Methodology

a) Description of the clinical trial

This was a multicenter, double-blind, randomized, non-inferiority clinical trial in two patient groups. The study was carried out for five months, from January 9, 2017 to May 29, 2017, in Cameroon in odontostomatology departments of: University Teaching and Hospital Center of Yaounde, Central Hospital of Yaounde, Military Hospital of Yaounde and the Jamot Hospital of Yaounde. The study was conducted according to the guidelines on good clinical practices, the Declaration of Helsinki (2008). The risk analysis was carried out as part of the protocol development. The study protocol has been approved by the Ethics Committee of the Faculty of Medicine and Biomedical Sciences (FMSB).The trial included a principal investigator and four secondary investigators from the previously mentioned hospitals.

b) Eligibility criteria

Any patient over the age of 18 who had given informed consent was likely to be included as soon as he had evidence of odontogenic circumscribed cellulitis (pain, swelling) with or without suppuration, trismus, or 'enanthema. The non-inclusion criteria were:
cellulitis fistulized to the skin, diffuse or diffused peri-maxillary cellulitis,

- A severe pathology that may not allow an evaluation of the efficacy and the tolerance of the treatment under study,
- Pregnant or lactating women,
- Patients with contraindications specific to the studied drugs
- Anyone who has received antibiotic therapy in the previous two weeks.
- Patients treated with an anti-inflammatory

c) Assessment of infection / inflammation

Clinical data were collected at baseline, at reassessment visits, and at the end of treatment. They included general (fever, asthenia) and locoregional signs of inflammation and infection: pain, edema, suppuration, trismus, lymphadenopathy, enanthema.

The trismus was quantified according to a scale of gravity comprising 4 classes: absent (mouth opening 3 fingers), medium (2 fingers), large (1 finger crossing), and total (0 finger crossing). The size of the edema was measured using the tape measure method [10]. Three measurements were obtained by five reference points ipsilateral to the lesion: the tragus, the cutaneous pogonion, the external can thus of the eye, the gonion, the labial commissure (figure1).The sum of the three measurements was the average of the edema size for that day.

The pain was graduated by the simple verbal scale. It is an ordinal scale, usually consisting of five ordered categories of verbal descriptors. Each is related to a score from 0 to 4. Absence of pain = 0; Slight pain = 1; Moderate pain = 2; Severe pain = 3; Unsupportable pain = 4.

The presence or absence of an enanthema was also noted.

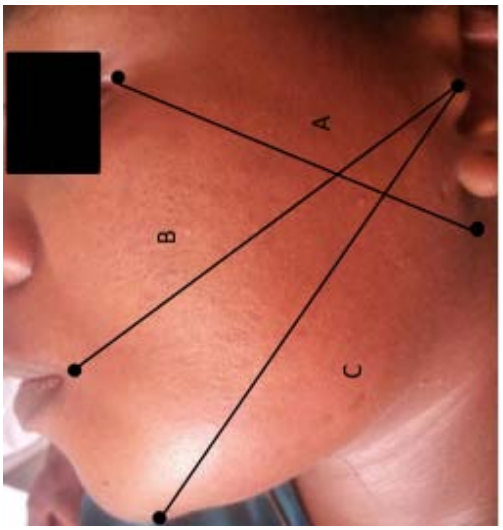


Figure 1: Measurement Method by Tape Measure

A- The distance between the outer can thus and the gonion; B-Tragus and labial commissure; C-Tragus and coetaneous pogo ion.

d) Outcome measures

At the end of the treatment, the patients were classified by the investigator as "cure" (clinical success) or "failure" according to precise rules.

The primary outcome retained was the success rate of treatment. Success was defined by the disappearance of edema and pain after seven days of antibiotic therapy, the absence of suppuration (suppurative cellulitis), trismus, enanthema with respect to inclusion.

The secondary outcomes were on the one hand a reduction of at least 70% of the pain; a reduction of edema; a trismus score decreased by at least two levels; the absence of adverse effects.

e) Sample size

As for an equivalence study, the number of subjects to be included was estimated at 138 evaluable patients per group, based on the following assumptions: 90% expected success rate, 10% equivalence threshold, risk 5% α and 20% risk of β in unilateral formation. This corresponded to a total of 276 patients to include.

f) Randomization and blinding

The patient was taken to the investigator of each center, who was responsible for the random assignment of drugs. The patient should not inquire about the treatment to be taken, nor to do anything to know the same for the secondary investigators. Each patient randomly drew two vials in non-transparent bags. These contained 10 to 12 vials per center. Once the draw was done, the bottle was no longer put in the bag (draw without discount) and the patient was put under the treatment carried by the draw. The prints were made successively by the selected patients until the last bottle. Beforehand, the drugs were removed from their packaging to be inserted in bottles of different colors. Green for amoxicillin or spiramycin and red for metronidaz ole. Each patient included had to be treated with an antibiotic combination for seven days and received:

either the spiramycin / metronidazole combination (3 MIU / 500mg): one tablet, twice a day for 7 days), or the amoxicillin / metronidazole combination (1000mg / 500mg): one amoxicillin tablets, twice daily and one tablet of metronidazole twice daily for7 days). GroupI corresponded to the amoxicillin / metronidazole combination and group II to the spiramycin / metronidazole combination.

Standard local treatment was performed at 72 hours. It consisted in carrying out either an extraction, associated or not with a drainage or a canal treatment, associated or not with a drainage.

Finally, each subject had to undertake to perform another 03 visits planned for the test: day3; day5; day7.These control visits made it possible to judge the disappearance or the preservation of the signs present at the time of inclusion, the presence or absence of signs of drug intolerance and finally the existence or not of a relapse. Tolerance and compliance were assessed at the level of both groups.

g) Statistical tests

The quantitative variables were compared by a Student's test, and the qualitative variables by a Chi^2test. The comparison of the efficacy of the treatments was carried out using a test of equivalence in unilateral formation. The non-inferiority of spiramycin / metronidazole was considered to be demonstrated if the confidence interval was included within [-∞ ; 10%], the equivalence threshold being set at 10%.The analysis was performed using α risk threshold of 5%. The analysis was performed in the treatment intent (ITT) population and the per-protocol population (PP).

III. Results

a) Populations and treatments

We selected 86 patients who were randomized. Five were excluded because they were lost after the inclusion visit. The remaining 81 cases were analyzed for intent to treat (41 in group I and 40 in group II). The per-protocol analysis led us to exclude 20 patients for non-compliance. Thus, the study was conducted on 61 patients (32 in group I and 29 in group II) in per-protocol analysis.

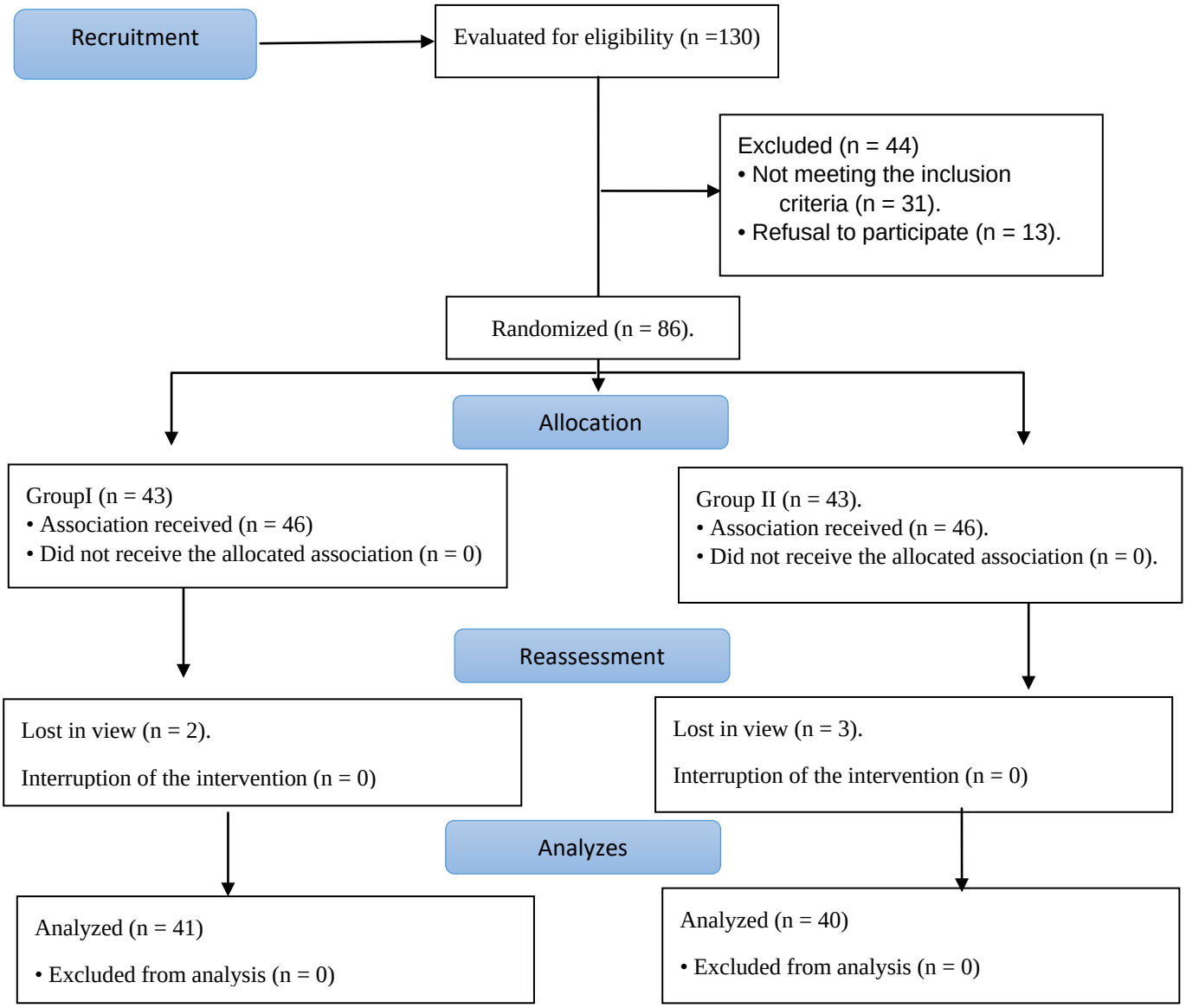


Figure 2: Chronology of the clinical trial

b) Baseline characteristics

The population included 47 men and 37 women with a mean age of 34 ± 14 years and an average weight of 72.2 ± 9.2 kg with no difference between the two groups (ITT). Regarding the signs and symptoms at baseline, no significant differences were noted between the two groups. Pain, enanthema and edema were present in all cases. Suppuration in 41 cases, lymphadenopathy in 64 cases, trismus in 40 cases, most often of mild or significant intensity. The general characteristics are presented in Table I.

Table I: Baseline Characteristics (ITT)

General characteristics	Group I		Group II				p
Mean age +/- SD (years)	34± 15		33 ± 14				0.68
Sex							
Male	25		22				
Female	16		18				0.41
Average weight +/- SD (Kg)	72.7 ± 9,7		71.8 ± 9.9				0.84
Average size +/- SD (cm)	169 ± 9		169 ± 10				0.68
Signs and symptoms	**n**	**%**	**n**	**%**	**n**	**%**	
pain	41	100	40	100	81	100	**0.25**
edema	41	100	40	100	81	100	**0.34**
Trismus							
Absent	20	48.8	17	42.5	37	45.7	
Mild	11	26.8	12	30	23	2.3	
Important	09	22	08	20	17	21	
Total	01	2.4	03	7.5	04	05	
Lymphademopathy	33	80.4	31	77.5	64	79	
Suppuration	23	56	18	45	41	50.6	**0.15**
Enanthema	41	100	40	100	81	100	
Clinical forms							
Cellulitis							
Serous	21		20		41		
suppurative	20		20		40		

ITT: Intent to treat

c) *Primary outcomes*

- *Serous Cellulitis*

The percentage of patients do not show clinical signs from the third visit was comparable in both groups (100% and 95% for group I and II respectively in intent to treat, 100% in the per-protocol for group I and II). Table II illustrates the success rate and failures after taking antibiotics.

Table II: Clinical Success and Failures in the Treatment of Serous Cellulitis (Day 7)

	Group I		Group II		Différence in % Group I/Group II	I.C at 95%	P
ITT	n= 21	%	n =20	%			
Clinical	21	100	19	95	5	[-3.8% ;9.4%]	0,9
successClinical	0		1	5			
failure							
PP	n= 17		n=15				
Clinical success	17	100	15	100	0		
Clinical failure	0		0				

ITT: intent to treat; PP: per-protocol

The difference in treatment between the two groups was 5% in intention of treatment with confidence interval [-3.8%, 9.4%].Table II illustrates clinical success and failure rates after taking antibiotics.

- *Suppurative Cellulitis*

Clinical success from intent-to-treat analysis was 85% in group I and 80% in group II. Table III details the clinical success and failure rates after taking antibiotics.

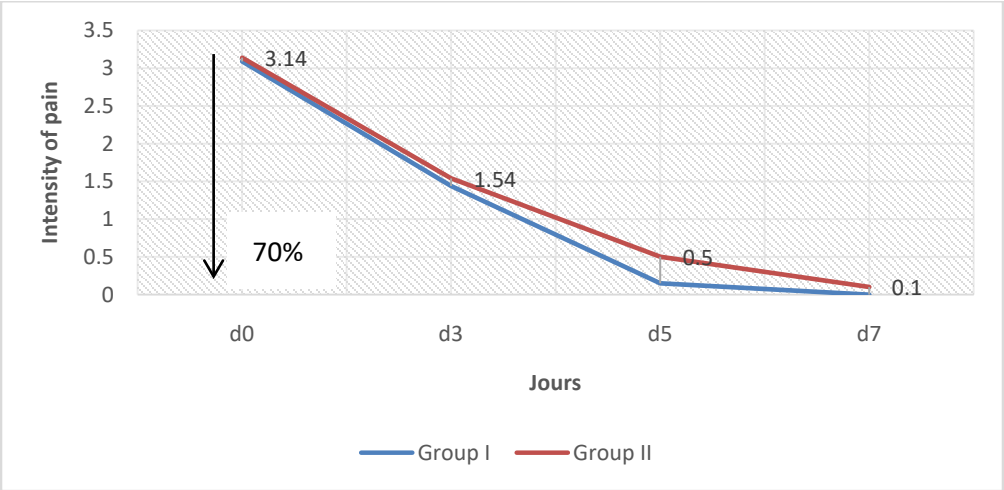
Table III: Success and Failures in the Treatment of Suppurative Cellulitis (Day 7)

	Group I		Groupe II		Différence in % Group I/Group II	I.C at 95%	P
ITT	n= 20	%	n=20	%			
Clinical success	17	85	16	80	5	[-3.2% ;11.7%]	0.6
Clinical failure	3	15	4	20			
PP	n= 15		n=14				
Clinical success	13	86,6	12	85,8	0,8	[-2.7% ;3.16%]	0.1
Clinical failure	2	13,3	2	14,2			

ITT: intent to treat; PP: per-protocol

d) Secondary outcomes

- *Pain:* The average pain was reduced more than 70% from one group to the other inclusion at the end of treatment. This reduction is illustrated in Figure 3 below.



- *Edema:* The mean edema at baseline was 18.5 ± 1.7 cm in group I versus 18.4 ± 1.5 cm in group II (P = 0.66) The average of the edema on the seventh day was 12.9 ± 1 and 12.4 cm ± 3.6 cm from one group to another. P = 0.15
- *Trismus:* On the seventh day trismus three finger was present in 41 patients in group I and 36 patients in group II.

e) Clinical tolerance of antibiotics

A total of 47 side effects were reported, 20 in group I and 27 in group II. The most frequently observed adverse reactions with a frequency≥3% wer e nausea, candidacies, epigastralgia and headache. The incidence of side effects was similar between treatment groups, with the exception of nausea that was reported in 37% of patients in group II.

f) The observance

Treatment compliance was consistent in 32 patients, or 78% of Group I (p= 0.396). Treatment compliance was non-compliant in 30 patients, 73.2% of group II. P = 0.811

IV. Discussion

In order to overcome the subjectivity of the Verbal Rating Scale (VRS), only subjects who showed a 70% decrease in pain were considered in calculating the response to clinical success. The required number of patients was not reached due to a strict methodology, refusal and / or delay of some hospital structures to allow this study and finally the time allowed for it was reduced. The percentage lost to follow-up did not exceed 10%. Proportion beyond which the interpretation of the results becomes prejudicial.

The primary objective was to evaluate the clinical efficacy of two antibiotic treatments of which only one, the spiramycin-metronidazole combination, had been the subject of previous studies already cited in the literature .This led to the choice of a statistical analysis called "non-inferiority", the spiramycin-metronidazole

combination being used as a reference. These antibiotics are the most prescribed by Cameroonian dental doctors.[11]

In serous cellulitis, the clinical success rate was higher than the expected 90% per-protocol and intention-to-treat ratio in both groups. The non-inferiority amoxicillin / metronidazole combination is demonstrated because the difference between the two antibiotics is less than the allowed threshold (10%) and the confidence interval is included in the limits [-∞; 10%]. This result is similar to that of Mello et al who achieved a clinical success rate of 85% for amoxicillin and 89.2% for the spiramycin / metronidazole combination in the treatment of pericoronitis.12 This is explained by the fact that aerobic microbial flora predominates in circumscribed cellulite .5This flora would be highly sensitive to amoxicillin. Amoxicillin is a bactericidal antibiotic whose broad spectrum of activity includes most aerobic and anaerobic bacteria in the oral cavity .[8] However, its important use for years led to the selection of natural resistant or related to the production of beta-lactamases, questioning its use as monotherapy. [13,14] Metronidazole, derivative of 5-nitroimidazole, is a bactericidal agent.15 Its spectrum of activity is carried on most anaerobic strains associated with oral infections, including those found in abscesses of dental origin.16 This activity is particularly useful for producing anaerobic bacteria bêta-lactamase.[13,15-17]

The combination of amoxicillin and metronidazole, because of the complementarily of the spectra of antibacterial activity, also makes it possible to cover most of the strains present in serous cellulites. Additionally, simultaneous administration of both antibiotics can be accompanied by a synergistic effect. In suppurative cellulitis, success rates were lower than expected in both intention-to-treat groups. This result is the consequence of the inclusion of patients with both non-compliant compliance and high failure rate.

In addition, inadequate and inappropriate ant biotherapy significantly modifies the bacteriology of peri-maxillary cellulitis.[18]Although it is a protective factor, inappropriate antibiotic therapy may be a factor in *the* progression of infection because it is administered at sub-therapeutic doses. Inappropriate and abusive antibiotic therapy promotes the proliferation of antibiotic-resistant pathogenic bacteria.[18] Pseudomonas aeruginosa, enterobacteria and Acinetobacter baumannii, often found in odontogenic cellulitis are known for their high resistance to certain antibiotics (spiramycin, metronidazole, amoxicillin, amoxicillin/ clavulanic acid).[13,18-20]

Their resistance may be due to the existence of a selection pressure exerted by the antibiotics. Nevertheless, the confidence interval is included in the bounds [-∞; 10%]. Thus, we can conclude that amoxicillin / metronidazole is non-inferior.

A higher percentage of the pain reduction (95.1%) was achieved in group I compared to group II (84%) after five days of treatment. In a similar study to demonstrate possible differences in the severity of symptoms after using amoxicillin and spiramycin/metronidazole in péricoronarites, pain was considered less acute with amoxicillin.12Thus, these results indicate that the amoxicillin / metronidazole combination administered twice daily for the treatment of circumscribed cellulitis serves as an appropriate treatment option with the potential benefit of an early clinical response.

V. Conclusion

The results of our study confirm the equivalence of efficacy, tolerance and compliance of the amoxicillin/ metronidazole combination compared to the spiramycin/ metronidazole combination. A seven-day treatment with amoxicillin/metronidazole (1000mg / 500mg) with four tablets for amoxicillin and two tablets for metronidazole a day is therefore as effective in the treatment of odontogenic circumscribed cellulitis as the combination spiramycin/metronidazole.

Conflicts of interest: None

References Références Referencias

1. Brunato D. Les cellulites d'origine dentaire: classification, étiologie, bactériologie et traitement. Illustrations cliniques. Thèse de chirurgie dentaire: Université de Nancy I, UFR de chirurgie dentaire ; 2005.
2. Bengondo CH, Bita RC, Avang NTC, Mengong H, Bengono G. Cellulitis and phlegmons of dental origin in the CHU of Yaounde. Odonto-Stomatol Trop Trop Dent J. mars 2006; 29(113):22 6.
3. Benzarti S, Mardassi A, Mhamed R, Hachicha A, Brahem H, Akkari K, et al. Les cellulites cervico-faciales d'origine dentaire: à propos de 150 cas. J Tunis ORL Chir Cervico-Faciale. 2007; 19(1).
4. Djiogue Lonkeng frédérica. Aspects épidémiologiques et thérapeutiques des cellulites périmaxillaires à l'hôpital regional de Bafoussam et à l'hôpital protestant de Mbouo. Thèse de chirurgie dentaire. Bangangté: Université des montagnes; 2016.
5. Laroque G, Dia-tine S, Evrad L, Gentile B, Faty-ndiaye CH, Diallo B, Dieng-sarr F. L'antibiothérapie probabiliste des cellulites périmaxillaires au Sénégal. Médecine Afr Noire. 1993; 40(11).
6. Lesclous P. Prescription des antibiotiques en pratique bucco-dentaire-Recommandations Afssaps 2011. Médecine Buccale Chir Buccale. 2011; 17 (4):334–346.
7. Agence Française de Sécurité Sanitaire des Produits de Santé. RBP/ Prescription des antibiotiques en odontologie ET stomatologie. AFSSAPS. Paris; 2001;

8. Duval J, Soussy CJ. Activité antibactérienne et pharmacocinétique de l'amoxicilline. Comparaison avec l'ampicilline. Médecine Mal Infect. 1973; 3(12):525–531.
9. Moulin M, Coquerel A. Pharmacologie. 2e éd. Paris: Masson; 2002. 845 p.
10. Üstün Y, Erdoğan Ö, Esen E, Karsli ED. Comparison of the effects of 2 doses of methylprednisolone on pain, swelling, and trismus after third molar surgery. Oral Surg Oral Med Oral Pathol Oral Radiol End odontology. 2003; 96(5):535–539.
11. Endale Esungou L. Connaissances, Attitudes et Pratiques des médecins bucco -dentaires vis- à -vis de la prescription d'antibiotiques en odontosto matologie. Thèse de chirurgie dentaire. Cameroun: Université de Yaoundé I; 2016.
12. De Mello G, Sixou J-L, Jeandot J, Duran D, Feki A, Roche Y, et al. Etude comparative de l'association spiramycine-métronidazole et de l'amoxicilline dans le traitement des péricoronarites de l'adulte. Médecine Buccale Chir Buccale. 2003; 9(3): 159–165.
13. Dubreuil L, Neut C. Arguments microbiologiques pour optimiser l'antibiothérapie empirique des cellulites cervico-faciales. Médecine Buccale Chir Buccale. 2005; 11(1):7 15.
14. Malhotra-Kumar S, Van Heirstraeten L, Coenen S et al. La persistance des résistances varie selon l'antibiotique Impact du traitement par amoxicilline sur la flore streptococcique oropharyngée des patients atteints d'infections respiratoires basses communautaires. Revue française de médecine générale. 2012; 23(101):78 9.
15. Löfmark S, Edlund C, Nord CE. Metronidazole is still the drug of choice for treatment of anaerobic infections. Clin Infect Dis. 2010; 50(Supplement 1): S16–S23.
16. Ingham HR, Hood FJC, Bradnum P, Tharagonnet D, Selkon JB. Metronidazole compared with penicillin in the treatment of acute dental infections. Br J Oral Surg. 1977; 14(3):264–269.
17. Dubreuil L, Calvet L, Rocques C, Sednaoui P. Etat de la sensibilité aux antibiotiques des bactéries anaérobies isolées lors d'infections odontogènes. Intérêt de l'association spiramycine-metronidazole. Médecine Buccale Chir Buccale. 2003; 9(3):167 75.
18. Kaboré WA, Konaté A, Bako E, Serge Bagré T, Boisramé S, Chandad F, et al. Détection d'Acinetobacter baumannii, agent pathogène opportuniste et multirésistant dans les infections bucco-dentaires à Ouagadougou, Burkina Faso. Medicine Buccale Chir Buccale. 2016; 22(2):105 12.
19. Nauciel C, Vildé J-L. Bactériologie médicale. 2e den. Paris: Masson; 2005.
20. Fauchère J-L. Bactériologie générale ET médicale. Paris: Ellipses; 2002.

Global Journals Guidelines Handbook 2018

www.GlobalJournals.org

FELLOWS

FELLOW OF ASSOCIATION OF RESEARCH SOCIETY IN MEDICAL (FARSM)

Global Journals Incorporate (USA) is accredited by Open Association of Research Society (OARS), U.S.A and in turn, awards "FARSM" title to individuals.The 'FARSM' title is accorded to a selected professional after the approval of the Editor-in-Chief/Editorial Board Members/Dean.

- The "FARSM" is a dignified title which is accorded to a person's name viz. Dr. John E. Hall,Ph.D., FARSS or William Walldroff, M.S., FARSM.

FARSM accrediting is an honor. It authenticates your research activities. After recognition as FARSM, you can add 'FARSM' title with your name as you use this recognition as additional suffix to your status. This will definitely enhance and add more value and repute to your name. You may use it on your professional Counseling Materials such as CV, Resume, and Visiting Card etc.

The following benefits can be availed by you only for next three years from the date of certification:

FARSM designated members are entitled to avail a 40% discount while publishing their research papers (of a single author) with Global Journals Incorporation (USA), if the same is accepted by Editorial Board/Peer Reviewers. If you are a main author or co-author in case of multiple authors, you will be entitled to avail discount of 10%.

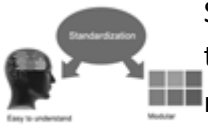
Once FARSM title is accorded, the Fellow is authorized to organize a symposium/seminar/conference on behalf of Global Journal Incorporation (USA). The Fellow can also participate in conference/seminar/symposium organized by another institution as representative of Global Journal. In both the cases, it is mandatory for him to discuss with us and obtain our consent.

You may join as member of the Editorial Board of Global Journals Incorporation (USA) after successful completion of three years as Fellow and as Peer Reviewer. In addition, it is also desirable that you should organize seminar/symposium/conference at least once.

We shall provide you intimation regarding launching of e-version of journal of your stream time to time.This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.

The FARSM can go through standards of OARS. You can also play vital role if you have any suggestions so that proper amendment can take place to improve the same for the benefit of entire research community.

As FARSM, you will be given a renowned, secure and free professional email addres with 100 GB of space e.g. johnhall@globaljournals.org. This will include Webmail, Spam Assassin, Email Forwarders,Auto-Responders, Email Delivery Route tracing, etc.



The FARSM will be eligible for a free application of standardization of their researches. Standardization of research will be subject to acceptability within stipulated norms as the next step after publishing in a journal. We shall depute a team of specialized research professionals who will render their services for elevating your researches to next higher level, which is worldwide open standardization.

The FARSM member can apply for grading and certification of standards of their educational and Institutional Degrees to Open Association of Research, Society U.S.A. Once you are designated as FARSM, you may send us a scanned copy of all of you credentials. OARS will verify, grade and certify them. This will be based on your academic records, quality of research papers published by you, and some more criteria. After certification of all your credentials by OARS, they will be published on your Fellow Profile link on website https://associationofresearch.org which will be helpful to upgrade the dignity.

The FARSM members can avail the benefits of free research podcasting in Global Research Radio with their research documents. After publishing the work, (including published elsewhere worldwide with proper authorization) you can upload your research paper with your recorded voice or you can utilize chargeable services of our professional RJs to record your paper in their voice on request.

The FARSM member also entitled to get the benefits of free research podcasting of their research documents through video clips. We can also streamline your conference videos and display your slides/ online slides and online research video clips at reasonable charges, on request.

The FARSM is eligible to earn from sales proceeds of his/her researches/reference/review Books or literature, while publishing with Global Journals. The FARSS can decide whether he/she would like to publish his/her research in a closed manner. In this case, whenever readers purchase that individual research paper for reading, maximum 60% of its profit earned as royalty by Global Journals, will be credited to his/her bank account. The entire entitled amount will be credited to his/her bank account exceeding limit of minimum fixed balance. There is no minimum time limit for collection. The FARSM member can decide its price and we can help in making the right decision.

The FARSM member is eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get remuneration of 15% of author fees, taken from the author of a respective paper. After reviewing 5 or more papers you can request to transfer the amount to your bank account.

MEMBER OF ASSOCIATION OF RESEARCH SOCIETY IN MEDICAL (MARSM)

The ' MARSM ' title is accorded to a selected professional after the approval of the Editor-in-Chief / Editorial Board Members/Dean.

The "MARSM" is a dignified ornament which is accorded to a person's name viz. Dr. John E. Hall, Ph.D., MARSM or William Walldroff, M.S., MARSM.

MARSM accrediting is an honor. It authenticates your research activities. Afterbecoming MARSM,you can add 'MARSM' title with your name as you use this recognition as additional suffix to your status. This will definitely enhance and add more value and repute to your name. You may use it on your professional Counseling Materials such as CV, Resume, Visiting Card and Name Plate etc.

The following benefitscan be availed by you only for next three years from the date of certification.

MARSM designated members are entitled to avail a 25% discount while publishing their research papers (of a single author) in Global Journals Inc., if the same is accepted by our Editorial Board and Peer Reviewers. If you are a main author or co-author of a group of authors, you will get discount of 10%.

As MARSM, you willbe given a renowned, secure and free professional email address with 30 GB of space e.g. johnhall@globaljournals.org. This will include Webmail, Spam Assassin, Email Forwarders,Auto-Responders, Email Delivery Route tracing, etc.

We shall provide you intimation regarding launching of e-version of journal of your stream time to time.This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.

The MARSM member can apply for approval, grading and certification of standards of their educational and Institutional Degrees to Open Association of Research, Society U.S.A.

Once you are designated as MARSM, you may send us a scanned copy of all of your credentials. OARS will verify, grade and certify them. This will be based on your academic records, quality of research papers published by you, and some more criteria.

It is mandatory to read all terms and conditions carefully.

AUXILIARY MEMBERSHIPS

Institutional Fellow of Open Association of Research Society (USA) - OARS (USA)

Global Journals Incorporation (USA) is accredited by Open Association of Research Society, U.S.A (OARS) and in turn, affiliates research institutions as "Institutional Fellow of Open Association of Research Society" (IFOARS).

The "FARSC" is a dignified title which is accorded to a person's name viz. Dr. John E. Hall, Ph.D., FARSC or William Walldroff, M.S., FARSC.

The IFOARS institution is entitled to form a Board comprised of one Chairperson and three to five board members preferably from different streams. The Board will be recognized as "Institutional Board of Open Association of Research Society"-(IBOARS).

The Institute will be entitled to following benefits:

The IBOARS can initially review research papers of their institute and recommend them to publish with respective journal of Global Journals. It can also review the papers of other institutions after obtaining our consent. The second review will be done by peer reviewer of Global Journals Incorporation (USA) The Board is at liberty to appoint a peer reviewer with the approval of chairperson after consulting us.

The author fees of such paper may be waived off up to 40%.

The Global Journals Incorporation (USA) at its discretion can also refer double blind peer reviewed paper at their end to the board for the verification and to get recommendation for final stage of acceptance of publication.

The IBOARS can organize symposium/seminar/conference in their country on behalf of Global Journals Incorporation (USA)-OARS (USA). The terms and conditions can be discussed separately.

The Board can also play vital role by exploring and giving valuable suggestions regarding the Standards of "Open Association of Research Society, U.S.A (OARS)" so that proper amendment can take place for the benefit of entire research community. We shall provide details of particular standard only on receipt of request from the Board.

The board members can also join us as Individual Fellow with 40% discount on total fees applicable to Individual Fellow. They will be entitled to avail all the benefits as declared. Please visit Individual Fellow-sub menu of GlobalJournals.org to have more relevant details.

We shall provide you intimation regarding launching of e-version of journal of your stream time to time. This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.

After nomination of your institution as "Institutional Fellow" and constantly functioning successfully for one year, we can consider giving recognition to your institute to function as Regional/Zonal office on our behalf.
The board can also take up the additional allied activities for betterment after our consultation.

The following entitlements are applicable to individual Fellows:

Open Association of Research Society, U.S.A (OARS) By-laws states that an individual Fellow may use the designations as applicable, or the corresponding initials. The Credentials of individual Fellow and Associate designations signify that the individual has gained knowledge of the fundamental concepts. One is magnanimous and proficient in an expertise course covering the professional code of conduct, and follows recognized standards of practice.

Open Association of Research Society (US)/ Global Journals Incorporation (USA), as described in Corporate Statements, are educational, research publishing and professional membership organizations. Achieving our individual Fellow or Associate status is based mainly on meeting stated educational research requirements.

Disbursement of 40% Royalty earned through Global Journals : Researcher = 50%, Peer Reviewer = 37.50%, Institution = 12.50% E.g. Out of 40%, the 20% benefit should be passed on to researcher, 15 % benefit towards remuneration should be given to a reviewer and remaining 5% is to be retained by the institution.

We shall provide print version of 12 issues of any three journals [as per your requirement] out of our 38 journals worth $ 2376 USD.

Other:

The individual Fellow and Associate designations accredited by Open Association of Research Society (US) credentials signify guarantees following achievements:

- The professional accredited with Fellow honor, is entitled to various benefits viz. name, fame, honor, regular flow of income, secured bright future, social status etc.

- In addition to above, if one is single author, then entitled to 40% discount on publishing research paper and can get 10%discount if one is co-author or main author among group of authors.
- The Fellow can organize symposium/seminar/conference on behalf of Global Journals Incorporation (USA) and he/she can also attend the same organized by other institutes on behalf of Global Journals.
- The Fellow can become member of Editorial Board Member after completing 3yrs.
- The Fellow can earn 60% of sales proceeds from the sale of reference/review books/literature/publishing of research paper.
- Fellow can also join as paid peer reviewer and earn 15% remuneration of author charges and can also get an opportunity to join as member of the Editorial Board of Global Journals Incorporation (USA)
- • This individual has learned the basic methods of applying those concepts and techniques to common challenging situations. This individual has further demonstrated an in–depth understanding of the application of suitable techniques to a particular area of research practice.

Note :

"

- In future, if the board feels the necessity to change any board member, the same can be done with the consent of the chairperson along with anyone board member without our approval.
- In case, the chairperson needs to be replaced then consent of 2/3rd board members are required and they are also required to jointly pass the resolution copy of which should be sent to us. In such case, it will be compulsory to obtain our approval before replacement.
- In case of "Difference of Opinion [if any]" among the Board members, our decision will be final and binding to everyone.

"

Preferred Author Guidelines

We accept the manuscript submissions in any standard (generic) format.

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template

Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at submit@globaljournals.org or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

Before and during Submission

Authors must ensure the information provided during the submission of a paper is authentic. Please go through the following checklist before submitting:

1. Authors must go through the complete author guideline and understand and *agree to Global Journals' ethics and code of conduct,* along with author responsibilities.
2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
6. Proper permissions must be acquired for the use of any copyrighted material.
7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

Declaration of Conflicts of Interest

It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

Policy on Plagiarism

Plagiarism is not acceptable in Global Journals submissions at all.

Plagiarized content will not be considered for publication. We reserve the right to inform authors' institutions about plagiarism detected either before or after publication. If plagiarism is identified, we will follow COPE guidelines:

Authors are solely responsible for all the plagiarism that is found. The author must not fabricate, falsify or plagiarize existing research data. The following, if copied, will be considered plagiarism:

- Words (language)
- Ideas
- Findings
- Writings
- Diagrams
- Graphs
- Illustrations
- Lectures

- Printed material
- Graphic representations
- Computer programs
- Electronic material
- Any other original work

Authorship Policies

Global Journals follows the definition of authorship set up by the Open Association of Research Society, USA. According to its guidelines, authorship criteria must be based on:

1. Substantial contributions to the conception and acquisition of data, analysis, and interpretation of findings.
2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

Changes in Authorship

The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

Copyright

During submission of the manuscript, the author is confirming an exclusive license agreement with Global Journals which gives Global Journals the authority to reproduce, reuse, and republish authors' research. We also believe in flexible copyright terms where copyright may remain with authors/employers/institutions as well. Contact your editor after acceptance to choose your copyright policy. You may follow this form for copyright transfers.

Appealing Decisions

Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

Declaration of funding sources

Global Journals is in partnership with various universities, laboratories, and other institutions worldwide in the research domain. Authors are requested to disclose their source of funding during every stage of their research, such as making analysis, performing laboratory operations, computing data, and using institutional resources, from writing an article to its submission. This will also help authors to get reimbursements by requesting an open access publication letter from Global Journals and submitting to the respective funding source.

Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

Tips for writing a good quality Medical Research Paper

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of medical research then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

Written material: You may discuss this with your guides and key sources. Do not copy anyone else's paper, even if this is only imitation, otherwise it will be rejected on the grounds of plagiarism, which is illegal. Various methods to avoid plagiarism are strictly applied by us to every paper, and, if found guilty, you may be blacklisted, which could affect your career adversely. To guard yourself and others from possible illegal use, please do not permit anyone to use or even read your paper and file.

Criterion for Grading a Research Paper (Compilation) by Global Journals

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals.

Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

INDEX

save our planet

Global Journal of Medical Research

Visit us on the Web at www.GlobalJournals.org | www.MedicalResearchJournal.org
or email us at helpdesk@globaljournals.org

ISSN 9755896