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Thiopropanol Induced Changes in Glycogen Breakdown in Alloxan Diabetic Liver

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Abstracts - Liver glycogen content and liver glycogen synthesis are lowered in diabetes mellitus due to lack of functioning insulin. Many enzymes of glycogen metabolism as well as glucose metabolism are sulfhydryl in nature and are affected by changes in cellular thiol-disulfide ratio. Certain low molecular weight thiols can influence glucose uptake and utilization in fat cells and in muscle cells. A study was undertaken to establish the effect of thiopropanol (3-mercapto 1 propanol) on glycogen breakdown in isolated alloxan diabetic liver. The results indicate that thiopropanol influences glycogen breakdown, lactic acid production in alloxan diabetic liver which may be attributed to increased activity of hexokinase in thiopropanol-exposed-alloxan diabetic liver

Keywords: *Low molecular weight thiols, 3-mercapto 1-propanol, glycogenbreakdown, diabetes mellitus.*

GJMR-B Classification (NLMC): *WK 818-819*

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Thiopropanol Induced Changes in Glycogen Breakdown in Alloxan Diabetic Liver

Vickram [α], Divya D [Ω], Vijay V [β], Kashinath.R.T [Ψ]

Abstract: Liver glycogen content and liver glycogen synthesis are lowered in diabetes mellitus due to lack of functioning insulin. Many enzymes of glycogen metabolism as well as glucose metabolism are sulfhydryl in nature and are affected by changes in cellular thiol-disulfide ratio. Certain low molecular weight thiols can influence glucose uptake and utilization in fat cells and in muscle cells. A study was undertaken to establish the effect of thiopropanol(3-mercapto 1-propanol) on glycogen breakdown in isolated alloxan diabetic liver. The results indicate that thiopropanol influences glycogen breakdown, lactic acid production in alloxan diabetic liver which may be attributed to increased activity of hexokinase in thiopropanol-exposed-alloxan diabetic liver.

Keywords: Low molecular weight thiols, 3-mercapto 1-propanol, glycogen breakdown, diabetes mellitus.

I. Introduction

Glycogen, a stored polysaccharide of liver, is the principal available source of glucose for hepatic as well as other cells in mammalian systems including human beings. It is observed that glycogen synthesis is lowered in liver in diabetes mellitus which may be probably due to lack of insulin as insulin is known to favour liver glycogenesis [1,4,19,21]. This lowered liver glycogenesis in part may also due to decreased cellular thiol concentration which is reciprocal to an elevated reactive oxygen species (ROS), a common phenomenon observed in diabetes mellitus [13,15]. It has been recognized that the stimulatory action of insulin on glucose transport in muscle[5,6] and fat cells[7,12,14] is sensitive to perturbation of cellular sulfhydrly groups. Some earlier workers [23] have shown that certain low molecular weight thiols may mimic some of the actions of the insulin in fat cells. In order to establish the possibility of similar effects of thiols in liver, a study was undertaken to assess the effect of thiopropanol (3-mercapto 1-propanol) on glycogen breakdown in isolated alloxan diabetic liver slices.

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II. Materials and Methods

a) Chemicals:

All the chemicals employed were of analar grade (AR). Alloxan was obtained from Loba chemicals. Thiopropanol was procured from Sigma-Aldrich chemicals Pvt. Ltd. USA.

b) Experimental Animals:

Male albino rats (*Rattus norvegicus*) in the weight range 150-250 g were selected randomly from the stock colony of animal house of Basaveshwara Medical College & Hospital, Chitradurga were employed in the present study. The chosen animals were housed in plastic well aerated cages at normal atmospheric temperature (25 ± 5 °C) and normal 12- hour light/dark cycle. The rats were maintained on standard stock diet (Amruth Rat Feed, manufactured and supplied by Pranav Agro Industries, Pune, India). The feed and the tap water were given *ad libitum*.

c) Induction of Diabetes:

Diabetes was induced into the 12 hours fasted rats with a single intraperitoneal injection of freshly prepared aqueous Alloxan monohydrate (150 mg per kg body weight) [2, 22]. The onset of diabetes was monitored 48 hours after alloxan treatment by using standard Urine Glucose Strips(from Qualigens).The rats, whose urine showing positive for glucose for 3 consecutive days were labeled diabetic and were used in the present work.

d) Experimental Design:

The rats were divided into two groups.

i. Normal group– consisting of 6 male albino rats maintained on stock lab diet and tap water *ad libitum.*

ii. Diabetic group – consisting of 6 male albino alloxan diabetic rats maintained on stock lab diet and tap water *ad libitum.*

The rats of both the groups were anesthetized and sacrificed after 30 days. They were immediately dissected, the liver tissue was procured, washed and refrigerated with PBS (phosphate buffered saline) pH 7.4 has to be added before at 0-2^{0}C till further use. The liver

0.5g each and these slices were employed in the present work. Glycogen levels [9] , Lactic acid levels [3] and hexokinase activity[18] were estimated both at zero minute as well as at 60 minutes interval in normal rat liver slices(0.5g), in alloxan diabetic liver slices, as well as in alloxan liver slices exposed to thiopropanol (5mg thiopropanol / 0.5 g)

The glycogen breakdown/depletion per hour was estimated by incubating a known weight (0.5 g) of normal / alloxan liver tissue in isotonic phosphate buffer, pH 7.4, for 1 hour at 37 ^{0}C in a thermostatic water bath. The glycogen content was estimated both at 0 minute and at 60 minutes to know the per hour glycogen breakdown/depletion. The experiments were repeated with thiopropanol- exposed - alloxan diabetic liver tissue to know its effect on glycogen breakdown. Lactate production per hour was also estimated in the same way as explained above.

e) Ethical Considerations:

The animal experiments were conducted as per the norms of CPCSEA (Committee for the Purpose of Control and Supervision of Experiments on Animals), New Delhi and ethical clearance was obtained from IAEC (Institutional Animal Ethical Committee) of Basaveshwara Medical College.

f) Data management and statistical analysis:

The data entry was carried out using Microsoft Office Excel worksheet and statistically analyzed. The P value was calculated by student't' test.

III. Results

The results of the present study are given in table-1. It is evident from the table that the glycogen breakdown, lactate production are significantly lowered ($p<0.001$) in diabetic liver tissue(group-2) as compared to normal liver tissue(group-1), where as these parameters are significantly elevated ($p<0.001$) in thiopropanol -exposed –alloxan diabetic liver tissue(group-3) as compared to control diabetic liver tissue(group-2) showing there is a stimulation of glycogen breakdown in alloxan diabetic liver in presence of thiopropanol. It is also evident from the table that liver tissue hexokinase activity is significantly lowered ($p<0.001$) in group-2 as compared to group-1 but the hexokinase activity is significantly raised ($p<0.001$) in group-3 as compared to group-2 showing that thiopropanol might have favored liver tissue hexokinase activity.

IV. Discussion

The glycogen stored in liver, in fed state, approximately amounts to 5% of the wet weight of liver tissue. Insulin favors glycogen synthesis in liver by keeping the glycogen synthase, the key enzyme of glycogenesis, in the active state [1,19]. Glycogenolysis usually occurs to provide glucose when there is a decrease in the available glucose, which promptly mediated by active glycogen phosphorylase. Many enzymes of glycogen breakdown and of glucose catabolism are thiol enzymes and are affected by tissue redox systems as well as by the available free thiols in the tissue [24]. As seen in the table the glycogen content of liver as well as glycogen breakdown after an hour of incubation at 37 ^{0}C is significantly decreased in group-2 probably due to lack of insulin as alloxan effectively damages the beta cells of Islets of Langerhans of pancreas [22], hence there is no available insulin thus glycogenesis is lowered and glycogen content is low in alloxan diabetic liver.

Glycogen is broken down to glucose-1-phosphate by glycogen phosphorylase, further converted to lactate via glycolytic pathway. It is evident from the table that lactate produced in group-2 is significantly low ($p<0.001$) compared to group-1, indicating that in alloxan diabetic rat liver not only the percentage of glycogen breakdown per hour but also the rate of glycolysis is significantly lowered in diabetic liver as compared to normal liver slices, which may be attributed to the lack of insulin as insulin activates the enzymes of glycolytic pathway [20]. The addition of 5 mg thiopropanol/0.5g liver tissue slice significantly increases the glycogen breakdown($p<0.001$), lactate production ($p<0.001$), as well as hexokinase activity($p<0.001$) in group-3 as compared to group-2. The key enzymes of glycolytic pathway namely hexokinase, phosphofructokinase and pyruvate kinase are known to be inhibited by smaller disulfides and are reactivated by glutathione and other thiols [10,11,16,17,24] indicating that these enzymes are sulphydryl in nature. The results obtained in the present study (ref. table-1) indicate that the liver hexokinase activity in group-3 is significantly higher as compared to liver hexokinase activity in group-2. This clearly indicates that thiopropanol, probably similar to GSH (reduced glutathione) might have favored the activity of hexokinase thus promoting the glucose utilization through glycolytic pathway.

A similar favorable action of thiopropanol with respect to glycogen phosphorylase kinase enzyme might have increased the activity of phosphorylase kinase and hence the activity of glycogen phosphorylase thus favoring the glycogen utilization in group-3 (ref. table-1).

In conclusion it can be stated that thiopropanol(3-mercapto1-propanol) at the concentration employed in the present study may influence glycogen breakdown and lactic acid formation in isolated diabetic liver slices probably favoring glycolytic key enzymes- hexokinase, phosphofructokinase and pyruvate kinase.

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Table -1

Table showing glycogen content, glycogen utilized per hour, percentage glycogen utilized per hour, lactate production per hour and hexokinase activity in normal rat liver slices(Group-1) , alloxan diabetic rat liver Slices(Group-2) as well as in thiopropanol- exposed – alloxan diabetic rat liver slices(Group-3)

GROUP	Glycogen Content[5] mg/g	Glycogen Utilized mg/g/hr	%age glycogen utilized/hr	Lactate Produced µg/g/hr	Hexokinase Activity[4] units
Group-1 Normal Liver(6)	38.25 ± 3.02	20.07 ± 1.71	51.64 ± 3.72	684.03 ± 23.40	166.67 ± 2.78
Group-2 Alloxan-Diabetic liver(6)	29.50*** ± 3.22	10.50*** ± 1.27	35.56 *** ± 1.35	341.70 *** ± 12.91	83.43 *** ± 1.43
Group-3 Thiopropanol exposed-alloxan diabetic liver (6)	29.50 ± 3.22	13.80** ± 2.15	46.65*** ± 2.376	552.96 *** ± 7.07	123.80 *** ± 1.42

Note: 1. Number in parenthesis indicate the number of liver specimen
2. The values are expressed as their mean ± SD
3. Statistical evaluation- probability level * $p<0.05$, ** $p< 0.01$, *** $p< 0.001$
4. Hexokinase: 1 unit = 1mμMol phosphate transferred /hr/mg liver tissue
5. Glycogen content of group-2 and group-3 is same as the same diabetic liver is employed for these experiments

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Incidence of Physiological Pineal Gland and Choroid Plexus Calcifications in Cranio-Cerebral Computed Tomograms in Douala, Cameroon

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Abstracts - Background - Intracranial calcifications are veritable radiological pointer to pathologies. Therefore there is need to differentiate physiological and pathological calcifications. Objective - Todetemine the incidence of physiological intracranial calcifications and relationship to age and sex. Materials And Methods - A cross sectional descriptive study of the computed tomograms (CT) of the brain was done from 8/4/09 to 18/10/2009 using a Schumadzu CT scan machine with continuous rotationalsystem. Data was analysed using SSPS3. Results - 132 patients were studied with 75 males and 57 females. Age range is 0-89. The highest studied population is in the 40-49 years with 38(28.78%) patients These 116 had a total of 136 seperate calcifications due to co-existent calcifications. No calcifications wasseen in patients less than 9years of age. The number of patients with choroid plexus calcifications (75) exceeds the number of patients with pineal gland calcifications (61). This corresponds to incidence of 56.8% for choroid plexus calcifications and 46.2% for pineal gland calcifications. In terms of total numberof calcifications, it is shared into 55.15% for choroid and 44.85% for pineal calcifications. the incidence of pineal gland calcification is 46.21% while choroid plexus calcification is 56.82%. Both calcifications aremore common in males than females. In choroid plexus calcifications, the incidence of calcifications in males is greater than females by 14.67% whereas in pineal gland calcifications, male incidence is greaterthan female incidence by 18.04%. Conclusion - Choroid plexus calcification is more than pineal gland calcifications and no calcification was seen before 9 years.

Keywords: *Intracranial calcification, Computed tomography, Pineal, Choroid.*

GJMR-A Classification: *WK 350*

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Incidence of Physiological Pineal Gland and Choroid Plexus Calcifications in Cranio-Cerebral Computed Tomograms in Douala, Cameroon

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Abstract: Background - Intracranial calcifications are veritable radiological pointer to pathologies. Therefore there is need to differentiate physiological and pathological calcifications. *Objective* – To detemine the incidence of physiological intracranial calcifications and relationship to age and sex. *Materials And Methods* - A cross sectional descriptive study of the computed tomograms (CT) of the brain was done from 8/4/09 to 18/10/2009 using a Schumadzu CT scan machine with continuous rotational system. .Data was analysed using SSPS3. *Results* - 132 patients were studied with 75 males and 57 females. Age range is 0-89. The highest studied population is in the 40-49 years with 38(28.78%) patients These 116 had a total of 136 seperate calcifications due to co-existent calcifications. No calcifications was seen in patients less than 9years of age. The number of patients with choroid plexus calcifications (75) exceeds the number of patients with pineal gland calcifications (61). This corresponds to incidence of 56.8% for choroid plexus calcifications and 46.2% for pineal gland calcifications. In terms of total number of calcifications, it is shared into 55.15% for choroid and 44.85% for pineal calcifications. the incidence of pineal gland calcification is 46.21% while choroid plexus calcification is 56.82%. Both calcifications are more common in males than females. In choroid plexus calcifications, the incidence of calcifications in males is greater than females by 14.67% whereas in pineal gland calcifications, male incidence is greater than female incidence by 18.04%. *Conclusion* - Choroid plexus calcification is more than pineal gland calcifications and no calcification was seen before 9 years.

Keywords: Intracranial calcification, Computed tomography, Pineal, Choroid.

I. Introduction

Pineal gland is a neuronal structure that lies within the CSF of quadrgeminal cistern but posterior to the cistern of velum interpositum[1]. It is attached to the upper aspect of posterior border of 3rd ventricle [1]. Embryologically, it is a pine-cone shaped ependymal evagination from the roof of caudal portion of the 3rd ventricle at 7th week intrauterine life [1]. Radiographically, C-shaped habenular calcification is 4-6mm anterior to pineal gland [1,2].This is seen in 15% of adult population[2]. 95% of pineal gland is made up of pinealocytes with dendritic processes while neuroglial supporting cells make up the rest of 5% [1].

Choroid plexus of lateral ventricle on the other hand, is an intra-ventricular vascular structure involved in the production of cerebrospinal fluid (CSF). It extends from the inferior horn of lateral ventricle through the body to the interventricular foramen where it communicates with that of 3rd ventricle. Radiogrphically,it is 20-30mm behind and slightly below pineal on lateral projection and symmetrical on AP projection [1]

Intracranial calcifications are often an accidental findings on conventional radiographs or computed tomography (CT) scans [3]. Such calcifications can be physiologic or pathologic, the latter is accompanied by various diseases of the central nervous system.[3]. Intracranial physiological calcifications are unaccompanied by any evidence of disease and have no demonstrable pathological cause. Also,they are almost never clinically significant and often do not lead to any clinical concern[4,5,6]. The physiologic calcifications are very common and have been well-described in the past decades [7]. They are associated with aging and are common in certain locations like basal ganglia, pineal gland, falx, tentorium, arachnoid granulations, choroid plexus, cerebellum, distal ICA especially in the cavernous sinus, intradural vertebral arteries, and basilar artery [2,3,4,8,9,10]

Physiological intracranial calcification is asymptomatic and is detected incidentally by neuroimaging [11, 12]. CT is superior to MR imaging in the detection of calcification.[13] Computed tomography (CT) is the modality of choice with high sensitivity for detection and localization of intracranial calcifications[3,6,14]. .Intracranial calcification is visualized 9 to 15 times more frequently with computed tomography (CT) than with plain skull radiography [15]. A number of factors including slice thickness, window width and level may affect the detectability of calcification on CT [13].

The intracranial calcifications may have no clinical importance but they may be critical findings in diagnosing underlying pathology.[4,8]. Moreover, these statistics may be of interest from the clinical perspective

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and potential clinical use [6]. Also, these statistics can be used for comparing physiological and pathological intracranial calcifications. It is noteworthy that several pathologic conditions involving the brain are associated with calcifications and the recognition of their appearance and distribution helps narrow the differential diagnosis [4]. Knowledge of physiologic calcifications in the brain parenchyma is essential to avoid misinterpretations [6].

AIM

OBJECTIVE: To determine the incidence of normal calcification of pineal gland and choroids plexus on Brain CT (computed Tomography) with correlation to age and sex.

II. Materials and Methods

A cross-sectional descriptive study was conducted at Radiology Department of Polyclinic, Bonanjo, Douala, Cameroon, a tertiary hospital. This was based on cranio-cerebral CT done from 8/4/09 to 18/10/2009. Schumadzu CT scan machine with continuous rotational system was employed. Axial sections of 2mm and 5mm slice tissue thicknesses were used from the base of the skull to the sella turcica, thence to the vertex respectively. IV Iopamidol at 1ml/kg was given when indicated. Images were reconstructed to achieve sagital and coronal images. Hounsfield unit and bone window were employed in some cases of doubt so as to differentiate calcifications from acute haemorrhage. The pineal gland and choroid plexus were evaluated for calcifications. A pair of choroid plexus calcifications in the atria of lateral ventricle was regarded as a single calcifications and calcifications in the 3rd ventricle, 4th ventricle and body of lateral ventricles were considered separately. Patients' consents and ethical committee's approval were obtained. All patients with any pathology linked or associated with pineal gland or choroid plexus and those with improper data documentation were excluded. Results were analysed using SSPS 3.0.

III. Results

132 patients were studied with 75 males and 57 females. Age range is 0-89 with mean age of 44.5. The highest studied population is in the 40-49 years with 38(28.78%) patients. This is followed by 22 (16.66%) patients in the 50-59 age range. 116(87.88%) out of 132 patients studied had either pineal gland and/or choroid plexus calcifications. These 116 had a total of 136 seperate calcifications with 55.15% of choroid plexus calcifications and 44.85% of pineal gland calcifications. No calcifications was seen in patients less than 9years of age. The number of patients with choroid plexus calcifications (75) exceeds the number of patients with pineal gland calcifications (61). This corresponds to incidence of 56.8% for choroid plexus calcifications and 46.2% for pineal gland calcifications in terms of total studied population. This also correspond to choroid plexus calcification to pineal gland calcifications ratio of 1.23:1. 61 (46.21%of total studied population and 52.59% of patients with calcifications) patients had co-existent choroid plexus and pineal gland calcifications with 36(59.02%) males and 25(40.98%) females. 100% of choroid plexus calcifications were bilateral and symmetrical. 100% of choroid plexus calcifications were seen in the atria. 100% of all pineal gland calcifications were well defined. 15.79% of studied population less than 20years had physiological pineal gland calcifications.

In males, choroid calcifications were 43 (57.33%) patients and in females 32 (42.66%) patients. In pineal gland calcifications, males were 36 (59.02%) and females were 25 (40.98%).Both calcifications are more common in males than females. In choroid plexus calcifications, the incidence of calcifications in males is greater than females by 14.67% whereas in pineal gland calcifications, male incidence is greater than female incidence by 18.04%. Females less than 50years have lesser degree of choroid plexus calcifications than those greater than 50years. Where as male less than 50 years have greater degree of choroid plexus calcifications than those greater than 50years. Choroid plexus calcification increase with age in females but variable with age in males. Pineal gland calcifications is variable but seems to be more in those less than 50 years in males. Pineal gland calcification appears more common at a younger age in males but 50% of all males older than 60years have pineal gland calcifications. But females have greater incidence of pineal gland calcifications after 60years. In females, despite small variations, pineal calcifications increases with age. 47 patients of studied population are less than 40years. 34.04% of this 47 patients had pineal calcifications, constituting 12.12% of total studied population. 40.43% of this 47 had choroid plexus calcifications, constituting 14.39% of total population.

IV. Discussion

Before the advent of sectioning imaging, conventional radiography has been used to study intracranial calcifications. This led to the utility of pineal gland calcification as an insight into intracranial pathology. Pineal gland calcification greater than 3mm from mid-line in skull radiographs is used as a sign of intracranial mass or raised intracranial pressure[1]. But calcifications are only visualised on plain radiographs if the CT attenuation values are more than 200 Hounsfield units[16] In this modern age, imaging is gaining priority over clinical examination and neuroimaging has help clinician in narrowing down diagnosis.[6,17]. One important neuro-imaging tool with added advantage of calcification and ossification detection is computed

tomography (CT). The identification of Intracranial calcifications on CT are the most common finding in daily neuro-radioloical practice since non-contrast-enhanced CT of the head is the preferred imaging modality worldwide for the initial evaluation of patients with acute or chronic neurological problems[4,18]. In addition, CT confers precision to the localizations of brain tissue calcification

This intracranial calcifications are often due to calcium and sometimes iron deposition in the blood vessels of different structures of the brain. [6]. The pathogenesis of pineal gland and choroid plexus calcifications has also been said to be due to calcified concretions of calcium and magnesium salts in the specific tissue, seen more often in old people [19]. Physiological intracranial calcifications resulting from local tissue dystrophy are usually incidental.[20]. Intracranial calcifications can be classified mainly into 6 aetiopathogenetic groups namely: age-related and physiologic, congenital, infectious, endocrine /metabolic, vascular, and neoplastic [2] Intracranial calcification is occasionally an idiopathic feature and therefore detailed biochemical and hormonal evaluation is not carried out unless there is a high index of suspicion. [17]. *Physiological intracranial calcification is asymptomatic and detected incidentally by neuroimaging.* [11] Several pathologic conditions involving the pineal gland and choroid plexus are associated with calcifications and the recognition of their appearance and distribution helps narrow the differential diagnosis. [8]. This study is only interested in the age-related and physiological subset.

In this study, 116 (87.88%) out of 132 patients studied had either pineal gland and/or choroid plexus calcifications.. This is in agreement with the commonplace of physiological intracranial calcifications [8]. 55.15% of these calcifications were choroid plexus calcification while 44.85% were pineal gland calcifications, The total number of physiological intracranial calcifications detected outnumbered the studied population because of co-existent pineal and choroid plexus calcifications in some patients. Such co-existence was common with advancing age. Choroid plexus calcification is known to be associated with pineal gland calcification [21].

46.21% of the total studied populations had pineal gland calcifications while 56.82% had choroid calcifications. Pineal gland calcification is visible on plain skull film in 33-76% in adults, but seen more frequently on CT [7]. The above incidence of pineal gland calcifications in this study is less than 2/3rd of the population noted in other studies [1, 22]. This choroidal calcification predominance has been reported by some authors [17]. However a reversal of this pattern was noted by other studies [3, 23]. [22]Admassie and Mekonne reported an overall incidence of normal pineal gland calcifications of 72.0% and that of choroid plexus 43.3%. Similarly, Daghighi et al observed 71% of their 1569 studied population had pineal gland calcifications while 66.2% had choroid plexus calcifications [6].

It is pertinent that no choroid plexusn or pineal gland physiological calcification was seen in any patient below 9years of age. Choroid plexus calcifications in patients less than 9 years is uncommon and pineal gland calcifications under 9years of age may be suggestive of a neoplasm [23]. The rarity of pineal gland calcification in kids has even been brought down to less than 6years and its presence in these kids less than 6years suggest neoplasm [7]. [21]Doyle and Anderson however observed 1% of pineal calcifications in those less than 6 years [13]. [2]. Other studies found in their study that only 2% of children between 0 to 8 years of age have calcifications of the choroids plexus[1,4] and no pineal calcification was seen in <5years of age[1]. Physiological calcification of the choroid plexus on CT has been reported as early as 3years of age but it is uncommon in subjects less than 10years old[1,4] .However, Physiologic pineal calcification is more common in children than previously reported, mostly because of improving computed tomography technology. [21]

In this study pineal gland calcifications were well defined, majority were solitary, < 4mm and few had conglome rate of 2 or 3 small calcifications. The size of pineal calcification is usually 3-5 mm, if greater than 1 cm, raise concerns for underlying tumor, like pinealoma, teratoma, AV malformation [1,7]. Pineal gland calcification of >3mm was never seen in less than age 5[1,20] Pineal gland calcification can be solitary, compact, or amorphous ring-like calcifications or usually in the form of a cluster of amorphous, irregular densities[1,7].15.79 % of this studied population who were less than 20years of age had physiological pineal gland intracranial calcifications. Whereas other studies recorded a higher value of 40% of patients who are 20 years and below having physiological pineal calcifications [1,4]. But 30% of our studied population below 30 years had pineal physiological calcifications. .

The physiologic calcifications of the choroid plexus are very common after the age of 40 years as noted in this study]4]., The pattern of pineal calcification across ages in this study is that females showed more calcifications in older age group of 70 years and above whereas males had more calcifications below 69years . The plausible explanation is the complete removal of the effect of the female sex hormonal control. The incidence of pineal gland and choroid plexus calcifications show male bias in this study as in other studies. In pineal gland calcifications, male incidence is greater than female incidence by 18.04% whereas in choroid plexus calcifications, the incidence of calcifications in males is greater than females by 14.67%. The incidence of normal pineal gland and choroids plexus calcification were higher in males than in females by 13.1% and 6.0%

respectively [22]. The frequency of pineal gland and choroid plexus calcifications show a steady increase in both sex groups[22]. In general, the frequency of intracranial physiological calcifications was greater in men than in women as equally seen in this study with male to female ratio of 1.44:1 and 1.34:1 for pineal gland and choroid plexus calcifications respectively [6].

Choroid plexi calcifications are known to occur in all ventricles, most commonly in the glomus within the atrium of lateral ventricles near foramen of Monro][1]. In this study, all chorid plexus calcifications were in the atria of lateral ventricles. In fact, Choroid plexus may calcify in all ventricles, most commonly in glomus within atrium of lateral ventricles, near foramen of Monro, tela choroidal of 3rd ventricle, roof of 4th ventricle, along foramen of Luschaka[1,2] Calcification in the third or fourth ventricle or in patients less than 9 years of age is uncommon.[2]. Young patients with exuberant calcification in the region of the glomerula, or with calcification extending into the bodies of the lateral ventricles should be evaluated for conditions associated with pathological calcification of the choroid plexus. This also applies to patients of any age in whom calcification of the choroid plexus in the roof of the third ventricle or in the region of the foramen of Monro can be visualized with routine CT centre and window levels [5][F11]. Calcification involving the temporal horns is associated with neurofibromatosis [15]

The pattern of choroid plexi calcification in this study were bilateral and symmetrical in 100% of positive cases of intracranial choroidal calcifications. While small calcifications of the choroid plexus are frequent, a large, single intra-cerebral calcification originating from the choroid plexus is rare [20]. Such bilaterallity and symmetry in the atria of lateral ventricles have been reported [1]. These calcifications are usually symmetrical but need not be always [1]

Choroid plexus and pineal gland calcifications increased with age with maximum of 80% in 80-89 years in this entire studied population.. Females in this study had a peak of both choroid and pineal gland calcifications with 100% at 80-89 age range while males had earlier peaks of both calcifications which were before 4th decade. It is noteworthy that from 50years and above females tend to surpass males in the incidence of intracranial pineal gland and choroid plexus calcifications. Females were seen to have increasing pineal gland calcifications with age than males *P*hysiologic calcification of the choroid plexus increases in frequency and extent with age [15] but in this study , the conformity is more with females but variable in males. . The physiologic calcifications of the choroid plexus are very common after the age of 40 years [1]. In this study, half of male population after 50 years have physiological pineal gland calcification. All types of calcification increased at older ages except for lens and other non-defined calcifications [6]. The frequency of pineal gland and choroids plexus calcification showed a steady increase with age on both sex groups [22]. 100% of females in the age range 80-89 in this study had pineal and choroid plexus calcifications whereas only 50% of males demonstrated same. Calcifications of the choroid plexus are seen with increasing incidence from 0.5% in the first decade to 80% in the eight decade, with the largest jump from 35% to 75% during the 5th -6th decade[23].This conforms to the fact that choroidal plexus and pineal gland physiological calcification increases with age[17].

V. Conclusion

Knowledge of physiologic intracranial calcifications is essential to avoid misinterpretations. Physiologic intracranial calcifications are almost never clinically significant, therefore its recognition is by radiological evaluations. There is predominance of physiological choroid plexus calcifications over physiological pineal gland calcifications. 46.21% of the total studied populations had pineal gland calcifications while 56.82% had choroid plexus calcifications. Both calcifications are more common in males than in females.

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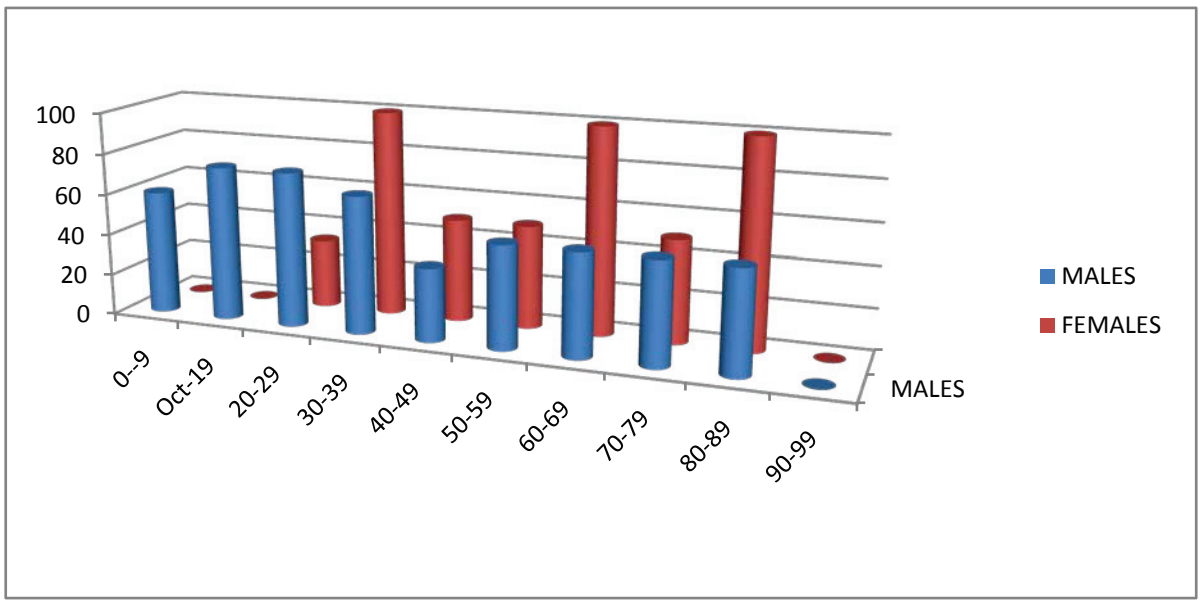
STUDIED POPULATION			
	MALES	FEMALES	TOTAL
0-9	8	2	10
10-19	5	4	9
20-29	8	3	11
30-39	4	13	17
40-49	24	14	38
50-59	14	8	22
60-69	6	2	8
70-79	4	8	12
80-89	2	3	5
90-99	0	0	0
TOTAL	75	57	132

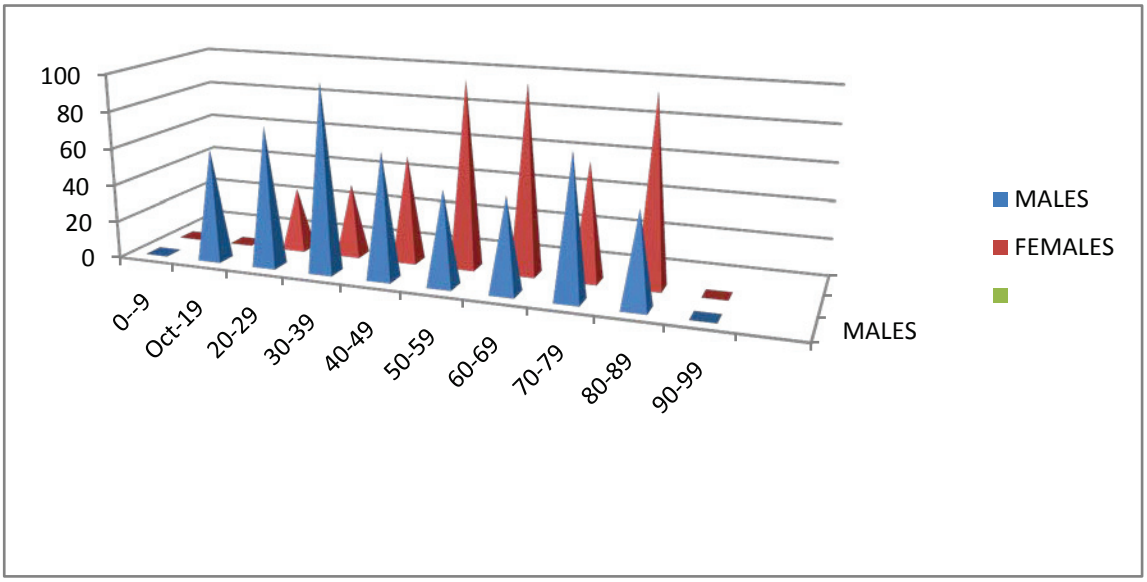
PINEAL CALCIFICATIONS

	MALES	FEMALES	TOTAL	MALES	FEMALES	%TOTAL
0- 9	0	0	0	60	0	0
10-19	3	0	3	75	0	33.33
20-29	5	1	6	75	33.33	54.54
30-39	3	4	7	66.66	100	41.17
40-49	16	7	23	35.71	50	60.52
50-59	5	4	9	50	50	40.9
60-69	1	2	3	50	100	37.5
70-79	2	4	6	50	50	50
80-89	1	3	4	50	100	80
90-99	0	0	0	0	0	
TOTAL	36	25	61			

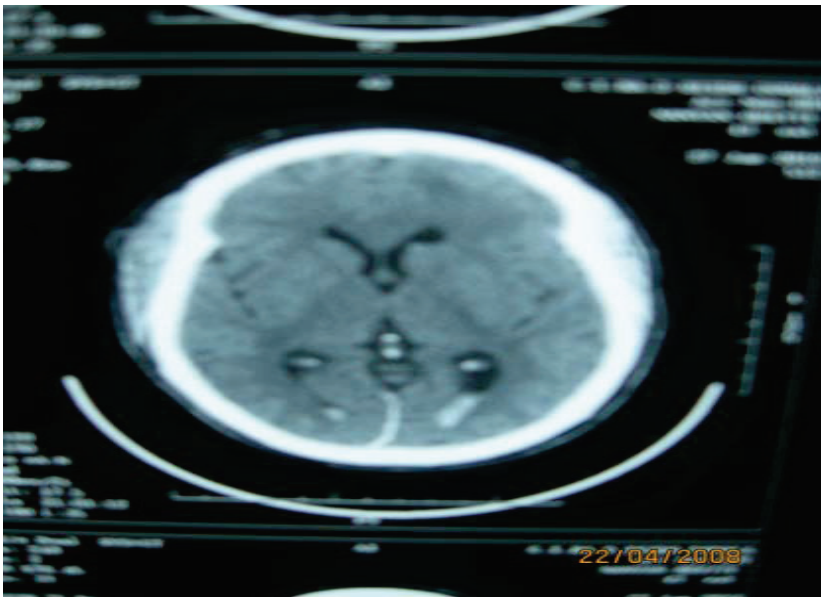
CHOROID PLEXUS CALCIFICATIONS

	NO. OF CALCIF			%CALCIF		
	MALES	FEMALES	TOTAL	MALES	FEMALES	%TOTAL
0-9	0	0	0	0	0	0
10-19	3	0	3	60	0	33.33
20-29	6	1	7	75	33.33	63.63
30-39	4	5	9	100	38.46	52.94
40-49	16	8	24	66.66	57.14	63.15
50-59	7	8	15	50	100	68.18
60-69	3	2	5	50	100	62.5
70-79	3	5	8	75	62.5	80
80-89	1	3	4	50	100	0
90-99	0	0	0	0	0	
TOTAL	43	32	75			





%CHOROID PLEXUS CALCIFICATIONS



ENHANCED BRAIN CT AT VENTRICULAR LEVEL SHOWING CO-EXISTENT PINEAL GLAND AND CHOROID PLEXUS CALCIFICATIONS

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The Primary Hypolactasia Frequency in 7-12-Year-old Albanian Pupils in F.Y.R.O.Macedonia

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Abstracts - Through this research, the frequency of the primary hypolactasia phenotype has been determined and it includes the Albanian pupils in Macedonia from 7 to 12 years of age, as a result of the existence of the Lac_R allele. The correlation between the lactose maldigestion prevalence and the ageadvancement changes has also been analyzed. The research included 115 primar school children in Macedonia at the age of 7 to 12 years of Albanian nationality. The glucose level in them was measured before and 40 minutes after the input of 200 – 220 ml of milk on an empty stomach, or 2 grams of lactose per one kilogram body weight. The emergence of clinical signs, such as glucose level increases with less than 1.1 mmol/l\L, stomachaches, belly bulge, diarrhea, etc., have been considered as determining parameters of the existence of primary hypolactasia and Lac_R allele in the persons in question. The result is that the average of the primary hypolactasia phenotype in the Albanian population sample in Macedonia which underwent the analysis has been represented in 71.22% of the cases.

Keywords: primary; hypolactasia; Lac_R; phenotype; frequency; intolerance; lactase; pupil; MTT; lactose; glucoses.

Strictly as per the compliance and regulations of:

The Primary Hypolactasia Frequency in 7-12-Year-old Albanian Pupils in F.Y.R.O.Macedonia

Mr. Sc. Imije Saiti[α], Mr. Sc.Njomza Shaqir[Ω]

Abstract - Through this research, the frequency of the primary hypolactasia phenotype has been determined and it includes the Albanian pupils in Macedonia from 7 to 12 years of age, as a result of the existence of the Lac_R allele. The correlation between the lactose maldigestion prevalence and the age advancement changes has also been analyzed. The research included 115 primary school children in Macedonia at the age of 7 to 12 years of Albanian nationality. The glucose level in them was measured before and 40 minutes after the input of 200 – 220 ml of milk on an empty stomach, or 2 grams of lactose per one kilogram body weight. The emergence of clinical signs, such as glucose level increases with less than 1.1 mmol/l\L, stomachaches, belly bulge, diarrhea, etc., have been considered as determining parameters of the existence of primary hypolactasia and Lac_R allele in the persons in question. The result is that the average of the primary hypolactasia phenotype in the Albanian population sample in Macedonia which underwent the analysis has been represented in 71.22% of the cases.

Keywords: primary; hypolactasia; Lac_R; phenotype; frequency; intolerance; lactase; pupil; MTT; lactose; glucoses.

I. Introduction

Lactose intolerance is the inability to *metabolize lactose,* because of a lack of the required enzyme lactase in the digestive system.[8] All healthy children from three to five years of age possess a considerable amount of the lactase ferment in their digestive tract. Lactase hydrolizes the glycosidic linkages β1, 4 that exist between the glucose and lactose with in the composition of lactose as disaccharide. With the growth of the person, there are changes occurring in terms of the activity of this enzyme. This phenomenon is known as primary hypolactasia and is present in different ethnic communities with a varying frequencies. These persons are considered to be intolerant towards lactose – IL. It is estimated that 75% of adults worldwide show some decrease in lactase activity during adulthood.[8] The frequency of decreased lactase activity ranges from as little as 5% in northern Europe, up to 71% for Sicily, to more than 90% in some African and Asian countries.[4]

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Primary hypolactasia is inherited as a recessive autosomic feature. The prevailing allele which determines the tolerance against lactose is known as Lac_P (lactase persistence), whereas the restrictive one as Lac_R (lactase restriction)[1]. Clinical manifestation of lactose intolerance is, generally speaking, most variable and depends, not only on the severity of enzymic deficit and on the degree of its overload, but on the patient's age and compensatory capacity of the colon as well. [2, 3, 10, 12, 13, 14]

II. Objective

The main objective of this research was to find the dispersion frequency of the primary hypolactasia phenotype in Albanian pupils in Macedonia of an age from 7 to 12 years old. This would provide a clear picture about the allele Lac_R frequency within the same population. The correlation between the phenotype dispersion and the age of the individuals has also been analyzed.

III. Method

115 pupils of Albanian nationality took place in this research. Their age ranged from 7 to 12 years old. The utilized test for the determination of the primary hypolactasia as a phenotype of the Lac_R allele is the one that measures the level of glucose in blood and is known as MTT (milk tolerance test). The glucose measurement has been carried out with a glucose-meter before and 40 minutes after the provision of 200-220 ml of highly adopted cow's milk or 2 grams of lactose per each kilogram of body's weight. The increase in the level of glucose of 1.1 mmol/l is considered as a sign that the person in question suffers from primary hypolactasia. Other symptoms, such as stomachaches, belly bulge, diarrhea, etc. helped us identify those with hypolactasia.

Pupils with general poor health or gastrointestinal illnesses as well as those with family histories of illnesses of gastrointestinal or genetic character were excluded from the research.

The data were processed and grouped in that way to determine the primary hypolactasia dispersion frequency along with the Lac_R allele. The correlation coefficient between the primary hypolactasia phenotype

dispersion and the age of the individuals has also been reckoned.

IV. Results

115 pupils were divided into 5 classes according to their age, with one year interval difference.

Initial sample data: interval mean $x_{mi\,(vj)}$ of the respective age-group, number of pupils in class-N_i-, numeric frequency of pupils with IL $-y_{oi(num.)}$- and the observed relative frequency in % $-y_{oi}$-(%), for y_{oi} **(%)** referring to values of x_{mi} (years) as well as for the increasing linear function have been given in Table 1 also.

Table 1. Initial sample data according to the tendency of the increase of relative frequency of pupils with IL from class to class. The flow of the observed relative frequency of pupils with IL from class to class has been illustrated in the picture below.

Xmi (vj)	Ni	yoi (num.)	Yoi (%)	Class 1-5 (Ladas)	
Interval mean of the class members' age	Number of pupils in class	Numberic frequency of pupils with IL	Observed relative frequency of pupils with IL in class	Linear line reg. equation	correlation and their significance
7.5	23	13	56.5	y=6.39x+10.50	y=6.49x7.30
8.5	23	15	65.2		
9.5	23	16	69.6	r=0.86	r=0.88
10.5	24	21	87.5		
11.5	22	17	77.3	0.025<p<0.050	p=0.004
Total	115	82			

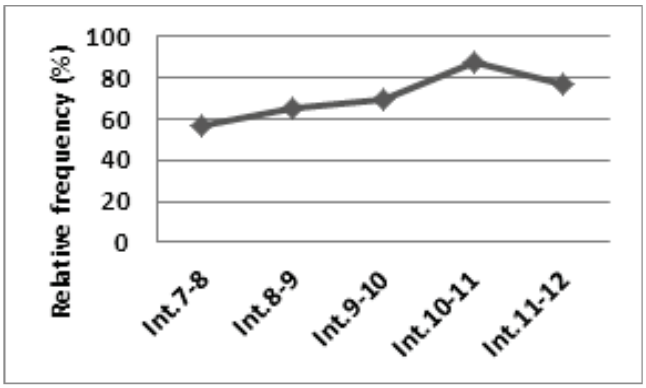

Fig. 1. The polygonal line of the observed relative frequency of pupils with primary hypolactasia in the initial sample.

a) The variation of frequency in pupils with IL according to their age, in the interval from 7 to 12.

In Table 1 we can see the data for y_{oi} **(%)** referring to values of x_{mi} (years), of the group-age interval means within the respective grades, from 1 to 5, that have been included in the work sample, with a

$$Y_e = 6.39x + 10.50 \qquad (1)$$

tendency of frequency increase of the IL, as well as the acquired results according to an increasing linear function. By using the method of least squares, the equation of the linear regression line for the age interval 7-12 has been determined and it is as follows:

$$Y_e = 6.49x - 7.30 \qquad (2)$$

along with the correlation coefficient between the variables r = 0,86. The level of significance 0.05>p>0.025 has been determined from the formulas and respective statistical charts of critical values for the correlation coefficients, mentioned in the references. [4, 6, 10]

As a reference point the values given by Ladas [8] have also been given for the analog equation:

as well as values r = 0,88 and p= 0,004.

In Fig.2 we can see the position of sample point dispersion (x_{mi}, y_{oi}) extracted from Table 1, including the respective joining line – the so called polygonal line of frequencies and the position of lines (1) and (2).

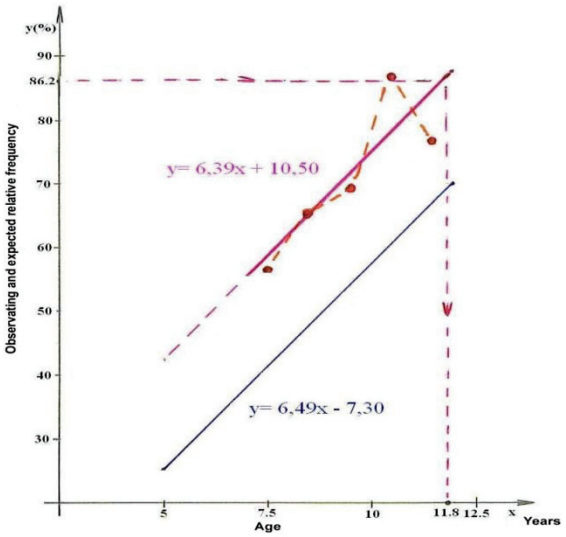

Fig. 2. Polygonal line of frequencies; linear regression lines: according to our sample and according to Ladas.

We can see that within the 7-12 years of age interval, the data expected from our model (1) are approximately 17% higher from those in equation (2).

V. Discussion

From the data in Table 1 and Figure 1 we can conclude that the observed relative frequency of pupils with primary hypolactasia **$-y_{oi}$-(%)** in classes from 1 to 5 has an increasing tendency.

Having previously processed the data from the initial sample, we can see that the average of the primary hypolactasia phenotype and the Lac_r allele in the Albanian population sample in Macedonia that underwent the analysis is 71.22%. Having into consideration the fact people coming from the same ethnic background, regardless of their distance of residence, are characterized by the same primary hypolactasia prevalence, we can assume that the Albanians living in Albania or Kosovo will most probably have an approximate frequency. However, it has to be verified with further studies.

The quite broad variation of the intolerance prevalence against lactose has led into the assumption that the lactose deficiency is a normal or natural state, whereas the persistence of the significant activity of the lactase in Northern European populations represents an "abnormal" mutation, which, as it seems, has created an advantage to those that use milk and other dairy products. It is not clear even today whether the usage of milk and dairy products has led to the maintenance of the lactasic activity or the persistence of the lactasic activity itself has helped in the inclusion of dairy products in people's everyday diet.[1]

Today, the allele that determines the intolerance towards lactose and is original and restrictive is Lac_R -(a), whereas the persistence allele is considered to be a dominant mutation –Lac_P-(A). By considering the population in equilibrium (a characteristic of civilized populations) and by using the Hardy – Wainberg equation, we have calculated the allele frequencies as shown below:

$$P^2Lac_P\ Lac_P + 2pq\ Lac_P\ Lac_R + q^2Lac_R\ Lac_R;$$

$$q^2Lac\ {}_RLac_R = 82/115 = 0{,}713;\ qLac_R = 0{,}844$$

whereas $pLac_P = 0{,}156$;

We have gained the assumed values of the presence of the allele Lac_R from the values of the presence of the primary hypolactasia phenotype, and we can conclude in advance that the Albanian population in Macedonia can be put in the group of those populations where the lactose intolerance prevails: $Lac_R > 0.84$, which means it belongs in the same group with population from Central Africa, Australia, Malaysia, and Southwestern Asia, based on the classification provided by Danil L. Swagerty. [6]

VI. Conclusion

After the procession and analysis of the data from the research on IL that included 115 pupils aged between 7 and 12 from the Albanian population living in Macedonia, characterized as a zone with increasing frequencies, we have come to the conclusion that among the interest variables (the relative frequency of pupils with IL $-y_o$% and pupils' age –x-years), there is a positive correlation of $r = 0.86$, with a level of significance $0.0025 < p < 0.05$.

The model of best approximation of sample points with a tendency to increase, which expresses the relative frequency dependency $-y_e$ (%) expected in pupils with IL, from the age of –x (years), and within the interval of 7 – 12 years of age, is given with the equation of the linear regression line: $y_e = 6.4x + 10.50$.

We can conclude that the relative frequency of primary hypolactasia in children agred between 7 and 12 in the Albanian population in Macedonia is 71.22% which means it belongs in the same group with population from Central Africa, Australia, Malaysia, and Southwestern Asia, based on the classification provided by Danil L. Swagerty [6] and has an increasing tendency with the ageing process itself.

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Causes of Chest Complications and Prevention for Percutaneous Nephrolithotomy Lithotripsy

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Abstracts - Objective : To evaluate the cases of percutaneous nephrolithotomy lithotripsy combined with chest complications and the way to prevent it ; Methods: A retrospective analysis of patients in our hospital form 2003.1 to 2010.4 because of upper urinary tract calculi lithotripsy for percutaneous nephrolithotomy combined with chest complications; Results: In 1400 patients, there are 7 cases with chest complications, 2 cases with complications of serious, need to be dealt positively, the other five cases are recovered after conservative treatment; Conclusion : Percutaneous nephrolithotomy lithotripsy is a safe, minimally invasive tools have been recognized by all, but we need to be carefully about reading preoperative image data, selecting the appropriate operation and puncture puncture point approach. Postoperative patients should be carefully observed with the situation in a timely manner and actively dealt with chest examination is the key to prevent serious complications chest.

Keywords: percutaneous nephrolithotomy, lithotripsy, complications, prevention.

Strictly as per the compliance and regulations of:

Causes of Chest Complications and Prevention for Percutaneous Nephrolithotomy Lithotripsy

Yang wen-zeng [α], Guo jing-yang [Ω], Zhang yan-qiao [β], Wei ruo-jing [Ψ], An feng[¥], Zhang Wen[§]

Abstract : ***Objective:*** To evaluate the cases of percutaneous nephrolithotomy lithotripsy combined with chest complications and the way to prevent it ; ***Methods:*** A retrospective analysis of patients in our hospital form 2003.1 to 2010.4 because of upper urinary tract calculi lithotripsy for percutaneous nephrolithotomy combined with chest complications; ***Results:*** In 1400 patients, there are 7 cases with chest complications, 2 cases with complications of serious, need to be dealt positively, the other five cases are recovered after conservative treatment; ***Conclusion:*** Percutaneous nephrolithotomy lithotripsy is a safe, minimally invasive tools have been recognized by all, but we need to be carefully about reading preoperative image data, selecting the appropriate operation and puncture puncture point approach. Postoperative patients should be carefully observed with the situation in a timely manner and actively dealt with chest examination is the key to prevent serious complications chest.

Keywords: percutaneous nephrolithotomy, lithotripsy, complications, prevention.

I. Introduction

Were treated in our hospital from 2003.1-2010.4 required percutaneous upper urinary tract stones in patients with renal stone mirror a total of 1400 cases, of which there were seven cases of chest complications, 7 patients are summarized the clinical data, to report as follows:

II. Materials and Methods

a) General information: on a total of 1400 cases of this group of patients, of which there were seven cases of chest complications. The 7 patients aged 45 - 60 years, mean 52 years, five cases of abnormal body weight, less than the standard weight of 10%; thorax, spinal deformity 1 case; patients, 3 patients were males, 4 females; smokers, 3 (male); kidney stones in 4 cases, including 3 cases of left kidney, right kidney 1 case; stones in 3 cases of upper calyx, in 1 case in the light; ureteral stones in 3 cases, of which Right side in 2 cases, left in 1 case. Preoperative parathyroid hormone no exception.

b) The preoperative preparation: of patients preoperative chest radiograph, urinary plain film, B ultrasound, electrocardiogram, blood, urine examination, intravenous pyelography and retrograde urography, kidney ureter imaging, parathyroid hormone and other tests such as urine infection use of antibiotics before surgery to control infection, chest radiograph abnormalities in 2 cases (including chronic bronchitis, emphysema, interstitial lung disease) to give antibiotics, expectorants, bronchodilators and other treatment to improve lung function.

c) Surgical lithotomy: position in patients taking conventional disinfection, shop towels, connecting light source, transurethral ureteroscope, the ureteral catheter into ipsilateral ureter, ureteroscopy out, indwelling balloon catheter, the ureteral catheter and connect fixed pressure flushing system, change the prone position, padded waist, connecting ultrasound equipment, first suffering from renal ultrasound scan, regular disinfection, shop towels, select the appropriate puncture point, B ultrasound guided needle insertion will be suffering from kidney calyx, exit needle heart to be inserted after a urine outflow special guide wire exit needle sheath, a knife cut the skin, along with the fascial dilator guide wire followed by expansion of needle tract, extended F16 fascia expansion, while thin sheath placed in Peel-away , pull out the F16 fascia expansion, placement of metal expander, expanded the original stoma to F24, F24 No. sheath and into the corresponding stone equipment, stone, For equipment with 2 or holmium laser lithotripsy on behalf of gravel equipment, expansion to the F16 can, of surgery, placed nephrostomy tube and the double "J" tube.

III. Results

1400 cases of chest complications in patients with presence in 7 cases, 7 patients in the establishment of two-channel or multi-channel gravel in 4 cases. Chest complications: intraoperative chest pain, 1 case of termination of surgery, the patients through the oxygen, application of sedative analgesics, antibiotics, bed rest after the symptoms disappear, chest radiographs and chest were normal B-; 1 case 2 days after breathing difficulties, blood oxygen saturation decreased after the diagnosis of pleural effusion in chest radiographs, transthoracic surgical consultation, to pleural puncture fluids, antibiotics recovery; one case of postoperative day 5 pull nephrostomy fistula after the fever, difficulty breathing, blood oxygen saturation decreased, after the

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diagnosis of hemothorax after thoracic surgery consultation, to pleural puncture and drainage, antibiotic recovery; three cases occurred after the first 2-3 days of chest discomfort, manifested chest pain, rib expansion, no significant changes in blood oxygen saturation, chest examination by a small amount of pleural effusion confirmed by observation, antibiotics and other symptomatic treatment recovery, 1 patient on day 6, fever, cough and other symptoms , consider aspiration pneumonia chest radiographs, antibiotics, expectoration, and other treatment to restore inhalation.

IV. Discuss

Percutaneous nephrolithotomy for upper urinary calculi with less trauma to the body function is small, the advantages of rapid recovery, but there are still some, such as bleeding, fluid absorption caused by hemodilution, chest injury was found. Relatively rare complication in which the chest, causing severe chest complications of early symptoms and positive treatment, complications of mild chest hidden by the onset, the lack of clinical features can not pay attention to.

a) The reason for chest complications :

Chest complications included: pleural injury caused by pleural stimulation chest pain, pleural effusion, inter costal vascular injury. May occur during operation, but most symptoms 2-3 days after surgery. We understand the reasons for chest complications may be: (1) the higher position of the puncture point: the group of 7 patients, the damage mostly occurred in the upper ureteral stones and renal gravel on the course of light (6 / 7), simple right kidney damage is relatively small (1 / 7). May be due to kidney stones puncture points on the calyx select a location higher ureteral stone surgery, in order to channel after completion of the renal pelvis and ureter point to make nephrolithotomy or ureteroscopy smoothly into the ureter, which is not on the renal parenchyma over more traction, the location of the puncture point is relatively high, because the distribution of renal vessels was fan-shaped, vascular puncture to avoid injury caused by bleeding, often walking along the road of vascular needle, the above cases, the puncture point position often reached 10 intercostal and increased opportunities for pleural injury; (2) position: percutaneous renal surgery in patients more than when using the prone position, abdominal breathing is limited, resulting in thoracic activity than normal weight large range of diaphragm increases and then easily lead to pleural injury ; (3) body weight and abnormal: abnormal body weight chest prone to complications, the group of 7 patients, 5 patients presented with less than the standard weight (71%), those prone to weight loss, weight loss may be due to greater mobility were breathing , a large range of diaphragm activity, thoracic or spinal deformities, particularly scoliosis patients puncture or expanding channel, could easily lead to pleural injury 【1】; (4) multi-channel gravel: multi-channel gravel repeatedly increased pleural puncture injury opportunity, and another reported in the literature, puncture casing to crack, can cause a large number of intraoperative pleural lavage enter 【2】, can cause breathing difficulties; (4) Hemothorax: Causes for the needle puncture site is inappropriate, puncture injury during intercostal artery.

b) Treatment of chest complications :

Percutaneous lithotripsy mirror chest complications tend to be mild and occur more than 2-3 days after surgery, so difficult to pay attention. Serious complications are rare. According to a summary of this set of data, we have the following experience: (1) pleural stimulation: pleural irritation than occurred during puncture, the patient sudden chest pain, the pain was persistent irritation, can be seen in the lower part of the chest or neck , ipsilateral shoulder, no significant changes in blood oxygen saturation may be the process of stimulation of phrenic pleural puncture caused by termination of operation time, immediate and lateral chest films and chest B-ultrasound, to other than pleural effusion, pneumothorax, such as the pleura, but pure excitement should not be moving immediately, should be given sedation pain medications, oxygen, bed rest until symptoms returned to the wards, to prevent the premature emergence of pleural shock moving 【3】; (2) a small amount of pleural effusion , free air: more common, the group of 7 patients, 4 patients had a small amount of pleural effusion, mild, occurred after 2-3 days, the affected side showed mild chest pain, rib expansion, oxygen no significant change in saturation due to less damage to the pleura, causing a small amount of perfusion fluid into the chest, it may be perirenal extravasation of liquid through the diaphragm into the chest lymph node 【4】, these patients had mild symptoms, to discover positive to bed, oxygen, antibiotics to control infection treatment, most patients can resume conservative treatment, no special treatment; (3) sketch maps pleural effusion, free air: This complication is more serious, occurred within 24 hours after surgery , hemothorax can be pulled out after post-renal fistula (after 3-4 days), probably due to vascular surgery have resulted in injury, but nephrostomy tube and the passage of oppression, no obvious symptoms, pull-made After the retraction of fistula caused by vascular access bleeding obvious symptoms. Such as difficulty breathing, chest pain, Xiongshihuxi weakening fast pulse, oxygen saturation and decreased performance. Therefore, the relative small amount of pleural effusion, free air was found earlier, such as pleural effusion and pneumothorax was found more serious, related departments should be promptly requested the consultation, needle aspiration or gas, such as a hemothorax, bleeding from intercostal blood vessels more required to actively give anti-infective

drugs and bleeding, thoracic puncture and promote patient rehabilitation, to prevent chest infections, especially diabetes, should pay attention. Percutaneous renal surgery more common in the parietal pleura pleural injury, chest injury and break more, and pleural disease or pathology, the majority of non-light absorption ability, it just puncture out, without thoracic cavity closed drainage 【5】; (4), aspiration pneumonia after surgery, the complications of female patients seen in the lighter weight, due to poor tolerance, patients in the postoperative nausea and vomiting caused by aspiration, showing postoperative nausea , vomiting, postoperative fever, cough, chest radiograph showed pulmonary shadows, need antibiotics to control infection, inhalation, bronchodilators and other treatment.

c) Measures to prevent chest complications:

Percutaneous nephrolithotomy operation, chest complications were seen in the percutaneous and channel expansion process, after the analysis of the patients, to prevent chest complications following recommendations: (1) should improve the correlation of preoperative Check carefully read the chest, urinary tract plain film, intravenous urography made videos and other image data, according to the patient thorax, spine and other skeletal location of signs and choose the right stone puncture point, puncture site without affecting the gravel under the premise of not be too high, has resulted in pleural injury or stimulation, the intercostal puncture should first find out the location of the ribs, rib margin at the top of the needle as far as possible in order to prevent damage rib below the rib groove edge of the blood vessels, nerves, puncture should be in the axillary near the midline, 11 intercostal or rib, needle angle to the horizontal in the 30-35 ° angle between the opportunities for smaller damage; (2) the puncture site should be part of the nearest stone, should be carefully observed before the expansion channel expander with or without cracks, cracks need for the timely replacement is found, should be rotating device placed into the expanded skin, the event should not be used when resistance to violence, to prevent the expansion process deviated from the guide wire channel, resulting in channel bend, damage the pleura or adjacent organs; (3) 12 ribs puncture less chance of pleural injury, and other high intercostal puncture 10,11, the greater chance of injury pleural 【6】, should be attention-getting middle-breath after the breath of patients, rather than in end-expiratory conduct. At this point the location of the diaphragm and right kidney, and prevent pleural injury【7】; (4) Under normal circumstances, the skin distance of about 10cm away from the calyx around, too fat or thin, the skin to the renal pelvis of the distance change difficult to grasp, therefore, should be based on individualized treatment in patients with body shape, if necessary, can be a ruler measuring the depth of puncture is not in place to prevent the effusion of renal weeks more, subdiaphragmatic lymphatic fluid absorption caused by pleural effusion; (5) before surgery The best location of access, placement of ureteral catheter and pressure flushing, application of diuretics and hormone 【8】 to facilitate artificial hydronephrosis, renal pelvis and expansion to increase the success rate, try to avoid multiple needle or multi-channel pieces Stone, reducing opportunities for chest injury; (6) for the preoperative treatment in patients with lung disease should be actively given antibiotics, expectorant, such as bronchodilators and inhalation therapy to improve lung function in patients, for minor chest complications after more useful; (7) after early detection: I understand where the following cases: abnormal body weight, thoracic or spinal deformities, kidney and upper calyceal stones, ureteral stones lithotripsy for percutaneous nephrolithotomy and after surgery in patients with multi-channel gravel 2 days after starting or after removal of nephrostomy tube chest symptoms, required lateral chest films and chest ultrasound is necessary, chest CT examination should be to early detection and timely treatment, as reported in the literature, PCNL thoracic films can be found in the probability of pleural effusion of 8%, while CT can reach 38% 【9】.

V. In Short

Percutaneous nephrolithotomy lithotripsy is a safe, minimally invasive means of gravel have been recognized too, need to read the image preoperative, intraoperative, and select the appropriate needle puncture point approach, postoperative patients should be carefully observed the situation chest examination in a timely manner and actively deal with, is to prevent serious complications chest key.

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Parasitic Contamination of Fresh Vegetables Sold in Jos Markets

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Abstracts - Common vegetables brought for sale in market within Jos South Local Government Area of Plateau State were screened for human parasites in Federal College of Veterinary and Medical Laboratory Technology (FCVMLT), Vom, Plateau State. Four hundred (400) samples of eight different vegetable types such as cabbage, lettuce, carrot, spinach, pumpkin, garden egg, tomatoes, and waterleaf were obtained in five different markets of the Local Government Area and screened using centrifugation method. Cysts, ova and larvae of intestinal protozoa, cestodes and nematodes were recovered. 225 (56.25%) of the samples were positive for different species of parasites. 5 (2.0%) were cysts of Entamoeba coli, 10 (4.0%) were Entamoiba histolytica, 2 (0.8%) were Hymenolepis nana, 5 (2.%) were Trichuris trichiura, 6 (2.4%) were Ascaris lumbricoides, 70 (28.2%) were Hookworm species and 150 (60.4%) were Strongyloides stercoralis. S. stercoralis with 60.4% of the positive cases has the highest occurrence, while H.nana with0.8% has the least occurrence. The study also showed that water-leaf with 90% infection rates has the highest parasitic load, while garden egg with 15% has the least load of parasites. Lettuce was found tohave the highest multiple parasitic contamination of six (6), were as carrot and garden egg had the least multiple parasites of two (2). None of the vegetables had single parasitic contamination. In view of these findings there is an indication that human parasites can be acquired through the consumption of thesevegetables, especially when not properly and hygienically prepare before consumption.

Keywords: *Vegetables, Markets, Parasites, Infection, centrifugation.*

GJMR-B Classification: *WC 900*

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Ojemudia Theophilus Idahosa

Abstract : Common vegetables brought for sale in market within Jos South Local Government Area of Plateau State were screened for human parasites in Federal College of Veterinary and Medical Laboratory Technology (FCVMLT), Vom, Plateau State. Four hundred (400) samples of eight different vegetable types such as cabbage, lettuce, carrot, spinach, pumpkin, garden egg, tomatoes, and waterleaf were obtained in five different markets of the Local Government Area and screened using centrifugation method. Cysts, ova and larvae of intestinal protozoa, cestodes and nematodes were recovered. 225 (56.25%) of the samples were positive for different species of parasites. 5 (2.0%) were cysts of *Entamoeba coli*, 10 (4.0%) were *Entamoiba histolytica*, 2 (0.8%) were *Hymenolepis nana*, 5 (2.0%) were *Trichuris trichiura*, 6 (2.4%) were *Ascaris lumbricoides*, 70 (28.2%) were Hookworm species and 150 (60.4%) were *Strongyloides stercoralis*. *S. stercoralis* with 60.4% of the positive cases has the highest occurrence, while *H.nana* with 0.8% has the least occurrence. The study also showed that water-leaf with 90% infection rates has the highest parasitic load, while garden egg with 15% has the least load of parasites. Lettuce was found to have the highest multiple parasitic contamination of six (6), were as carrot and garden egg had the least multiple parasites of two (2). None of the vegetables had single parasitic contamination. In view of these findings there is an indication that human parasites can be acquired through the consumption of these vegetables, especially when not properly and hygienically prepare before consumption

Keywords: *Vegetables, Markets, Parasites, Infection, centrifugation.*

I. Introduction

Vegetables are essential for good hearth, and they form a major component of human diet in every family. They are vital energy contributors that are depended upon by all levels of human as food supplement or nutrient (Duckworth *et al*, 1996). They substantially improve food quality and have high water content as seen in lettuce and cabbage. Many vegetables are good sources of vitamin C, carotene and mineral elements such as iron, and vitamins including thiamine (Vitamin B12), Niacin and Riboflavin. (Frazier and West hoff, 1998).

The cultivation of vegetables in many parts of the word has been amplified with the application of fertilizer and or manure. In Africa, the transmission of intestinal parasitic infection has been considered to increase successfully due to the frequent use of untreated human or animal dung as manure in cultivation by the local farmers, which serves as a source of enhancement of zoonotic parasitic infection. (Luka et al.,2000). Consumption of raw or unhygienically prepared vegetables such as cabbage (*Brassica deracea)*, lettuce, okra, garden egg (*Sdanum macropium*), cucumber, carrot (*Daurus carota*), water leaf (*Talinum trangulare*), pumpkin (*Telfairia*), spinach, tomatoes (*Lycoperisicon esculentum*), etc, is considered to be a risk factor for human parasitic infections (Chessbrough, 1991).

The cultivation of vegetables for commercial and domestic purposes in Nigeria is mostly carried out by peasant farmers depend on irrigation or natural rainfall (Luca, et al 2000). These vegetables though seasonal, are cultivated in the same piece of land every year. As a result of this continuous land usage there is depletion of nutrient hence the need for fertilizer or manure. Most farmers use untreated animals and human faeses as manure, which are known to contain various species of parasites that are of medical and veterinary importance. (Okoronkwo,1998). Indiscriminate faecal disposition in bushes, farm lands and even in present farms with a belief of enriching the lands is also a common practice by farmers and unlearned citizens. Some of the water bodies used for irrigation are also polluted with parasites infected excreta, that could lead to recycling of infection (Ayer, et al; 1992).

Altekruse, (1997), reported that the potential risks factors for human intestinal parasitic infection, viz; *Ascaris lumbericoides*, *Trichuris trichuria*, *Ancylostoma duodenale*, *Necator americanus*, *Balantidium coli*, *Giardia intestinalis*, *Blastocystic hominis* involve unhygienic associations with unhygienic environment.

II. Material and Methods

a) Study area

The study was conducted in Jos South Local Government Area of Plateau State during dry season; between February and April. Vegetable samples were collected from markets in the Local Government Area. Majority of the inhabitants of the area are peasant farmers and petty traders of low economic status. The watering of vegetable at this period is through irrigation. It is a common practice that majority of the farmers use human and animal manures to augment the

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commercially processed fertilizer to limit their cost of farming.

b) Sample collection

The vegetables screened were cabbage *(Brassica oleracea),* lettuce (*Lactuva sativa*), carrot *(Daurus carota),* Garden egg *(Solanum macropium),* Tomatoes *(Lycoperisicon esculentum),* Pumpkin *(Telfairia),* water – leaf *(Talinum trangulare)* and spinach *(Ayer, et al; 1992).*

They were randomly collected in batches of 50 per markets in the L.G.A, and wrapped in clean polythene bags and labeled. A total of 400 samples of vegetables of the eight different types were assayed. The market places from where samples were collected include; Bukuru main market, Sabo-barki market, sukwa market, Vom market and Zawan market, all in Jos south LGA.

c) Screening procedure:

The screening of vegetable samples was carried out in the Parasitology Laboratory of the Federal College of Veterinary and Medical Laboratory Technology (FCVMLT), National Veterinary Research Institute, Vom, Plateau State.

The samples were washed with formol saline according to their batches in 100 ml round bottom clean plastic container. These were allowed to stand on the bench for one hour to allow time for proper sedimentation. The supernatant was discarded with a Pasteur pipette leaving about 15ml at the bottom. 10ml of the deposit mixture was transferred into a centrifuge tube and spun for five minutes at 3,000 rpm. The supernatant was decanted while the deposit was resuspended with 10% formal saline. This was centrifuged, the supernatant was decanted and the deposit was then transferred to a clean glass slide. A drop of iodine was added to stain the cysts, it was then covered with a cover slip avoiding air bubbles and over floating. 10* and 40* objectives were used for examination.

III. Results

Out of the 400 samples of the eight types of vegetables, 213 were positive for intestinal parasite with a percentage of 56.25. The parasites encountered include some species of protozoa, cestode and nematodes. The protozoa parasites are *Entamoeber histolytica* and *Entamoeber coli,* the cestode *is Hymenolepis nana,* and the nematodes are *Ascaris lumbricoides, Trichuris trichiura,* Hookworm and *Strongyloides stercoralis.*

Table 1, shows the intensity of contamination in different markets; the highest intensity of 61(76%) positive cases occurred in Sabobariki market, while the lowest intensity of 23(28.75%) occurred in Sukwa market. Table 11, shows the parasitic contamination of different vegetable; where Lettuce was found to have the highest poly-parasitic contamination of five species of parasites, whereas Garden egg and Carrot showed the least poly-parasitic contamination of two parasites. Table 111, shows the rate of infection of each vegetable sample. Water leaf shows the highest contamination rate of 90%, while garden egg is the least contaminated vegetable with a percentage of 30%. Figure 1: represent the frequency of occurrence of parasites; *Strongyloides stercoralis* has the highest occurrence while *Hymenolepis nana* shows the least occurrence on various vegetable types.

Out of 248 parasitic occurrences, 15 were protozoa, 233 were nematodes, while 1 was cestode. This work also revealed poly-parasitic contamination of some of the samples which makes them vehicles for multiple parasitic infections.

Table 1: Intensity *of contamination in different markets*

Markets	Number of vegetable types screened	Number contaminated	Percentage contamination
Bukuru	80	46	57.50%
Sabobariki	80	61	76.25%
Vom	80	37	46.25%
Zawan	80	58	72.50%
Sukwa	80	23	28.75%
Total	400	225	56.25%

Table 2 : Contamination on different vegetable

Parasites	C	L	C2	S	G egg	P	T	Wl
Entamoeba histolytica	+	+	-	-	+	-	+	-
Entamoeba coli	+	+	-	+	+	-	-	-
Hookworm	+	+	+	+	-	+	+	+
Ascaris lumbricoides	-	+	-	+	-	+	-	-
Strongyloides stercoralis	+	+	+	+	-	+	+	+
Trichuris trichiura	+	-	-	+	-	-	-	+
Hymenolepis nana	-	+	-	-	-	-	-	-

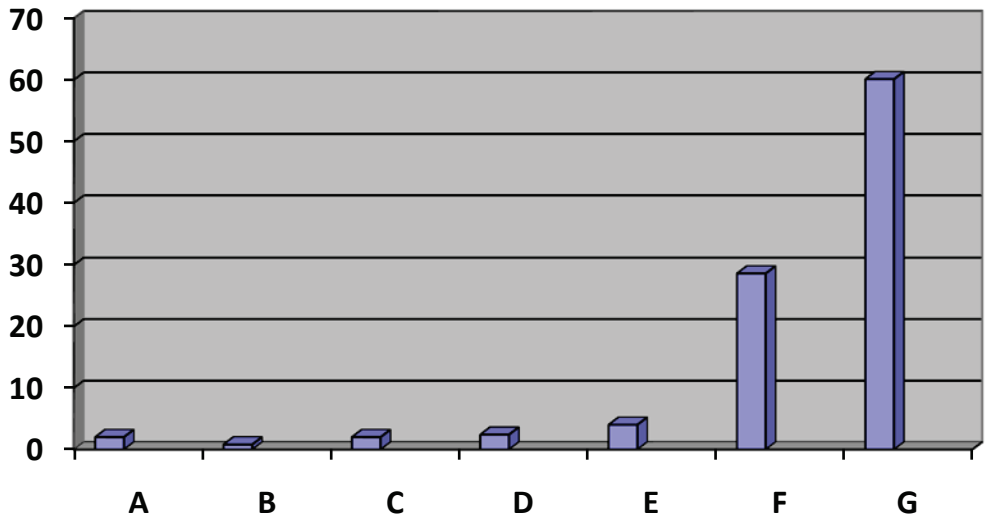
Key. C=Cabbage, L=Lettuce, C2=Carrot, S=Spinach, G=Garden egg, P=Pumpkin, T=Tomato, Wl= Waterleaf

Table 3 : Contamination rate

Types of vegetable	NE	NP and overall %	PS(%)
Cabbage	50	25(6.3)	50
Lettuce	50	30(7.5)	60
Carrot	50	20(5.0)	40
Spinach	50	40(10.0)	80
Garden egg	50	15(3.8)	30
Pumpkin	50	20(5.0)	40
Tomatoes	50	18(4.5)	36
Water leaf	50	45(11.3)	90
Total	400	213(53.3%)	426

NE: Number Examined. NP: Number Positive. PS: Positive Specificity
X/y*100/1. (Y= number of samples per specimen. X= number of positive cases)

Fig: 1: Frequency of occurrence



A: *Entamoeba col,* B: *Hymenolepes nana*, C: *Trichuris trichiura*, D: *Entamoeba histolytica*, E: *Ascaris lumbricoides* F: Hookworm, G: *Strongyloides stercoralis*,

IV. Discussionl

The presence of intestinal parasites in vegetable samples is suggestive of faecal contamination. The trend of parasitic infection in our society as reported through routine diagnosis is partly a factor of vegetables being sources of transmition. The following factors have contributed to the prevalence of parasitic infection and have also confirm the discovery by Heyneman Donald, (1995);

Hygienic status of the consumers and producers, vegetables being adequately harboring the infective forms of the parasites, the behavioral attitude of producers in application of untreated human and animal dung as manure leading to the transmition of zoonotic infection, the use of irrigation source which receives raw affluent from human or animal wastes.

The consumption of vegetables raw or undercooked is a way by which the transmition of these parasites is encouraged. This is true with the believe that the consumption of raw or undercooked vegetables give more nutrient. Hedberg C. W. (1994). In agreement to Chiodini P.L. (2001); Isolation of more than one parasite per sample in this work reflects the possibility of a poly feacal contamination of vegetables which most probably result to poly parasitic infection in man. The high occurrence of these parasites reflects a high level contamination and persistence of human infection. This is in agreement with the study of Gibson D. I. (1994), that the prevalence of intestinal parasites among a particular people is an attribute of environmental pollution by human feces. The life cycle of the parasites particularly the *Strongyloides stercoealis* which has both parasitic and free living state enhances the proliferation of larvae without the host (Feachem *et al*, 1983). The consumption of water-leaf with 90% occurrence is a risk factor as it is a common vehicle for transmision, particularly when the hygienic condition of the consumers is poor, WHO (1999). In contrast to Soni G. R and Nama H. S (1992) study, who reported that Hookworm (64.4%) and *T. trichiura* (23.36%) were the highest contaminating parasites in their area of study, this study reveals *Strongyloides stercoralis* (60.1%) and Hookworm (28.6%) as being the highest occurring parasites in this study area. However, the overall result is not an exact representation of the findings of previous researchers because the areas of study differ both in geographical location, climatic, environmental conditions, the general behavioral attitude to hygiene and the socio-economic activities of producers, sellers and consumers. The number of samples collected differs also, and consequently, the results differ variously.

V. Recommendation

Vegetable cannot be removed from human diet, but can be excluded from the cycle of transmission and dispersion of parasites. This can be achieved by mentainance of simple personal and environmental hygiene by sellers and consumers, avoid using untreated human and animal wastes as manure, soaking of vegetable for 10 minutes in vinegar or saturated salt solution which will plasmolize the parasites if present, cooking of vegetables adequately before serving them as meal, avoidance of indiscriminate defecation.

VI. Conclusion

It is obvious that vegetables consumed by people are quite often contaminated with parasites, more especially by intestinal parasites. This is an indication that humans are always at risk of infection especially as vegetables is naturally popular in the diet of people of all classes, Bean NH, (1990). These findings underscore the public health implication of vegetable farmers, sellers and consumers, being at high risk of infection with Strongyloidiasis, Ascariasis, Amoebiasis and a host of others. The high prevalence of parasitic infection among the public has led to increased funding for epidemiological surveillance, unwarranted financial stress on patients, incidence of hospital admission, increase in the demand of antihelminthic drugs, pressure on pharmaceutical industry to discover and develop a more potent antihelminthic drugs to curtail increase spreading of parasites, the risks of death and finally food insecurity in West Africa.

The campaign to eradicate parasitic infection must be intensified; this is the more reason world health organization has continued to call for global strategy in putting this menace under check (WHO, 1999).

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Micronutrient Malnutrition, A Tragedy To Childhood Growth And Education

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Abstracts - Micronutrient malnutrition is a serious childhood dietary problem in developing nations. Deficiencies in vitamins A and B_{12}, iron, folic acid and zinc, are preventable causes of poor childhood growth and school performance. Sustainable strategies exist to eradicate malnutrition. This paper discusses the negative effect of vitamin and mineral malnutrition on childhood growth and education, and effective strategies to eliminate them.

Keywords: *Micronutrient malnutrition, Preschool-age children, Growth, Education, Strategies*

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I. Introduction

Micronutrients are nutrients needed in minute specific quantities in the body. Most of them are not generated in the body but are derived from food intake. These micronutrients include vitamins A and B_{12}, iron, folic acid, iodine, and zinc. Prolonged inadequate intake of foods rich in these micronutrients result in their deficiencies. Most developing countries are battling with hunger, poverty and high rate of unemployment. This gives rise to food insecurity in most of the households.

One-third of the world's population suffers from micronutrient deficiencies, due primarily to inadequate dietary intake (Fielder and Macdonald, 2009). Vitamin A is a fat-soluble vitamin, essential for vision in dim light, cellular, bone and tooth growth, formation and maintenance of healthy skin, hair, and mucous membranes, reproduction and immunity boosting. Vitamin A is so important in embryological development that without it, the fertilized egg cannot develop into a fetus (Brody, 2007). It's deficiency results in night blindness or impaired dark adaptation, lowered immunity to infections such as measles, diarrhoea, chickenpox, respiratory infections, anemia, poor growth, slowed bone development, blindness and death. All these have disastrous effect on the healthy growth and school performance of a child. Vitamin A deficiency (VAD) can be severe in children 6 years of age while blindness is more prevalent in children below 3 years. The average preschool child requires 400 μg of vitamin A daily for healthy vision, bone growth, reproduction, cell division, and cell differentiation. This must be derived from intake of foods rich in vitamin A such as fatty meat, egg, milk, butter, margarine, palm oil, fortified foods, dark green leafy vegetables and yellow fruits. For many parents in developing countries, apart from plant sources of vitamin A, animal sources are a luxury only enjoyed by the rich. The poor only depend on plant sources and it has been established that the efficiency of the conversion of plant sources of vitamin A (Provitamin A carotenoids) to vitamin A [bioefficacy] in a mixed diet is less than was previously thought (Wardlaw and Kessel, 2002). Retinol Equivalent overestimated the contribution of carotenoids to vitamin A needs until now (Thurnham and Northrop-Clewes, 1999). Then, I RE = I μg of all-trans Retinol = 6μg of all-trans beta–carotene = 12 μg other carotenoids but the true contribution is I RAE = 12 μg of beta-carotene=24μg of other Carotenoids. Consequently, a child whose vitamin A source is solely dependent on plant sources of vitamin A will become vitamin A deficient over time. Worst still, the main component of the diet of children in developing countries is starchy foods. Another cause of vitamin A deficiency is the drifting from local foods rich in vitamins and minerals to fast foods which are highly refined as a result of the influence of urbanization and western culture. Prolonged shortage of vitamin A rich foods in the diet of the child, results in low vitamin A Recommended Dietary Allowance (RDA) and eventual depletion of any available vitamin A stored in the liver.

World Health Organization (WHO) defines vitamin A deficiency as the tissue concentration of vitamin A low enough to cause adverse consequences even without clinical evidence of xerophthalmia (Liberato and Pinheiro-sant'Ana, 2006). A child suffering from vitamin A is unable to see in the dim, a situation called night blindness or nyctalopia. If night blindness is not noticed and treated on time, it will lead to xerophthalmia (dryness of the eyes) and eventually blindness.

Vitamin A deficiency (VAD) is a widespread public health problem in developing nations where it affects more than 130 million preschool children and is the leading preventable cause of childhood blindness and major underlying cause of child mortality (WHO, 2008; FFI, 2008; West et al. 2008). Micronutrient deficiency is prevalent in Africa. In 27 African countries, every third child suffers from sub-clinical vitamin A deficiency (FORTAF, 2000). These countries are as shown in Table 1. From Table 1, the highest VAD prevalence is found in Eastern and Southern African

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countries such as Zambia, Uganda and Kenya . Only Egypt does not have Vitamin A deficiency as a public health problem. The end-of-decade goal for elimination of VAD was widely promoted in the 1990s but, although progress was made, the goal was not met (Underwood, 2006). However, many countries now have success stories e.g. Vietnam, Venezuela, Bangladesh, Indonesia, Phillippine and some parts of India. They have been able to reduce VAD and xerophthalmia to below WHO cut-off point constituting a public health problem (West, 2002; Ramakrishnan and Darnton-Hill, 2002). The International Consultative Group (IVACG) recently adopted a cut off of more than 15% of pre-school population with serum retinol below 0.70μmol (or 20 μg/dL) or displaying abnormal impression cytology as indicative of VAD (West, 2002; Wasantwisut, 2002; Ramakrishnan and Darnton-Hill, 2002). Study carried out in Venezuela showed that VAD is not a public health problem in children from 6-59 months of age (Zimmermann, 2005). Iron deficiency anaemia is one of the leading nutritional diseases worldwide, affecting an estimated 2 billion people (Li et al. 2010). World Health Organization (WHO) review of nationally representative surveys from 1993 to 2005 shows that 30% non-pregnant women of childbearing age, 42% of pregnant women, and 47% of preschool children worldwide have anaemia (Mclean et al. 2007; Black et al. 2008; Kraemer and Zimmermann, 2011). These figures agree with that of Arcanjo et al. (2011) who also stated that the prevalence estimate of global anaemia in pre-school-age children is 293.1 million cases, or 47.4% of the total population. It is estimated that 40% of the world population, or 2 billion people, suffer from anaemia, and that iron deficiency anemia (IDA) is responsible for about half of those cases (Arcanjo et al. 2011). Vitamin and mineral deficiency is mostly prevalent in Africa. In 31 of the 38 African countries that have data on iron deficiency, every second child under the age of 5 suffers from iron deficiency (FORTAF, 2000) (Table 2).

Iron deficiency occurs when iron requirements cannot be met by absorption from the diet, such as during periods of rapid growth (infancy, adolescence), in pregnancy, and as a result of menstrual or pathological blood loss (Hurrell, et al. 2010). Developing countries' diets are predominantly dominated by plant-based foods and so limit iron absorption due to their high phytate and polyphenol contents (Hurrell, 2002; Zimmermann, et al. 2005; Hurrell, et al. 2010). Iron deficiency in infants and young children is associated with delayed mental and motor development (Lozoff, 2007). In summary, an iron-poor diet and rapid growth are primary causes of iron deficiency in infants and preschool children (Li et al. 2009). Iron deficit children may experience emotional problems and fail to meet educational goals later in life leading to a negative impact on learning capacity in adulthood (Hurrell et al. 2011).

An estimated 240,000 annual cases of folic acid-preventable spina bifida and anencephaly has been recorded (Oakley et al. 2004). Adequate consumption of folic acid before pregnancy and during the early weeks of gestation protects fetuses from developing neural tube defects (Folic Acid Working Group et al. 2010).

Interest in zinc was stimulated when zinc supplements given to short children and failure-to-thrive infants in the U.S. city of Denver improved growth (Allen, 2001). Trial studies concluded that zinc supplements are likely to improve the height gain of the most stunted children and to improve the weight gain of those with low plasma zinc concentrations (Allen, 2001). Intakes of absorbable zinc are often low in children and growth-stunting occurs nearly universally during the first two years of life in underpriviledged populations (Allen, 2001).

Because vitamin B-12 is found only in animal products, many poor populations, or those that avoid animal products for religious or other reasons, consume little or no vitamin B-12. Low serum B-12 concentration is associated with a higher risk of potentially irreversible harm to memory, cognitive function, and nerve conduction, as well as a higher risk of megaloblastic anaemia. Studies among low income people in Guatemala, Mexico, Nepal, Venezuela, and other countries show that 25 to 50 percent of individuals are deficient (Allen, 2001). Vitamin B-12 deficiency occurs in populations with low consumption of animal-source foods which are the only natural source of the vitamin. Vitamin B-12 deficiency is also prevalent in developed countries among the elderly due to their inability to release and absorb the vitamin from foods (Rosenberg, 2010).

II. Effect of Micronutrient Malnutrition on the Growth and Education of Preschool Children

Both chronic under nutrition and severe clinical malnutrition in childhood are related to scholastic backwardness (AMCOFF,1981).It has been documented that malnutrition in foetus and young children causes disturbances in the morphological and functional development of the central nervous system thus affecting the cognitive and emotional development of the child. Micronutrient Malnutrition causes birth defects, mental retardation, learning difficulties, compromised immune systems, low work capacity, blindness and death. These consequences definitely have a negative effect on the healthy growth of the child via education in terms of intelligent quotient (I.Q) and school performance. There is evidence that a poor diet associated with high fat, sugar and processed food content in early childhood may be associated with small reductions in I.Q in later childhood (Northstone et al.

2010). Iron deficiency lead to compromised ability and poor physical growth, which can impair school performance ultimately resulting to retarded cognitive, motor and academic ability. Childhood anaemia has been shown to negatively correlate with educational outcomes, such as grades, attendance and attainment (Miguel and Kremer, 2004). Agreeably, studies have recognized that there is a relationship between school performance and child health nutritional status. Early malnutrition affects brain structure and learning ability (Liu et al. 2003). Malnourished children are inactive, inattentive and lack curiosity and explorative abilities and these affect their educational performance. Malnutrition also results in language retardation. A more serious effect of malnutrition is its permanent effect on children who were less than six months when they were malnourished which is a serious handicap on schooling and has a close impact on the ability to learn, read, and write (Amcoff, 1981). The consequences of these are school failure. Iron deficiency and anemia lead to compromised ability to learn and poor physical growth, which can impair school performance ultimately resulting in retarded cognitive, motor and academic ability (REAP, 2010). Consequences of iron deficiency in children includes anaemia, poor growth, weak immune system, reduced cognition and development, poor attention span, concentration, memory, learning ability, poor muscle function and manual dexterity, behaviour, and social interaction. It has also been reported that even though VAD does not directly affect school performance, it may do so indirectly via its effect on infectious related morbidity, which in turn will affect school attendance. This was demonstrated in a study on school teachers' awareness about scholastic performance and nutritional status of Egyptian school children (van- Stuijvenberg, 2005).

Many studies have shown associations between hunger, poor dietary intakes, stunting, underweight and poor school performance stating that children who were stunted, anaemic, or iodine deficient had poorer school achievement levels and attendance than other normal children. Figs. 1 and 2 are pictures showing some malnourished children in developing countries. Some already have blotted faces.

Folate deficiency results in learning disabilities. Recent evidence suggests that poor maternal folate status is also associated with a higher risk of abnormal pregnancy outcomes, including eclampsia, premature delivery, and birth defects such as club foot and cleft palate (Allen, 2001).

III. Nutritional Intervention Strategies

The optimal growth, physical and intellectual development which will enable children to learn and reach their full potential in life must not be jeopardized. Strategies that have been identified to fight micronutrient deficiencies include exclusive breast-feeding, vitamin A supplementation (through use of capsules), nutrition education/communication, dietary diversification, food fortification, biofortification, home gardening, and disease control. Fortification of food with vitamin A, iron and folate results in smarter, stronger, healthier children. It increases the national Intelligent Quotient (I.Q.) by 5%, national GDP by 2% and prevents the 200,000 cases of severe disability in babies yearly (Moench-Pfanner, 2007).

Many local foods, fruits, and plants have been reported to be good sources of micronutrients. They are available in abundance and very cheap. Consumption of varieties of local foodstuffs will help the children have adequate nutrient stores especially during their season when the fruits, vegetables and foodstuffs are usually wasted due to poor storage facilities. Examples are palm oil, yellow maize (corn), orange-fleshed sweet potatoes, mango, banana, tomatoes etc. Red palm oil has proved effective in combating VAD in South Africa. Red palm oil has been used to fortify biscuits which provided beta-carotene at 50% of the Recommended Dietary Allowance (RDA) and red palm-oil based bread spreads for primary school feeding programs in South Africa (van Stuijvenberg, 2005). Similar fit has also been performed in Burkina Faso (Zagre, et al. 2004). The result from South Africa has a significant long-term positive implication on learning and school performance in children that are vitamin A deficient (Zimmermann, et al. 2004). This technology could be transferred. There has been an increased promotion and utilization of orange-fleshed sweet potato to combat vitamin A deficiency in Burkina Faso, Uganda, and South Africa (Vebamba, 2004; Kapinga, et al. 2004; van-Stuijvenberg, 2005). Efforts to identify Nigerian traditional edible plants that are good sources of vitamin A have yielded positive results. Recent findings reported that Baobab leaf (Adansonia Digitata L) is a rich source of beta-carotene (156.5μg/g) and iron. It's use on rural Nigerian children improved their vitamin A and iron status by decreasing the number of children with serum retinol levels below 20μg/dl significantly from 21.25% to 10.0% and their serum beta-carotene rising from 6.8μg/dl to 14.1μg/dL while serum ferritin of children with low serum ferritin (HB<11.0g/dl) significantly increased to 19.0μg/dL (Nnam, 2004). Nnam and Onyeka (2004) reported that Sorrel (*Hibiscus sabdariffa*) calyx is a good source of micronutrients to combat VAD. According to them,

Sorrel Calyx is a good source of retinol (285.29RE), iron (833.00mg/100g), and ascorbate (53.00mg/100g). Rural Nigerian children fed with sorrel calyx based diet had higher hemoglobin (HB) and serum retinol (SR) levels and no VAD symptoms as against the control. Other lessons could be learnt from Malaysia where nutritious foods such as milk and multi-vitamins are distributed to families, primary school children, pregnant women and lactating mothers with twins. Milk is a good source of iron. In a study using milk fortified with 15mg iron (as iron sulphate/L) the incidence of anaemia was reduced from 36.4% (control) to 12.7% in the fortified group (Blum, 1997).

IV. Conclusion

Studies have shown that maintaining high levels of micronutrients in the diet of children is important for optimal growth, development of their normal learning and cognitive functions. Adequate vitamins and mineral diet is needed for healthy and productive children. This should be a matter of right and not charity. Agriculture should be emphasized more and research encouraged to identify more local foods rich in micronutrients in various communities in developing nations. Nutrition education/communication should encourage increased consumption of animal sources of vitamins and minerals among preschool-aged children. Nutritional policies in developing countries should be encouraged in favour of children, pregnant and lactating mothers.

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Fig. 1. Malnourished School children
Source: http://www.anec4.or.ke/s

Fig, 2. Malnourished children.
Source UNICEF, 2001

Table 1. Estimated Percentage of children with Sub-clinical vitamin A deficiency by Region

REGION :	Estimated % of children under six with a sub-clinical vitamin A deficiency in Africa, 2000
Eastern and Southern Africa	
Mozambique	26
Zimbabwe	28
Botswana	30
Eritrea	30
Ethiopia	30
South Africa	33
Tanzania	37
Swaziland	38
Rwanda	39
Madagascar	42
Burundi	44
Lesotho	54
Angola	55
Namibia	59
Malawi	59
Zambia	66
Uganda	66
Kenya	70
Western and Central Africa	
Mauritania	17
Nigeria	25
Guinea Bissau	31
Congo	32
Togo	35
Cameroun	36
Niger	41
Gabon	41
Chad	45
Burkina Faso	46
Mali	47
Sierra Leone	47
Liberia	48
Congo, Democratic Republic	59
Senegal	61
Gambia	64
Central African Republic	68
Benin	70
Horn Africa	
Egypt	7
Morocco	29

Source:http://fortaf.org/the_african_context.htm

Table 2. Estimated prevalence of iron deficiency in children under five years.

REGION	Estimated prevalence of iron deficiency (%) in children under under - five years.
Eastern and Southern Africa	
South Africa	37
Botswana	37
Namibia	42
Swaziland	47
Lesotho	51
Zimbabwe	53
Kenya	60
Zambia	63
Uganda	64
Tanzania	65
Rwanda	69
Angola	72
Madagascar	73
Eritrea	75
Mozambique	80
Malawi	80
Burundi	82
Ethiopia	85
Western and Central Africa	
Gabon	43
Congo	55
Niger	57
Cameroun	58
Congo, Democratic Republic	58
Liberia	69
Nigeria	69
Senegal	71
Togo	72
Mauritania	74
Central African Republic	74
Gambia	75
Chad	76
Mali	77
Benin	82
Burkina Faso	83
Guinea Bissau	83
Sierra Leone	86
Horn Africa	
Egypt	31
Morocco	45

Source: http://fortaf.org/the_african_context.htm

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A Composite Study of Coeliac Trunk in 30 Adult Human Cadavers - its Clinical Implications

By Ambica Wadhwa, Sandeep Soni
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Abstracts - Variations of origin and course of arteries of different organs are not only of anatomical and embryological interest but also of practical and clinical importance when these variations can be the agents of pathological conditions, or in surgery when knowledge of them can result in more accurate treatment. With the development of techniques of arteriography, the knowledge of arteries and of their variations has acquired a special importance for correct interpretation of the different, and sometimes very complicated roentgenographic pictures. Anatomical variations involving the visceral arteries are common. However though variations in coeliac trunk are usually asymptomatic, they may become important in patients undergoing diagnostic angiography for gastrointestinal bleeding or prior to an operative procedure. Recognition of variations enables clinicians to distinguish features which merit further investigations or treatment from those which do not. Clinical implications of variations in this artery have been stressed upon.

Keywords: *Coeliac trunk, Gastric artery, Hepatic artery, Splenic artery.*

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A Composite Study of Coeliac Trunk in 30 Adult Human Cadavers – its Clinical Implications

Ambica Wadhwa [α], Sandeep Soni [Ω]

Abstract- Variations of origin and course of arteries of different organs are not only of anatomical and embryological interest but also of practical and clinical importance when these variations can be the agents of pathological conditions, or in surgery when knowledge of them can result in more accurate treatment. With the development of techniques of arteriography, the knowledge of arteries and of their variations has acquired a special importance for correct interpretation of the different, and sometimes very complicated roentgenographic pictures. Anatomical variations involving the visceral arteries are common. However though variations in coeliac trunk are usually asymptomatic, they may become important in patients undergoing diagnostic angiography for gastrointestinal bleeding or prior to an operative procedure. Recognition of variations enables clinicians to distinguish features which merit further investigations or treatment from those which do not. Clinical implications of variations in this artery have been stressed upon.

Keywords: *Coeliac trunk, Gastric artery, Hepatic artery, Splenic artery.*

I. Introduction

Anomalous blood vessels are always interesting from a purely scientific point of view, especially since they so often shed light on obscure problems of phylogeny and ontogeny. They may also be of considerable significance from a clinical or a surgical standpoint [1]. Anatomic variations involving the visceral arteries are common. While vascular anomalies are usually asymptomatic, they may become important in patients undergoing diagnostic angiography for gastrointestinal bleeding or prior to an operative procedure or transcatheter therapy [2]. The unusual embryological development of the ventral splanchnic arteries can lead to considerable variations in the origin of coeliac trunk. Close relation of short coeliacomesenteric trunk with median arcuate ligament and the tight tendinous ring around the aortic opening can cause compression of the trunk which may lead to post prandial periumbilical pain and surgical intervention in such a case may be associated with the risk of ligating the wrong vessel or severing an essential organ sustaining artery, danger of ischaemia, gangrene, leakage and bleeding from the site of repair [3]. since there is no anastomosis between the hepatic arteries, an injury to the hepatic artery during operation would result in hepatic damage with serious morbidity. Therefore, preoperative information on the anatomical features of the hepatic arteries is very important in hepatobiliary surgery [4]. Knowledge of the approximate level at which the splenic artery arises from the coeliac axis and its course should also be of help in defining the superior margin of the field when the splenic pedicle is to be treated in splenectomized Hodgkin's disease patients [5]. The purpose of the present study is to give a composite account of the celiac trunk with regard to its origin, vertebral level, sexwise distance from aortic bifurcation, length, branches and its variations encountered. The clinical implications of these variations are subsequently discussed.

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II. Material and Methods

The material for this study comprised of 30 well embalmed adult human cadavers of known sex obtained from the Department of Anatomy, Govt. Medical College, and Amritsar. They were serialized from 1-30 with suffix 'M' for male and 'F' for female. The abdominal cavity was opened by a cruciform incision passing through the whole hickness of the anterior abdominal wall. Flaps were reflected. The abdominal viscera i.e. stomach, intestines liver, pancreas and spleen were systematically removed according to Cunningham's Manual of Practical Anatomy [6]. The abdominal aorta was cleaned along its whole length and the origin of various branches was traced. The coeliac trunk was identified and its branches were cleaned. The coeliac trunk was studied with respect to the following parameters:

1. Vertebral level of origin.
2. Diameter of the artery.
3. Length of the artery.
4. Distance between origin of coeliac artery and the aortic bifurcation.
5. Branching pattern.

III. Results and Discussion

Anatomical variations involving the visceral arteries are common. However though variations in coeliac trunk are usually asymptomatic, they may become important in patients undergoing diagnostic angiography for gastrointestinal bleeding or prior to an operative procedure [2].

a) Origin:

i. Vertebral level

In the current study of coeliac trunk, it was arising from the aorta at the level of intervertebral disc between T12 and L1 in 22 cases (73.3%) and upper 1/3rd of L1 vertebra in 8 cases (26.6%). The findings were comparable to the study of Moncada et al [7] and Hofman and Watson [8] who concluded that the vertebral level ranged from upper third of T11 to L2 vertebra with a mean level opposite upper third of L1 vertebra. Slight variability in the vertebral level suggests that treatment planning for carcinoma stomach, pancreas and hepatobiliary tree should be individualised as the nodes at risk lie adjacent to this vessel.

ii. Distance from aortic bifucation

Cauldwell and Anson [9] defined the coeliac-bifurcation interdistance to represents the linear extent of abdominal aortic segment. In the present study the mean distance of origin of coeliac artery from the aortic bifurcation was 12.8cm with a range of 9.5cm to 12.8cm.

iii. Diameter at origin

The range of diameter was found to 7 mm to 14 mm with a mean of 11.5 mm, the findings comparable with the range of 8 mm to 16 mm given by Moncada et al [7].

iv. Length

The length of this artery ranged between 8mm and 21 mm with the maximum number of cases i.e. 17(56.6%) falling between 10mm to 13mm. Michels [10] in his study has given the range of length between 8mm to 40 mm. Cavdar et al [3] reported that a long coeliac trunk is always associated with a varied origin of left gastric artery from aorta, hepatic or splenic artery. However, they also reported one case in which a long coeliac trunk (43mm), the longest reported in literature gave origin to left gastric artery. Similar observations were made in the present study in 2 cases (6.6%) (17 M, 21 M) where the length of the artery was 20 mm and 21 mm respectively and the left gastric artery was arising from the splenic artery.

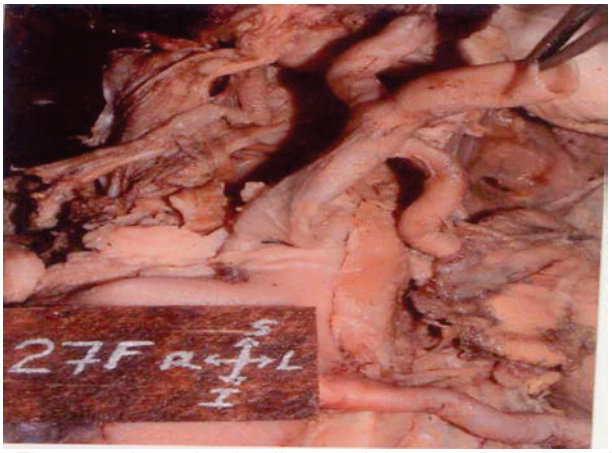

Figure 1– Length of celiac trunk is more than normal.

Table 1- Incidence of length of coeliac trunk

Range of Length (mm)	Number of cases	Percentage
8 – 10	3	10.0
10 -12	9	30.0
12 -14	8	27.0
14 -16	2	6.6
16 -18	6	20.0
18 -20	0	0
20 -22	2	6.6
TOTAL	30	100

b) Branching pattern

According to **Moncada et al** [7], 89% of the coeliac arteries divide into left gastric, common hepatic and splenic arteries but variations in the arrangement are quite common. **Vandamme and Bonte** [11] in their angiographic study showed that only 86% of coeliac trunk showed the classical trifurcation whereas **Michels** [10] stated this percentage to be only 55%.

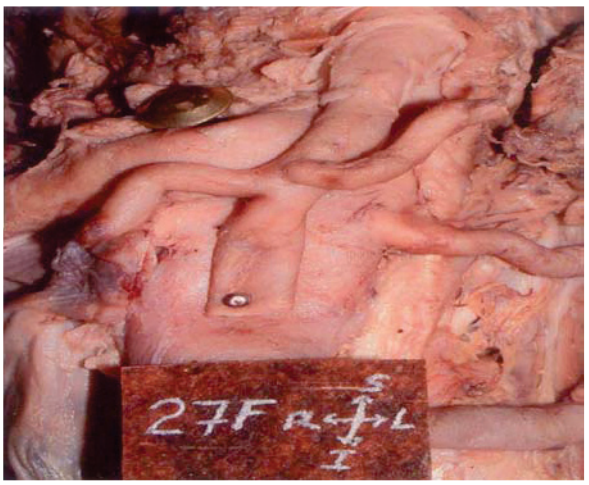

Figure 2- Typical trifurcation of coeliac trunk into left gastric artery, common hepatic artery and Splenic artery.

Author & Year	No. of subjects examined	Coeliac axis complete	Celiac axis incomplete	Coeliaco-mesenteric trunk	Celiac axis absent
Rossi & Cova (12)	102	86 (84.5%)	12 (11.7%)	2 (1.96%)	2 (1.96%)
Descomps (13)	50	44 (87.4%)	6 (12%)	0	0
Picquand (14)	50	41 (82%)	7 (14%)	1 (2%)	1 (2%)
Rio Branco (15)	50	45 (90%)	2 (4%)	1 (2%)	2 (4%)
Lipschutz (16)	83	60 (72.2%)	21 (25%)	2 (2.4%)	0
Eaton (17)	206	186 (90.2%)	19 (9.2%)	1 (0.6%)	0
Present Study	30	28 (93.3%)	2 (6.6%)	0	0

Table - 2 Comparison of incidence of mode of origin of branches of coeliac trunk.

Present study was thus in near agreement with the study of Eaton [17] but no caseof coeliaco-mesenteric trunk was found although there was approximation of the celiac and superior mesenteric artery in 2 cases (16 M, 20 M) without loss of their topographical integrity as they emerged from the aorta. This close relation with a large median arcuate ligament of the diaphragm may cause compression syndrome of coeliac trunk leading to post-prandial periumbilical pain [3].

Lipshutz [16] gave a detailed account of coeliac trunk based on the mode of origin and distribution of gastric, splenic and hepatic arteries and classified his findings into 4 types.

Type I: (75% cases) coeliac axis was the common trunk of origin for the gastric splenic and hepatic arteries.
Type II: (15% cases), the hepatic and splenic artery arose from the coeliac trunk but left gastric artery had a varied origin either from hepatic artery or directly from abdominal aorta.
Type III: (6% cases), the gastric and hepatic arteries took origin from celiac axis, but the splenic artery was a separate branch from abdominal aorta.
Type IV: (4% cases), coeliac axis was the trunk of origin for gastric and splenic arteries, but hepatic artery occurred as a separate branch directly from abdominal aorta.

Table 3- Comparison of the mode of origin of branches of coeliac trunk

Author	Year	No. of specimens	Type I	Type II	Type III	Type IV
Rossi & Cova (12)	1904	55	48	6	0	1
Picquand (14)	1910	50	37	5	3	4
Descomps (13)	1910	50	28	16	0	5
Rio Branco (15)	1912	50	30	15	3	1
Lipschutz (16)	1917	83	41	21	3	12
Eaton (17)	1917	206	140	47	10	9
Present study	2004	30	28	2	0	0

In the present study, type I coeliac axis was found in 28 cases (94%) and type II coeliac axis was found in 2 cases (6%) cases in which the left gastric artery arose from the abdominal aorta. According to Eaton [17] knowledge of type II coeliac trunk decreases the risk of error and inadvertent ligation of other structures. Additionally, it is necessary to recognize this abnormality during diagnostic angiography and prior to transcatheter intervention. Knowledge of variations in the level of origin of splenic artery, its calibre and course is helpful in defining the superior margin of the field when splenic pedicle is to be treated in splenectomized hodgkin's disease patients [18].

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Manuscript submission is a systematic procedure and little preparation is required beyond having all parts of your manuscript in a given format and a computer with an Internet connection and a Web browser. Full help and instructions are provided on-screen. As an author, you will be prompted for login and manuscript details as Field of Paper and then to upload your manuscript file(s) according to the instructions.

To avoid postal delays, all transaction is preferred by e-mail. A finished manuscript submission is confirmed by e-mail immediately and your paper enters the editorial process with no postal delays. When a conclusion is made about the publication of your paper by our Editorial Board, revisions can be submitted online with the same procedure, with an occasion to view and respond to all comments.

Complete support for both authors and co-author is provided.

4. MANUSCRIPT'S CATEGORY

Based on potential and nature, the manuscript can be categorized under the following heads:

Original research paper: Such papers are reports of high-level significant original research work.

Review papers: These are concise, significant but helpful and decisive topics for young researchers.

Research articles: These are handled with small investigation and applications

Research letters: The letters are small and concise comments on previously published matters.

5.STRUCTURE AND FORMAT OF MANUSCRIPT

The recommended size of original research paper is less than seven thousand words, review papers fewer than seven thousands words also.Preparation of research paper or how to write research paper, are major hurdle, while writing manuscript. The research articles and research letters should be fewer than three thousand words, the structure original research paper; sometime review paper should be as follows:

Papers: These are reports of significant research (typically less than 7000 words equivalent, including tables, figures, references), and comprise:

(a)Title should be relevant and commensurate with the theme of the paper.

(b) A brief Summary, "Abstract" (less than 150 words) containing the major results and conclusions.

(c) Up to ten keywords, that precisely identifies the paper's subject, purpose, and focus.

(d) An Introduction, giving necessary background excluding subheadings; objectives must be clearly declared.

(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, unless non-standard.

(f) Results should be presented concisely, by well-designed tables and/or figures; the same data may not be used in both; suitable statistical data should be given. All data must be obtained with attention to numerical detail in the planning stage. As reproduced design has been recognized to be important to experiments for a considerable time, the Editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned un-refereed;

(g) Discussion should cover the implications and consequences, not just recapitulating the results; conclusions should be summarizing.

(h) Brief Acknowledgements.

(i) References in the proper form.

Authors should very cautiously consider the preparation of papers to ensure that they communicate efficiently. Papers are much more likely to be accepted, if they are cautiously designed and laid out, contain few or no errors, are summarizing, and be conventional to the approach and instructions. They will in addition, be published with much less delays than those that require much technical and editorial correction.

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

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

Format

Language: The language of publication is UK English. Authors, for whom English is a second language, must have their manuscript efficiently edited by an English-speaking person before submission to make sure that, the English is of high excellence. It is preferable, that manuscripts should be professionally edited.

Standard Usage, Abbreviations, and Units: Spelling and hyphenation should be conventional to The Concise Oxford English Dictionary. Statistics and measurements should at all times be given in figures, e.g. 16 min, except for when the number begins a sentence. When the number does not refer to a unit of measurement it should be spelt in full unless, it is 160 or greater.

Abbreviations supposed to be used carefully. The abbreviated name or expression is supposed to be cited in full at first usage, followed by the conventional abbreviation in parentheses.

Metric SI units are supposed to generally be used excluding where they conflict with current practice or are confusing. For illustration, 1.4 l rather than 1.4 × 10-3 m3, or 4 mm somewhat than 4 × 10-3 m. Chemical formula and solutions must identify the form used, e.g. anhydrous or hydrated, and the concentration must be in clearly defined units. Common species names should be followed by underlines at the first mention. For following use the generic name should be constricted to a single letter, if it is clear.

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Abstract, used in Original Papers and Reviews:

Optimizing Abstract for Search Engines

Many researchers searching for information online will use search engines such as Google, Yahoo or similar. By optimizing your paper for search engines, you will amplify the chance of someone finding it. This in turn will make it more likely to be viewed and/or cited in a further work. Global Journals Inc. (US) have compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Key Words

A major linchpin in research work for the writing research paper is the keyword search, which one will employ to find both library and Internet resources.

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

Search engines for most searches, use Boolean searching, which is somewhat different from Internet searches. The Boolean search uses "operators," words (and, or, not, and near) that enable you to expand or narrow your affords. Tips for research paper while preparing research paper are very helpful guideline of research paper.

Choice of key words is first tool of tips to write research paper. Research paper writing is an art.A few tips for deciding as strategically as possible about keyword search:

- One should start brainstorming lists of possible keywords before even begin 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 research paper?" Then consider synonyms for the important words.
- It may take the discovery of only one relevant paper to let steer in the right keyword direction because in most databases, the keywords under which a research paper is abstracted are listed with the paper.
- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

Numerical Methods: Numerical methods used should be clear and, where appropriate, supported by references.

Acknowledgements: Please make these as concise as possible.

References

References follow the Harvard scheme of referencing. References in the text should cite the authors' names followed by the time of their publication, unless there are three or more authors when simply the first author's name is quoted followed by et al. unpublished work has to only be cited where necessary, and only in the text. Copies of references in press in other journals have to be supplied with submitted typescripts. It is necessary that all citations and references be carefully checked before submission, as mistakes or omissions will cause delays.

References to information on the World Wide Web can be given, but only if the information is available without charge to readers on an official site. Wikipedia and Similar websites are not allowed where anyone can change the information. Authors will be asked to make available electronic copies of the cited information for inclusion on the Global Journals Inc. (US) homepage at the judgment of the Editorial Board.

The Editorial Board and Global Journals Inc. (US) recommend that, citation of online-published papers and other material should be done via a DOI (digital object identifier). If an author cites anything, which does not have a DOI, they run the risk of the cited material not being noticeable.

The Editorial Board and Global Journals Inc. (US) recommend the use of a tool such as Reference Manager for reference management and formatting.

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Tables: Tables should be few in number, 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. Vertical lines should not be used.

Figures: Figures are supposed to be submitted as separate files. Always take in a citation in the text for each figure using Arabic numbers, e.g. Fig. 4. Artwork must be submitted online in electronic form by e-mailing them.

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Even though low quality images are sufficient for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit (or e-mail) EPS (line art) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings) in relation to the imitation size. 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.

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Upon approval of a paper for publication, the manuscript will be forwarded to the dean, who is responsible for the publication of the Global Journals Inc. (US).

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the search? Will I be able to find all information in this field area? If the answer of these types of questions will be "Yes" then you can choose that topic. In most of the cases, you may have to conduct the surveys and have to visit several places because this field is related to Computer Science and Information Technology. Also, you may have to do a lot of work to find all rise and falls regarding the various data of that subject. Sometimes, detailed information plays a vital role, instead of short information.

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3. Think Like Evaluators: If you are in a confusion or getting demotivated that your paper will be accepted by evaluators or not, then think and try to evaluate your paper like an Evaluator. Try to understand that what an evaluator wants in your research paper and automatically you will have your answer.

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

12. Make all efforts: Make all efforts to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in introduction, that what is the need of a particular research paper. Polish your work by good skill of writing and always give an evaluator, what he wants.

13. Have backups: When you are going to do any important thing like making research paper, you should always have backup copies of it either in your computer or in paper. This will help you to not to lose any of your important.

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16. Use proper verb tense: Use proper verb tenses in your paper. Use past tense, to present those events that happened. Use present tense to indicate events that are going on. Use future tense to indicate future happening events. Use of improper and wrong tenses will confuse the evaluator. Avoid the sentences that are incomplete.

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19. Know what you know: Always try to know, what you know by making objectives. Else, you will be confused and cannot achieve your target.

20. Use good quality grammar: Always use a good quality grammar and use words that will throw positive impact on evaluator. Use of good quality grammar does not mean to use tough words, that for each word the evaluator has to go through dictionary. Do not start sentence with a conjunction. Do not fragment sentences. Eliminate one-word sentences. Ignore passive voice. Do not ever use a big word when a diminutive one would suffice. Verbs have to be in agreement with their subjects. Prepositions are not expressions to finish sentences with. It is incorrect to ever divide an infinitive. Avoid clichés like the disease. Also, always shun irritating alliteration. Use language that is simple and straight forward. put together a neat summary.

21. 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 to your topic. You may also maintain your arguments with records.

22. Never start in last minute: Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

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

24. Never copy others' work: Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

25. Take proper rest and food: No matter how many hours you spend for your research activity, if you are not taking care of your health then all your efforts will be in vain. For a quality research, study is must, and this can be done by taking proper rest and food.

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

27. Refresh your mind after intervals: Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

28. Make colleagues: Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

29. **Think technically:** Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

30. Think and then print: When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

31. Adding unnecessary information: Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be

sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

32. Never oversimplify everything: To add material in your research paper, never go for oversimplification. This will definitely irritate the evaluator. Be more or less specific. Also too, by no means, ever use rhythmic redundancies. Contractions aren't essential and shouldn't be there used. Comparisons are as terrible as clichés. Give up ampersands and abbreviations, and so on. Remove commas, that are, not necessary. Parenthetical words however should be together with this in commas. Understatement is all the time the complete best way to put onward earth-shaking thoughts. Give a detailed literary review.

33. Report concluded results: Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

34. After 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 to 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 in 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 criterion for grading the final paper by peer-reviewers.

Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of 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 the 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 evade

- Insertion a title at the foot of a page with the subsequent text on the next page

- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

· Use standard writing style including articles ("a", "the," etc.)

· Keep on paying attention on the research topic of the paper

· Use paragraphs to split each significant point (excluding for the abstract)

· Align the primary line of each section

· Present your points in sound order

· Use present tense to report well accepted

· Use past tense to describe specific results

· Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives

· Shun use of extra pictures - include only those figures essential to presenting results

Title Page:

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

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The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript--must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing 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 approach 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. Yet, use comprehensive sentences and do not let go readability for briefness. You can maintain it succinct by phrasing sentences so that they provide more than 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 maintain the initial two items to no more than one ruling each.

- Reason of the study - 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 quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
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- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
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- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

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- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
- Shape the theory/purpose specifically - do not take a broad view.
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- Explain materials individually only if the study is so complex that it saves liberty this way.
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- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

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- Report the method (not 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 - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in 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 a 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. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.

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- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise 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 in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.

- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to 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 part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

Discussion:

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a 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 implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly 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 with prospect, and let it drop at that.

- Make a decision if each premise is supported, 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 the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One 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?
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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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