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Highlights

Renal Vein Thrombosis

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Discovering Thoughts, Inventing Future

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GLOBAL JOURNAL OF MEDICAL RESEARCH: F Diseases Cancer, Ophthalmology & Pediatric

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Renal Vein Thrombosis as a Presenting Sign in a Boy with Lupus Nephritis- Case Report

By Ester Forer, MD, Raouf Nassar MD, Eduard Ling MD, PhD, Ruth Schreiber MD, Ana Tobar MD, Amit Nahum MD, PhD & Michael Geylis, MD

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Abstract- Renal vein thrombosis (RVT) is a rare phenomenon that involves the renal veins or their tributaries. Beyond the neonatal age, it can be associated with several conditions such as coagulopathy, nephrotic syndrome, and autoimmune diseases, which include antiphospholipid syndrome and systemic lupus erythematosus (SLE).

We describe a case of an 11-year-old boy presenting with abdominal pain and diagnosed with renal vein thrombosis as a presenting manifestation of membranous lupus nephritis. RVT as a presenting sign of SLE has been reported only in few cases and, to our knowledge, never in a male pediatric patient. Thrombotic complications responded to intense immunosuppression combined with an anticoagulation treatment regimen, but nephrosis persisted. High degree of suspicion is required for prompt diagnosis of this rare and clinically challenging condition.

Keywords: renal vein thrombosis, systemic lupus erythematosus, membranous lupus nephritis, pediatric case report, rheumatology.

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Renal Vein Thrombosis as a Presenting Sign in a Boy with Lupus Nephritis- Case Report

Renal Vein Thrombosis in Pediatric Lupus Case

Ester Forer, MD^α, Raouf Nassar MD[°], Eduard Ling MD, PhD^ρ, Ruth Schreiber MD^ω, Ana Tobar MD[¥], Amit Nahum MD, PhD[§] & Michael Geylis, MD^x

Abstract- Renal vein thrombosis (RVT) is a rare phenomenon that involves the renal veins or their tributaries. Beyond the neonatal age, it can be associated with several conditions such as coagulopathy, nephrotic syndrome, and autoimmune diseases, which include antiphospholipid syndrome and systemic lupus erythematosus (SLE).

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Keywords: renal vein thrombosis, systemic lupus erythematosus, membranous lupus nephritis, pediatric case report, rheumatology.

I. INTRODUCTION

Cute onset abdominal pain with hematuria is one of the most challenging presentations in pediatric practice. The differential diagnosis includes nephrolithiasis, pyelonephritis, trauma, and, rarely, renal vein thrombosis (RVT)¹. The term renal vein thrombosis is used to describe the thrombus in the major renal veins or their tributaries. This condition may present either with acute symptoms or go unnoticed until complications develop such us pulmonary embolism or worsening renal function. The most common pediatric form of RVT is neonatal, usually following severe dehydration or prolonged hypotension. It is a rare entity characterized clinically by the triad of gross hematuria, flank mass, and thrombocytopenia². RVT in older children and adults can be associated with several conditions such as coagulopathy, trauma, infection, autoimmune diseases, including SLE, but most commonly with nephrotic syndrome with an incidence of 21.4% found in a large meta-analysis³⁻⁴.

Membranous nephropathy (MN) is an immunecomplex-mediated entity and is a common cause of nephrotic syndrome in adults but occurs less frequently in children (I%–2%)⁵. MN is most often a primary disease but could develop secondary to infections such as hepatitis B, exposure to medications, or systemic lupus erythematosus (SLE) which is defined as class V lupus nephritis.

SLE is a multisystem autoimmune disease characterized by a broad spectrum of clinical manifestations and a multitude of laboratory abnormalities. Up to 10-20% of SLE patients present in childhood. Worldwide prevalence of pediatric SLE rates ranges from 3.3 to 8.8 per 100,000 children and adolescents, depending upon their ethnic distribution⁶.

Lupus nephritis is one of the cardinal manifestations of SLE, occurring more often in children than in adults. Renal involvement is present in up to two-thirds of pediatric SLE patients⁷ including direct glomerular injury or thrombotic vascular involvement, such as RVT. Patients with SLE may not always present with multi-organ clinical manifestations and serologic findings simultaneously.

We describe here a case of an 11-year-old boy with SLE that initially presented with RVT.

II. Case Presentation

A previously healthy 11-year-old boy presented to the ER with a history of 3 days of left flank pain and vomiting. He had no fever, dysuria, or any urinary complaints.

Upon admission, his blood pressure was elevated - 139/101 mmHg, with the rest of his vital signs normal for age. His physical examination revealed abdominal tenderness on the left upper quadrant, and was otherwise unremarkable, with no palpable masses or edema. Laboratory tests showed normal hemoglobin, neutrophilia with an absolute neutrophil count of $9.6*10^3/\mu$ l, with low platelets count-of $85*10^3/\mu$ l. Renal

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function tests were within normal range with a serum creatinine of 0.71 mg/dl (Estimated GFR 114 ml/min/1.73m²). He had hypoalbuminemia of 2.7 (3.4-5) g/dL. Coagulation studies revealed normal PT/PTT with elevated fibrinogen- 682 mg/dl (200-500) and elevated D-Dimer; > 10000 ng/ml (0-500).

Urinalysis showed microscopic hematuria with few casts on microscopy, trace leukocytes and nephrotic range proteinuria with total protein to creatinine ratio (T/C) of 14000 mg/gr (normal <200).

Urgent computed tomographic (CT) scan revealed increased left renal vein density suspicious for RVT (Fig. 1A). CT angiography demonstrated thrombosis of renal vein extending to the inferior vena cava (Fig. 1B) and a massive infarct of the left kidney.

On repeated focused anamnesis, the boy had a history of a migratory bilateral knee pain and a facial rash with photosensitivity that quickly resolved several months before admission. Family history reveals maternal aunt with a history of recurrent miscarriages. There was no other family history suggestive of coagulopathy or autoimmunity.

Immunological workup revealed mild hypocomlementemia; C3 of 79mg/dL, and C4 of 9mg/dL (respective normal range: 90-180 and 10-40 mg/dL). Antinuclear antibody (Ab) titer>1:160, anti– double-stranded DNA Ab was positive both in ELISA study (Ab titer > 300, normal range 0-6 IU/ml) and upon immunofluorescent staining using *Crithidialuciliae* technique, anti–Sm and anti-RNP antibodies as well as direct Coombs test were also positive.

At that time, the patient fulfilled the validated pediatric diagnostic criteria of SLE⁸. Immunosuppressive therapy was initiated in the form of pulsemethyl prednisolone therapy (3 doses of 750 mq methylprednisolone, which is 15 mg/kg/dose, followed by 50 mg/day PO Prednisone). Hydroxychloroquine and mycophenolate mofetil (550 mg/m²/dose BID) treatment was initiated. He was also treated by SC Enoxaparin injection (1 mg/kg twice daily initially, then monitored using an anti- Xa assay targeting 0.5-1 unit/ml).

The thrombophilia studies have not rendered diagnostic information: serum lupus anticoagulant and anti-cardiolipin antibodies concentrations were only mildly elevated, and not consistent with the presumed diagnosis of APLA secondary to SLE. However, Lipoprotein A as well as IX, X, and XIII clotting factors indices were high. Protein C activity, protein S antigen, and Antithombin III were normal.

After few days the patient developed edema of lower extremities concomitant with worsening proteinuria and decreasing serum albumin. Tacrolimus was added with targeted trough blood levels of 7-9 ng/ml, as well as ACE inhibitors.

Renal biopsy is generally indicated for SLE nephritis. However, it was deferred because the risk of both thrombotic and bleeding complications seemed to overweight the benefits from pathological grading. Two months later, the thrombus in the left renal vein resolved on the following renal duplex study. DMSA renal scan revealed normally- appearing kidneys with left kidney functioning even mildly better compared to the right (53% vs 47%). At that time, we performed US- guided kidney biopsy. Pathological studies were compatible with membranous lupus nephritis (MLN) with focal interstitial fibrosis and tubular atrophy (Fig 2).

After 3 months, the patient's immunological studies improved significantly with complement returning to the normal level and a significant decrease of anti-double-stranded DNA Ab titer, which remained only mildly elevated - 32 UI/ml on last analysis. However, severe nephrotic syndrome persisted with significant weight gain and marked edema and hypoalbuminemia with serum albumin as low as 1.5 gr/dl. He was treated by intermittent IV albumin infusions on top of combined immunosuppression and supportive therapy, including diuretics, with mild improvement. After seven months of therapy, the patient received two doses of IV Rituximab 1000 mg/dose, and MMF was discontinued without significant change in his condition.

Anticoagulation was discontinued after three months of therapeutic and three more months of prophylactic therapy.

After one year of treatment, the boy maintains normal renal function but still has nephrotic range proteinuria with a last T/C of 3600 mg/gr and serum albumin of 2.7 mg/dl.

III. DISCUSSION

We describe here the case of a 11-year-old boy with SLE and membranous SLE nephritis which presented as RVT. Clinically suspected and biopsyproven membranous lupus nephritis was probably the main pathophysiological factor for this unusual presentation.

SLE manifests with a variety of clinical and laboratory features, which may differ according to age and gender. Pediatric SLE, while often presents similarly to adult-onset disease, may also present with more unusual or more severe features⁹.

Thrombotic complications of SLE significantly affect morbidity and mortality. The presence of antiphospholipid antibodies detected in up to half of SLE patients, both adults, and children, has long been recognized as the main risk factor for the development of thrombotic complications of the disease. However, SLE patients without SLE have a two-fold higher risk of thrombosis as well¹⁰. The pathogenesis mechanism of the latter phenomenon is unclear¹⁰. Among the thrombotic complications, deep vein thrombosis as well as cerebral vein thrombosis and arterial events are most common. RVT is a relatively rare phenomenon described in less than 1 to 3.6% of SLE patients in a few small studies¹¹ and usually occurs in SLE patients with thrombophlebitis and nephrotic syndrome. Thrombotic episodes, including RVT, are more common in both primary MN and MLN. They are found to occur in 3% to 23% of patients with MLN and are probably influenced by the proportion of patients with persistent nephrosis¹². Proteinuria and severe hypoalbuminemia are the main risk factors for thrombosis in both primary and secondary MN, which we assume was the major risk factor in our patient who was negative for antiphospholipid antibodies.

RVT as a presenting symptom of SLE was described in a few case reports in adults¹²⁻¹³. The data regarding pediatric patients is extremely scarce, with only two cases described to-date, when RVT preceded the development of clinical and serological features of SLE: in 11 and 9-year-old girls, respectively¹⁴⁻¹⁵.

To the best of our knowledge, we described here the first case of SLE presenting as an isolated RVT in an antiphospholipid antibody- negative boy.

We suggest to consider RVT in differential diagnosis of all patients presenting with abdominal or flank pain. If diagnosed, prompt evaluation for possible underlying conditions, including nephrotic syndrome and SLE is indicated in male and female patients.

Delayed treatment raises the risk of renal and thrombotic complications, while prompt diagnosis may lead to a better outcome in patients with this challenging condition.

Conflicts of interest: The authors declare no conflict of interest.



Fig. 1A: CT scan image with no contrast showing increased left renal vein density, suspicious as RVT (arrow), axial view



Fig. 1B: CT angiography image showing thrombosis of the left renal vein, extending to the inferior vena cava (arrow). Note the enlarged, swollen kidney, indicative of a vast infarct (arrowhead)

Figure 1: Abdominal imaging



Figure 2: Renal biopsy

Features compatible with membranous lupus nephritis with focal interstitial fibrosis and tubular atrophy

- a. Pas stain (x100): diffuse thickening of the glomerular basement membrane (GBM)
- b. Silver stain (x200): Thickening of the glomerular basement membrane (arrow)
- c. IF: Granular pattern of IgG stain is present (++) with focal mesangial stain
- d. EM: Thick GBM with diffuse subepithelial and intra-membranous electron- dense deposits (asterisk).

References Références Referencias

- 1. Brown D, Reidy K. Approach to the child with hematuria. Ped Clinics. 2019, 66:15-30. doi: 10.1016/j.pcl.2018.08.003
- Niada F, Tabin R, Kayemba-Kaye's S. Spontaneous neonatal renal vein thromboses: Should we treat them all? A report of five cases and a literature review. Peds Neonatol 2018, 59:281-287. doi: 10.1016/j.pedneo.2017.09.009
- Kumar R, Kerlin T. Thrombosis of the abdominal veins in childhood. Frontiers Peds. 2017, doi: 10.3389/fped.2017.00188
- Wysokinski W, Gosk-Bierska I, Greene E, Grill D, Wiste H, McBane R 2nd. Clinical characteristics and long-term follow-up of patients with renal vein thrombosis. Am J Kidney Dis 2008: 51:224-232. doi: 10.1053/j.ajkd.2007.10.030

- Avner ED, Harmon WE, Niaudet P, Yoshikawa N, Emma F GS. Valentini RP. Membranous Nephropathy in Children. In: Pediatric Nephrology 7th ed Berlin, Heidilberg, Springer-Verlag GmbH. 2016. p. 1055–75.
- Kamphuis S, Silverman ED. Prevalence and burden of pediatric-onset systemic lupus erythematosus. Nat Rev Rheumatol. 2010 Sep; 6[9]: 538–46.doi: 10.1038/nrrheum.2010.121
- Barsalou J, Levy DM, Silverman ED. An update on childhood-onset systemic lupus erythematosus. Curr Opin Rheumatol. 2013 Sep; 25[5]: 616–22. doi: 10.1097/BOR.0b013e328363e868.
- Aringer M, Costenbader K, Daikh D, Brinks R, Mosca M, Ramsey-Goldman R, et al. 2019 European League Against Rheumatism/American College of Rhematology classification criteria for systemic lupus erythematosus. Arth Rheum, 2019, 71: 1400-1412doi: 10.1002/art.40930

- Feng J-B, Ni J-D, Yao X, Pan H-F, Li X-P, Xu J-H, et al. Gender and age influence on clinical and laboratory features in Chinese patients with systemic lupus erythematosus: 1,790 cases. Rheumatol Int. 2010 Jun; 30[8]: 1017–2. doi: 10.1007/s00296-009-1087-0
- 10. De Groot P, de Laat B. Mechanisms of thrombosis in systemic lupus erythematosus and antiphospholipid syndrome. Best pract res Clin Rheumatol, 2017, 31:334-341.doi: 10.1016/j.berh. 2017.09.008
- 11. Driest KD, Sturm MS, O'Brien SH, Spencer CH, Stanek JR, Ardoin SP. Factors associated with thrombosis in pediatric patients with systemic lupus erythematosus. Lupus [Internet]. 2016 Mar 14; 25[7]:749–53. doi: 10.1177/0961203316638164
- 12. Mintz G, Acevedo-Vazquez E, Gutierrez-Espinosa G, Avelar-Garnica F. Renal vein thrombosis and inferior vena cava thrombosis in systemic lupus erythematosus. Frequency and risk factors. Arthritis Rheum. 1984 May; 27(5):539–44. doi: 10.1002/art.1780270509
- Onishi S, Ichiba T, Nagata T, Naito H. Unusual initial presentation of SLE: fever and flank pain with renal vein thrombosis. Am J Emerg Med. 2016 May; 34(5): 937.e1-2. doi: 10.1016/j.ajem.2015.09.019
- 14. Skalova S, Minxova L, Lukes A, Dedek P, Tousovska K, Podhola M. Renal vein thrombosis with pulmonary embolism: first manifestation of lupus nephritis. Vol. 47, Journal of paediatrics and child health. Australia; 2011. p. 315–6. doi: 10.1111/j.1440-1754.2011.02091.x
- 15. Ma AL, Lai W, Chiu M. An unusual case of loin pain and nephritis. Clin Exp Nephrol. 2010 Feb; 14[1]: 75–9. doi: 10.1007/s10157-009-0222-2.

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Insulin Pump Therapy

By Ismat Abdelrhman Alborhan Mohammed

Introduction- The conception of administer continuous insulin appeared in the United States in early 1960s. Dr Arnold Kadish was the first individual who intended the primary closed-loop insulin pump tool that functioned by administration of continuous insulin to the patient accompanied with automatic blood glucose detecting. Practically this device was unsuitable because of its oversize.[1] The earliest certified pump for marketable use accessible in 1983 was branded as Nordisk Infuser. In 1970s, Pickup and Keen practice transportable insulin pump device for CSII in type 1 diabetes mellitus individuals.[2][3] In the year 1976 the world saw the invention of first insulin pumps.[4] Recently insulin pumps manufactures shows more improvement. It became less in size and more practical for usage. The American Diabetes Association identify that CSII is as unhurt as multiple injection therapy, when suggested measures are monitored.[5]

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Insulin Pump Therapy

Ismat Abdelrhman Alborhan Mohammed

I. INTRODUCTION

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- Basal Insulin, which is constant & continuous calculated dosage.
- Bolus Insulin, which is a mealtime dose.

Common indications and contraindications for insulin pump treatment in diabetic individuals:[7][8]

Indications	Contraindications
Repeated events of sever hypoglycaemia with multiple daily injections	Diabetes with psychiatric disorders
Patient failure to hits HbA1c goal inspite of MDI and HbA1c remains \geq 8.5%.	Reluctance to self-monitor of blood sugar
Individual with diabetic complications such as neuropathy, nephropathy	shortage of time and motivation to maintain lycaemic control
Patient with considerable dawn phenomenon	Cannot be proficient on crucial practical part of insulin pump treatment
Diabetes individual looking for improved quality of life.	
Patients demanding extraordinary insulin dose.	
Pregnancy complicated with diabetes	

It is probable that approximately 375,000US patients use the insulin pump, with this figure likely to increase.[9] It has been used for more than 35 years.[10]

The FDA permitted Medtronic's MiniMed 530G with Enlite in 2013, under its novel Artificial Pancreas Device System-Threshold Suspend guidelines, as the earliest device that adjust insulin release in reaction to CGM sensor data.[11] Threshold suspend means that when CGM sensor glucose levels decline below a specified threshold, the pump warnings and hangs insulin delivery for 2 hours. The usage of this device has been revealed to lessen nocturnal hypoglycaemia.[12]

Exact Features of Patients Who Are Not Suitable Candidates for Insulin Pump Use:[13]

- Reluctant to implement MDI doses 3-4 daily, regular SMBG more than 4 daily and carbohydrate counting
- Absence of inspiration to accomplish close-fitting glucose control
- History of psychiatric disorders (e.g., psychosis, severe anxiety, or depression)
- Significant doubts about pump usage affecting lifestyle (e.g., contact sports or sexual activity)
- Impracticable hopes of pump therapy (e.g., faith that it reduces the need to be in charge for diabetes controlling)

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Indication of CSII for paediatric diabetic patients issued in 2006 in Berlin on conference attended by specialists in paediatrics diabetes:[14]

- Raised HbA1c levels on injection remedy
- Recurrent, severe hypoglycaemia
- Usually unsettled glucose levels
- A management schedule that compromises lifestyle
- Microvascular and macrovascular complications

Perfect nominees for paediatrics CSII include patients with interested relatives who are dedicated to observing blood glucose minimum 4 times per day and know show estimate bolus insulin doses. a) Insulin Pump Treatment for diabetes during Pregnancy

Due to the fact that pregnancy is a state where hastened level of ketone bodies in the women.[15] Minimum hours of insulin intermission can cause hyperglycaemia and ketosis. High ketone bodies during pregnancy lead to fetal death.[16] There is no long acting insulin in the pump infusion, there for to be safe side a little dose of neutral protamine Hagedorn(NPH) or insulin detemir may be administered at night to guarantee that there will never be a deficiency of insulin in circulation if the needle get out.13

Advantages and Disadvantages of Insulin Pump Therapy: [17][18][19][20]

Advantages	Disadvantages
<i>Improve glycaemic control</i> which was proved by the Diabetes Control and Complications Trial (DCCT)	Numerous checking of blood sugars
Accurate insulin administration	Uncomfortable, during sports or sexual life
Lessening in dangerous hypoglycaemia and hypoglycaemic unawareness.	Connected to device 24 hours a day
Maintain blood sugar during pregnancy	Hazard of machine-driven insufficiency may lead to diabetic ketoacidosis
Better quality of life pliancy of lifestyle	Too expensive
Valuable I in Patients with Lipohypertrophy	Shortage of expert team
Decrease needle phobia	Infusion place reactions such as cannula site
Assisting treat the dawn phenomenon	Hazard of minor dermatologic changes and skin infection

Calculations for Insulin Pump Settings:[21]

There are two methods for calculating Pump total daily dose (TDD):

- $\Box \quad \text{Pre-pump TDD} \times 0.75$
- Patient weight: kg \times 0.5 orlb \times 0.23

Pump dose modification:

- □ Basal Rate: (Pump total daily dose × 0.5)/24 h Carbohydrate Ratio: 450/total daily dose
- Insulin Sensitivity Factor: 1700/Pump total daily dose TDD

Causes of in explicable high blood sugar in patient using insulin Pump: [22]

- 1. Insulin Pump
- Basal rate set imperfectly
- Pump failure; syringe is not progressing
- 2. Syringe
- Insulin outflow

- Needle becomes displaced from instilling place
- □ Air/blood is in the infusion set
- Needle has been positioned in scar tissue; insulin cannot be supplied, and a high pressure alarm will sound
- □ Twisted tubing precludes insulin transfer
- □ Insulin obstruction due to use of non-buffered insulin in the infusion set
- 3. Infusion Site
- Soreness, irritation, inflammation will modify insulin absorption
- Primary systemic infection lead to insulin resistance
- 4. Insulin
- Insulin has been unprotected to risky hotness and has been deactivated
- □ Insulin has expired
- □ In appropriate meal time bolus of insulin was used

II. Conclusion

In diabetic patient, the ideal way to administer insulin is in away mimic pancreas releases it. The perfect method to administer it in that way is insulin pump more than any other methods.[23] Nowadays the growing acceptance of insulin pump treatment has positioned more responsibility on medical experts and nonmedical personnel who do not have diabetes speciality, like accident and emergency department, hospital staff and school teachers. This revolution necessitates that these specialist strain themselves with this form of insulin supply.[24]

References Références Referencias

- 1. Alsaleh FM, Smith FJ, Keady S, Taylor KMG. Insulin pumps: from inception to the present and toward the future. J Clin Pharm Ther [Internet]. 2010 Apr [cited 2015 Jul 15]; 35(2): 127–38. Available from: http://www.ncbi.nlm.nih.gov/pubmed/20456732
- Bode BW, Sabbah HT, Gross TM, Fredrickson LP, Davidson PC. Diabetes management in the new millennium using insulin pump therapy. Diabetes Metab Res Rev [Internet]. Jan [cited 2015 Jul15]; 18 Suppl1: S14–20. Available from: http:// www.ncbi. nlm.nih.gov/pubmed/11921425
- Appendix 2: The History of Insulin Pumps «Diabetes Support Information Exchange [Internet]. [cited 2015 Jul 15]. Available from: http://www.diabetessupport.org.uk/info/?p=287
- 4. History of Diabetes: American Diabetes Association® [Internet]. [cited 2015 Jul 14]. Available from: http://www.diabetes.org/researchand-practice/student-resources/history-of-diabetes. html
- 5. History of Insulin Pump Therapy|Advanced Therapeutics [Internet].[cited2015Jul 14]. Available from:http://www.advancedtherapeuticsuk.com/histo ry-insulin-pump-therapy
- 6. Insulin Pumps: American Diabetes Association® [Internet].[cited 2015 Jul 15]. Available from: http://www.diabetes.org/living-with-diabetes/treatment-and-care/medication/insulin/insulin-pumps.html
- 04_use_of_insulin_pump.pdf[Internet].[cited2015Jul 15].Availablefrom:http://www.japi.org/july_2014_spe cial_issue/04_use_of_insulin_pump.pdf
- Management of type1 diabetes mellitus in children and adolescents [Internet]. [cited 2015 Jul 14]. Available from: http://www.uptodate.com.abc. cardiff.ac.uk/contents/management-of-type-1diabetes-mellitus-in-children-and-adolescents? source=preview&search=first+Insulin+pump&lang uage=en-US&anchor=H21&selectedTitle=2~150 #H21
- 9. U.S. Food and Drug Administration. General Hospital and Personal Use Medical Devices Panel. Insulin infusion pumps panel information. Available

at: http://www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/MedicalDevices/ MedicalDevicesAdvisoryCommittee/GeneralHospital andPersonalUseDevicesPanel/UCM203749.pdf.201 0.

- Bruttomesso D, Costa S, Baritussio A. Continuous subcutaneous insulin infusion (CSII) 30 years later: still the best option for insulin therapy. Diabetes Metab Res Rev.2009; 25:99-111.
- 11. U.S. Food and Drug Administration. MiniMed 530GFDA Approval Letter. Available at: http:// www.accessdata.fda.gov/cdrh_docs/pdf12/p12001 0a.pdf2013.
- 12. Bergenstal RM, Klonoff DC, Garg SK, et al. Threshold-based insulin-pump interruption for reduction of hypoglycemia. NEnglJMed.2013; 369: 224-232.
- 13. Insulin-pump-management cs.pdf [Internet]. [cited2015Aug2]. Available from: https://www.aace. com/files/insulin-pump-management-cs.pdf
- 14. Phillip M, Battelino T, Rodriguez H, Danne T, Kaufman F. Use of insulin pump therapy in the pediatric age-group: consensus statement from the European Society for Paediatric Endocrinology, the Laws on Wilkins Pediatric Endocrine Society, and the International Society for Pediatric and Adolescent Diabetes, endors. Diabetes Care [Internet]. 2007Jun1[cited2015Aug5]; 30(6): 1653– 62. Available from: http:// care.diabetesjournals.org/ content/30/6/ 1653.long
- 15. Buchanan TA, Metzger BE, Freinke IN. Accelerated starvation in late pregnancy: a comparison between obese women with and without gestational diabetes mellitus. AmJObstetGynecol.1990; 162:1015-1020.
- Jovanovic L, Druzin M, Peterson CM. Effect of euglycemia on the outcome of pregnancy in insulindependent diabetic women as compared with normal control subjects. Am J Med. 1981; 71: 921-927.
- 17. CSII: benefits and drawbacks-Management-Diapedia, The Living Textbook of Diabetes [Internet]. [cited 2015 Jul 15]. Available from: http://www.diapedia.org/management/csii-benefitsand-drawbacks
- Management of type1 diabetes mellitus in children and adolescents [Internet]. [cited 2015 Jul 14]. Available from: http://www.uptodate.com.abc. cardiff.ac.uk/contents/management-of-type-1-diabetes-mellitus-in-children-and-adolescents?source= preview&search=first+Insulin+pump&language=e n-US&anchor=H21&selectedTitle=2~150#H21
- 19. Continuous subcutaneous insulin infusion for the treatment of diabetes mellitus | Guidance and guidelines | NICE.NICE; [cited2015Jul28]; Available from: https://www.nice.org.uk/guidance/ta151
- 20. Model of care document.pdf[Internet].[cited 2015 Jul 28]. Available from: http://www.hse.ie/eng/about/

Who/clinical/natclinprog/paediatricsandneonatology programme/paeddiabetes/modelofcaredocument.p df

- 21. Bode BW, Kyllo J, Kaufman FR. Pumping Protocol: A Guide to Insulin Pump Initiation. Medical Education Academia.2013. Medtronic.
- 22. A Primary Care Approach to Continuous Subcutaneous Insulin Infusion [Internet]. [cited 2015 Jul29]. Available from: http://journal.diabetes.org/ clinical diabetes/V17N31999/Pg113.htm
- 23. Basics of Insulin Pump Therapy.pdf[Internet]. [cited2015Aug6]. Available from: https://www. medtronicdiabetes.com/sites/default/files/library/sup port/BasicsofInsulinPumpTherapy.pdf
- 24. Boyle ME, Seifert KM, Beer KA, et al. Guidelines for application of continuous subcutaneous insulin infusion(insulin pump) therapy in the perioperative period. JDiabetesSciTechnol.2012;6:184-190



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Performance of Cox Proportional Hazards and Accelerated Failure Time Models in the Tuberculosis/HIV Co-Infected Survival Data By Ogungbola O. O., Akomolafe A. A & Musa A. Z

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Abstract- Cox model and accelerated failure time models are widely used in modelling of survival data for various diseases. This research compares the performance of Cox proportional hazards models and accelerated failure time (AFT) models using TB/HIV co-infected survival data. The tools used are AFT model plot, the log-likelihood test, Akaike Information Criterion (AIC), Log rank test for comparing all survival variables. The research established that AFT model provides a better description of the dataset as compared with Cox PH models because it allows prediction of Hazard function, survival functions as well as time ratio. Moreover, Cox proportional hazard model does not fit appropriately when compared with AFT model; thereby provide less appropriate description of the survival data. Hence, it is better for researchers of TB/HIV co-infection to consider AFT model even if the proportionality assumption of the Cox model is satisfied.

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GJMR-F Classification: NLMC Code: WF 200

PERFORMANCE OF COXPROPORTIONAL HAZARDSANDACCE LERATE DEATLURETIMEMODELS IN THE TUBER CULOS ISHIVCOINFECTE OSURVIVALDATA

Strictly as per the compliance and regulations of:



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Performance of Cox Proportional Hazards and Accelerated Failure Time Models in the Tuberculosis/HIV Co-Infected Survival Data

Ogungbola O. O. °, Akomolafe A. A ° & Musa A. Z. ^P

Abstract- Cox model and accelerated failure time models are widely used in modelling of survival data for various diseases. This research compares the performance of Cox proportional hazards models and accelerated failure time (AFT) models using TB/HIV co-infected survival data. The tools used are AFT model plot, the log-likelihood test, Akaike Information Criterion (AIC), Log rank test for comparing all survival variables. The research established that AFT model provides a better description of the dataset as compared with Cox PH models because it allows prediction of Hazard function, survival functions as well as time ratio. Moreover, Cox proportional hazard model does not fit appropriately when compared with AFT model; thereby provide less appropriate description of the survival data. Hence, it is better for researchers of TB/HIV coinfection to consider AFT model even if the proportionality assumption of the Cox model is satisfied.

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I. INTRODUCTION

🥆 urvival analysis is a statistical method for data analysis where the length of time, t_0 corresponds to the time period from a well-defined start time until the occurrence of some particular event or endpoint t_c , i.e. $t = t_c - t_0$, Ata and Sozer (2007). It is a common outcome measure in medical studies for relating treatment effects to the survival time of the patients. In these cases, the typical start time is when the patient first received the treatment, and the end point is when the patient died or was lost to follow-up. These developments have led to the introduction of several new extensions to the original model. However the Cox PH model may not be appropriate in many situations and other modifications such as stratified Cox model or Cox model with time-dependent variables can be used for the analysis of survival data. The AFT model is another alternative method for the analysis of survival data. Hence, the importance is to compare the performance of the Cox models and the AFT models. This will be studied by means of real dataset which is from a cohort of TB/HIV co-infected patients managed in tertiary Directly Observed Treatment Short (DOTS)

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e-mails: ooogungbola@futa.edu.ng, aaakomolafe@futa.edu.ng Author p: National Institute of Medical Research, Yaba, Lagos State. e-mail: sola dele@yahoo.com Course centre for a period of six months among the Nigerian adults.

Cox regression model in the presence of nonproportional hazards was considered by Ata and Sozer (2007). They worked on alternative different models in the violation of proportional assumption. They analysed the treatment and prognosis effects with censored and survival data, makes the assumption of constant hazard ratio. David (2014) produced data for the simulation experiments that mimic the types of data structures applied researchers encounter when using longitudinal biomedical data. Validity was assessed by a set of simulation experiments and results indicate that a nonproportional hazard model performs well in the phase of violated assumption of the Cox proportional hazards. Jiezhi (2009) compared the proportional hazards (PH) model and parametric AFT models. The major aims of his work was to support the argument for consideration of AFT model as an alternative to the PH model in the analysis of survival data by means of real life data from TB and HIV in Uganda. There are two advantages of Cox proportional regression models, which are ability to incorporate time varying covariate effects and timevarying covariates (Cox, 1972). Ogungbola et al (2018) there research established that the model provides a better description of the dataset because it allows prediction of Hazard function, survival functions as well as time ratio. The result revealed that the Weibull model provided a better fit to the studied data. Hence, it is better for researchers of TB/HIV co-infection to consider AFT model even if the proportionality assumption is satisfied. Kazeem et al (2015)considered the application of survival analysis has extended the importance of statistical methods for time to event data that incorporate time dependent covariates. The Cox proportional hazards model is one such method that is widely used. An extension of the Cox model with timedependent covariates was adopted when proportionality assumption are violated. The purpose of this study is to validate the model assumption when hazard rate varies with time. This approach is applied to model data on duration of infertility subject to time varving covariate. Validity is assessed by a set of simulation experiments and results indicate that a non-proportional hazard model performs well in the phase of violated assumptions of the Cox proportional hazards. Lindsay

(2004) cameup with the Cox Regression Model to deal handle failure time data. Ayman (2012) established that the estimation of the parameters in Cox proportional hazard is presented by using Bayes methods based on Markov Chain Monte Carlo (MCMC) algorithm and duplicate the results using non-Bayes framework. Person (2002) compared the hazard ratio estimated from the Cox model to an exact calculation of the geometric average of hazard ratio when the underlying assumption of proportional hazard is false. He studied the effects of covariate measurement error on testing the assumption of proportional hazards is investigated. John et al (2006) observed prospective cohort study of 168 adult patients enrolled at diagnosis of ALI in 21 adult Intensive Care Unit (ICUs) in three Australian states with measurement of survival time, censored at 28 days. Cox model with time-varying covariates remains a flexible model in survival analysis of patients with acute severe illness. Scheke (2004) presented some development that dealt with time varying effect of covariates. He also emphasized the use of semi-parametric models where some effects are time-varying and some are timeconstant, thus giving the extended flexibility only for effects where a simple description is not possible. Timevarying effects may be modelled completely nonparametrically by а general intensity model, $\lambda_{i}(t) = \lambda(t, X_{i}(t))$. Smoothing techniques have been

suggested for estimation of $\lambda(.)$; see, e.g., Nielson and Linton (1995) and the references therein. Such a model may be useful when the number of covariates is small compared to the amount of data, but the generality of the model makes it difficult to get a clear, if any, conclusion about covariate effects. Yuanxin (2013) built up a Cox proportional hazards model by survival analysis using the SAS statistical package. To process the analysis, the proportional assumption or time dependence for individual factors is tested; variables are selected; and their interactions are considered to optimize the model. Due to strikingly impact of gender on the prediction, it is stratified. Therefore different baseline hazards are applied for the set of variables within each group. In the model, the parameters are estimated by maximum likelihood Newton-Raphson algorithm. The results show that gender, status of diabetes, age, body mass index, cholesterol and blood pressure are found impacting the diseases onset/development. Interestingly, the education level has its influence on it as well. In this research, we applied the model into the sputum conversion of the TB/ HIV which are co-infected patients managed in tertiary DOTS centre for a period of 6 months among the Nigeria adults. We also make use of the knowledge of percentage of censoring, variation in sample sizes. All these contribute to the existing knowledge.

II. METHODOLOGY

a) Study and Sampling Procedure

The population target for this study comprises all Patients with Tuberculosis related cases/issues in the DOTs Clinic of NIMR who had been registered between 2011 and 2016. The research design is a cross sectional design. The study was carried out at the DOTs Clinic of the Nigerian Institute of Medical Research (NIMR). A parastatal under the Federal Ministry of Health that has treated over 5000 TB patients in the last 6 years. The Institute has a Directly Observed Treatment Short Course (DOTS) centre where it attends to patients infected with TB. All patients that were enrolled between 2011 and 2016 was included in the study; it enabled the completion of the 6months treatment cycle for those enrolled in 2016.

Log rank test: This was used to compare the death rate between two distinct groups, conditional on the number at risk in the groups. The log rank test hypothesis that;

H_0 : All survival curves are the same

 H_1 : Not all survival curves are the same.

Log rank test approximates a chi-square test which compares the observed number of failures to the expected number of failure under the hypothesis. Chisquared test is used.

A large chi-squared value implies a rejection of the null hypothesis for the alternative hypothesis.

b) Cox Proportional Hazard Model

The non-parametric method does not control for covariates and it requires categorical predictors. When we have several prognostic variables, we must use multivariate approaches. But we cannot use multiple linear regression or logistic regression because they cannot deal with censored observations. We need another method to model survival data with the presence of censoring. One very popular model in survival data is the Cox proportional hazards model, which is proposed by ⁷.

The Cox Proportional Hazards model is given by

$$h(t/x) = h_0(t) \exp(\beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p)$$
$$= h_0(t) \exp(\beta' x)$$
(1)

where $h_0(t)$ is called the baseline hazard function, which is the hazard function for an individual for whom all the variables included in the model are zero, $x = (x_1, x_2, ..., x_p)'$ is the values of the vector of explanatory variables for a particular individual, and $\beta' = (\beta_1, \beta_2, ..., \beta_p)$ is a vector of regression coefficients.

The corresponding survival functions are related as follows:

$$S(t/x) = S_0(t) \exp \sum_{i=1}^n \beta_i x_i$$
 (2)

This model, also known as the Cox regression model, makes no assumptions about the form of $h_0(t)$ (non-parametric part of model) but assumes parametric form for the effect of the predictors on the hazard (parametric part of model). The model is therefore referred to as a semi-parametric model. The beauty of the Cox approach is that this vagueness creates no problems for estimation.

Even though the baseline hazard is not specified, we can still get a good estimate for regression coefficients β , hazard ratio, and adjusted hazard curves. The measure of effect is called hazard ratio. The hazard ratio of two individuals with different covariates x and x^* is

$$\widehat{HR} = \frac{h_0(t)\exp(\beta' x)}{h_0(t)\exp(\beta' x^*)} = \exp\left[\sum \hat{\beta}'(x - x^*)\right]$$
(3)

This hazard ratio is time-independent, which is why this is called the proportional hazards model.

Limitation of Cox PH Model: Cox regression model in the case of violation of the assumption of proportional hazards. It is improper to use a simple Cox regression model with regard to the violation of proportional hazard assumptions as it can lead to false deductions.

c) Accelerated Failure Time Model

Accelerated Failure Time model (AFT model) is a parametric model that provides an alternative to the commonly used proportional hazards models. Whereas a proportional hazards model assumes that the effect of a covariate is to multiply the hazard by some constant, an AFT model assumes that the effect of a covariate is to accelerate or decelerate the life course of a disease by some constant.

The assumption of AFT model can be expressed as

$$s(t/x) = s_0(\exp(\beta^l x) t) \text{ for } t \ge 0$$
(4)

Where (t/x) is the survival function at the time t and the $s_0(\exp(\beta^l x) t)$ is the baseline survival function at the time t. From this equation (1), AFT model can states that the survival function of an individual with covariate x at the time t is same as the baseline survival function of the time $(\exp(\beta^l x) t)$. The factor $(\exp(\beta^l x)$ is known as the acceleration factor. The acceleration factor is the key measure of association obtained in the AFT model. It is a ratio of survival times corresponding to any fixed value of survival time.

The general log-linear representation of AFT model for ith individual is given as

$$\log T_i = \mu + \alpha_1 x_{1i} + \alpha_2 x_{2i} + \alpha_p x_{pi} + \sigma \varepsilon_i$$
(5)

Where logTi represents the log-transformed survival time, (x_1, \ldots, x_p) are the explanatory variables with the coefficients $(\beta_1, \ldots, \beta_p), \varepsilon_i$ is the residual term and assumes a specific distribution and μ is the intercept and σ is the scale parameters respectively.

Types of AFT Models

There are various types of AFT models, they are as follows:

- 1) Exponential and Weibull Model
- 2) Log-normal AFT model
- 3) Log-logistic AFT model
- 4) Gamma AFT model

We shall be explaining just the first two in this research:

i. Exponential and Weibull AFT model:

The exponential distribution was studied 1st in connection with kinetic theory of gasses⁴. The survival function of T_i can be expressed by the survival function of ε_i . If the ε_i , has an extreme value distribution then T_i follows the exponential distribution. The survival function of Gumbel distribution is given by $s_{\varepsilon_i}(\varepsilon) = \exp(-\exp(\varepsilon))$

The Survival function of Weibull AFT model is given by

$$s_i(t) = exp\left[\frac{-\exp\left(\log t - \mu - \beta_i x_i - \dots - \beta_p x_p\right)}{\sigma}\right]$$
(6)

And the cumulative hazard function of Weibull AFT is

$$H_i(t) = -\log s_i(t) = exp\left[\frac{(\log t - \mu - \beta_i x_i - \dots - \beta_p x_p)}{\sigma}\right]$$

ii. Log-normal AFT model:

If the εi , has standard normal distribution then Ti follows the log-normal distribution. The survival function of log-normal AFT model is given by

$$s_{i}(t) = 1 - \emptyset \left[\frac{(\log t - \mu - \beta_{i} x_{i} - \dots - \beta_{p} x_{p})}{\sigma} \right]$$
(7)

The cumulative hazard function of Log-normal AFT model is

$$H_i(t) = -\log s_i(t) = -\log \left(1 - \varphi \left[\frac{(\log t - \mu - \beta_i x_i - \dots - \beta_p x_p)}{\sigma}\right]\right)$$

iii. Log-logistic AFT model:

If the εi , has logistic distribution then Ti follows the log-logistic distribution. The survival function of logistic distribution is given by $s_{\varepsilon_i}(\varepsilon) = \frac{1}{1+e^{\varepsilon}}$

The survival function of log-normal AFT model is given by

$$s_i(t) = \left\{ \frac{1}{1 + e^{\left(\frac{(\log t - \mu - \beta_i x_i - \dots - \beta_p x_p}{\sigma}\right)}} \right\}$$
(9)

The cumulative hazard function of log-logistic AFT is given by

 $H_i(t) = -\log s_i(t) = -\log \left(1 - exp \frac{\mathbb{R}_{out} - \mu - \beta_i x_i - \cdots}{2}\right)$

Various goodness of fit Test:

There are various goodness of fit test, they are:

- 1) Bayesian Information Criterion
- 2) Kolmogorov-Smirnov test
- 3) Cramer-von Mises Criterion
- 4) Anderson-Darling test
- 5) Shapiro Wilk test
- 6) Chi-squared test

7) Akaike Information Criterion

8) Hosmer-Lemeshow test

- 9) Kuiper's test
- 10) Kernelized Stein Discepancy
- 11) Zhangs Z_{κ} , $Z_{c} Z_{A}$ test
- 12) Moran test

AIC: To compare various semi-parametric and parametric models Akaike Information Criterion (AIC) is used. It is a measure of goodness of fit of an estimated statistical model. In this study, AIC is computed as follows

$$AIC = -2(log - likelihhod) + 2(P + K)$$
(10)

Where P is the number of parameters and K is the number of coefficients (excluding constant) in the model. For P=1, for the exponential, P=2, for Weibull, Log-logistic, Lognormal etc. The model which as smallest AIC value is considered as best fitted model.

For each distribution of ε_i , there is a corresponding distribution for T. The members of the AFT model class include the exponential AFT model, Weibull AFT model, log-logistic AFT model, log-normal AFT model, and gamma AFT model. The AFT models are named for the distribution of T rather than the distribution of ε_i or $\log T$.

III. Analysis and Discussion

We can see from *Fig 1*. that the cumulative survival proportion appears to be much higher in the Anti-TB/HIV therapy (INHRIFEMB, INHRIFPZAEMB and INHPZAEMB) compared to the groups in which INHPZAEMB) compared to the groups in which INHPZAEMB was used. In INHPZAEMB group, few participants resume this therapy. It would appear that INHRIFPZAEMB and INHPZAEMB of TB/HIV Therapy significantly prolong the time until participants resume event compared to the other interventions. The median survival time is at 40 years of age for INHPZARIF combination TB/HIV therapy while 45 years is expected for INPZAEMB therapy group. Many are censored in INHRIFEMB before reaching the age of 60 years with regarding sputum conversion of TB patients on therapy.

Note: EMB, INH, PZA, RIF and RPT represent Enthambutol, Isoniazid, Pyrazinamide, Rifampin and Rifapentine respectively.

LOG Rank Test

 H_{o} : The effect of the three regimens does not have significant to TB preventive therapy for TB/HIV co-infected adults.

H_1 : Not H_o :

In *Table 1.* Since $P_{\text{-value}}$ (.0192) < (α = 0.05), the effect of the three regimens does have significant to TB preventive therapy for TB/HIV co-infected adults. Then survival distributions are different in the population which make the result more statistically significance. By the log-rank test, in the preventive therapy, there is significant difference among three regimens of TB preventive therapy for TB/HIV co-infected adults, since the p-value is 0.0192 against 5% level of significance. The K-M curves for time to educate length and time to combined event of the preventive therapy is presented *(Figure 1.).*

a) Cox Proportional Hazard Model

In Table 2, since $P_{-value} < (\alpha = 0.05)$: SEX, HAEMO GLUC, BMI and LYMPHABS, then they are statistically significant. The coefficient for Creatinine is positive, telling us that greater Creatinine values are associated with greater hazard and therefore shorter survival. The coefficient for weight is negative -normal body weight will be associated with a lower hazard and longer survival among the therapy population. The coefficient of LYMPHABS is negative showing that there is no significant reduction in CD4 cells which will be associated with a lower hazard and longer survival. The CD4 cells are the cells that the HIV Virus kills. As HIV infection progresses, the number of these cells decline. When the CD4 counts drops below 200 due to advance HIV disease, a person is diagnosed with AID. A normal range for CD4 lies between 500-1500. If haemoglobin content is also reduced, then the possibility of survival will be greatly affected. The BMI estimate of parameter is also negative, and then there will be associated lower hazard and longer survival.

The results of a PH model fitted to this dataset are obtained (*Table 3*)

$h_i(t) = h_0(t) \exp(0.328AGE - 0.520SEX - 0.004MARITAL + 0.366BMI - 0.001LYMPHABS - 0.160HAEMO + 0.002CREAT - 0.005WEIGHT - 0.679GLUC$

After a Cox PH model is fitted, the adequacy of this model, including the PH assumption and the goodness of fit, needs to be assessed. The PH assumption checking with graphical method and two statistical test methods.

Omnibus Test: From Table 4, since the P-value (0.009) < (0.05), we have statistical reasons to reject H_ $_{\rm o}$ and conclude that the parameter of the model are more

stable and can be totally relied on in evidence based decision making regarding the TB/HIV preventive therapy. Also, the log-likelihood supported the significant of the model parameter estimate.

b) Accelerated Failure Time Models

In *Figure 2*, the Cox proportional hazard model does not hold completely for this data, if it is completely

hold then, the log minus log plot will be parallel. For this reason, the investigation of Accelerated Failure.

Time Model comes into play. In univariate AFT models, age, haemoglobin, body mass index, sex, and absolute lymphocyte count are not statistically significantly associated with time to sputum conversion of TB/HIV co-infected patients. The results from the different AFT models applied to the time to sputum conversion are presented in Tables 5, 6, 7, and 8. There is no big difference for the estimations in different models. Accelerated failure time models were compared using statistical criteria (likelihood ratio test and AIC). The Weibull in table 8 reveals that age and sex are statistically significant while HAEMO GLUC, BMI and LYMPHABS are not significant with their p-value greater than 0.05. We compared all these AFT models using statistical criteria (likelihood ratio test and AIC). The nested AFT models can be compared using the likelihood ratio (LR) test in Table 10. The Cox model, loglogistic model and the Weibull model are nested within the log-normal model (Table 10). According to the LR test, the weibull model fits better. However, the LR test is not valid for comparing models that are not nested. In this case, we use AIC to compare the models (Table 11), (The smaller AIC is the best). The Weibull AFT model appears to be an appropriate AFT model according to AIC compared with other models, although it is only slightly better than Log-logistic or Log-normal model. We also note that the Cox model and Lognormal model are poorer fits according to LR test and AIC. This provides more evidence that the PH assumption for this data is not appropriate. At last, we conclude that the Weibull model is the best fitting the AFT model based on AIC criteria.

IV. Conclusion

In this research, our findings revealed the absence of protection of TB/HIV preventive therapies on sputum conversion, death and combined event of the conversion and death. The study presents similar estimates of risk for the covariates with the previous study based on the baseline variables in the Cox Proportional Hazard model. But the PH assumption does not hold for LYMPHABS in this analysis. We also use .three different AFT models to fit the data. We find that the weibull AFT model fit better for this dataset. The univariate PH models, the SEX, HAEMO GLUC, BMI and LYMPHABS are lesser than p-value, then they are statistically significant. The coefficient for Creatinine is positive, telling us that greater Creatinine values are associated with greater hazard and therefore shorter survival. The coefficient for weight is negative-normal body weight was associated with a lower hazard and longer survival among the therapy population. The coefficient of LYMPHABS is negative showing that there is no significant reduction in CD4 cells which will be associated with a lower hazard and longer survival. Men have longer survival time and sputum conversion time than women. The risks of TB/HIV progression, death and the combined event of TB/HIV and death are higher among old adults.

Log-rank test was able to show us that effect of the three regimen have significant association to the TB/HIV co-infected preventive therapy. Moreso, through *Omnibus Tests of Model*, we were able to deduce that there is no significant difference in time to sputum conversion of the TB/HIV co-infected patients on therapy. Telling us that the model is statistically adequate and significant

According to the Cox PH model with timedependent variables, the predictive effect of absolute lymphocytes count clearly changes at about 2 years. Before 2 years, the hazard is less than one, which indicates that the risk of TB/HIV as absolute lymphocyte count increases. According to the log-logistic AFT model, LYMPHABS prolongs the time to sputum conversion as it increases along the process. The PH model is routinely applied to the analysis of survival data. The study considered here provides an example of a situation where AFT model is appropriate and where the PH model provides a little better description of the data set. We have seen that the PH model is a less valuable and realistic alternative to the AFT model in some situations. AIC shows us that weibull AFT model fits better when compared to the other models.

This study is based on a large number of participants from Lagos residents in Nigeria, where the prevalence of TB infection and HIV are very high. In this study, the Cox PH model and the AFT model have been compared using TB/HIV co-infected data. Association of the TB/HIV preventive therapies with the sputum conversion is examined through the linkage of the signs and symptoms to replication of the virus. The Cox model expresses the multiplicative effect of covariates on the hazard. The AFT model provides an estimate of the survival function time ratios. In this research, we have analyzed the TB/HIV dataset using these alternative methods. This study provides an example of a situation where the AFT model is appropriate and where the PH model provides a little description of the data since logminus-log plot is not parallel. The Cox proportional hazard assumption does not hold in this dataset.

We select the model that best describes the data. In addition, the example illustrates that the AFT model have a more realistic interpretation and provides more informative results as compared to Cox PH model for the available data. Therefore,

a) We suggest that using the Cox PH model may not be the optimum approach. The AFT model may provide an alternative method to fit some survival data. b) Determining the effect of the three regimens may be additional values to researches.

The results from this model could then be compared with the standard AFT models and Cox PH models. In addition, further study can be carried out to evaluate the effects of practical cases such as large censoring.

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References Références Referencias

- Ata, N and Sozer, M. (2007) "Cox Regression Models with Non proportional Hazards applied to Lung Cancer survival data", Hacettepe Journal of Mathematics and Statistics; 36(2), pp. 157-167.
- Ayman, A. M. (2012) Semi-Parametric Hazard Ratio applied to Engineering Insurance System. International Journal of Engineering Research and Application. 2(2), 374-385.
- 3. World Health Organization (WHO) (2007). Global tuberculosis control: surveillance, planning, financing. Geneva, 79.
- Bender, R., Augustin, T. and Blettner, M. (2005) Generating Survival Times to Simulate Cox PH Models. Wiley Online Library. 24(11), 338.
- Cox, D. R. (1972) Regression modeOls and lifetables. Journal of the Royal Statistical Society Series B, 34, 187-220.
- David J. H. (2014) Data Generation for the Cox Proportional Hazards Model with Time-Dependent Covariates: A Method for Medical Researchers. Statistics in Medicine, 33(3), 436-454.
- Efron, B. The efficiency of Cox's likelihood function for censored data. J. Am. Statist. Assoc. 1977; 72, 557-65.
- Kazeem, A. A.; Abiodun, A. A.; and Ipinyomi, R. A. (2015) "Semi-Parametric Non-Proportional Hazard Model With Time Varying Covariate," *Journal of Modern Applied Statistical Methods*: 14(2), Article 9.
- 9. Jiezhi, Q. (2009) Comparison of Proportional Hazards and Accelerated Failure Time Models, A Master of Science Thesis Submitted to the College of Graduate Studies and Research in the Department of Mathematics and Statistics *University of Saskatchewan Saskatoon, Saskatchewan* Canada.
- Lindsay, S. (2004) Cox Regression Model, thesis submitted to Department of Mathematics, B.S., Virginia Polytechnic Institute and State University.
- 11. Leemis, L. M., Shih, L. and Reynertson, K. (1989) Variate Generation for Accelerated Life and Proportional Hazards Models with Time Dependent

Covariates. University of Oklahoma, Norman, OK 73019.

- 12. Maller, R. & Zhou, X. (1996) Survival Analysis with Long-Term Survivors. Wiley, New York.
- Monica, M. B. (2011) "Bayesian Approaches to Correcting Bias in Epidemiological Data", dissertation submitted to Department of Statistical Science, Baylor University.
- 14. Nielsen, J. P. and Linton, O. B. (1995), Kernel Estimation in a Nonparametric Marker Dependent Hazard Model. Ann. Statist.23, 1735 – 1748.7
- Ogungbola O. O., Akomolafe A. A. and Musa Z. A. (2018) "Accelerated failure time models with application to data on TB/HIV co-infected patients in Nigeria". American J Epidemiol Public Health. 2018;2(1): 021-026.
- Pagano, M. and Gauvreau, K. (1993) Principles of Biostastics. 1st ed. Belmont, Calif Wadsworth; 445-468.
- 17. Persson, I. (2002) "Essays on the assumption of Proportional Hazards in Cox Regression", dissertation for the degree of Doctor of Philosophy in Statistics presented at Upsala University.
- Jin Z., Lin D. Y. and Ying Z. (2003), Rank-based Inference for Accelerated Failure Time Models, Biometrika. 90, 341 – 353.
- John L. M., Andrew D. B., Patricia J. S., Cyprus E and Tamara HBN. (2006) Modelling Survival in Acute Severe Illness Cox versus AFT models. Journal of Evaluation in Clinical Practice, 2006; ISSN 1356 – 1294.
- 20. Johnson, L. M. and Strawderman, R. L. (2009), Induced smoothing for the semiparametric accelerated failure time model: Asymptotics and extensions to clustered data. Biometrika. 96, 18 577–590.
- Scheike, T. H. (2004) Time-varying effects in survival analysis. In Balakrishnan, N. and Rao, C. R., editors, Handbook of Statistics Elsevier B.V., North Holland. 23, 61–85.
- 22. Sy Han, C. "Statistical methods and computing for Semi-parametric and Accelerated Failure Time Model with induced Smoothing", department of Statistics, University of Connecticut Graduate School. 2013.
- 23. Thomas, M. L. "Bootstrap application in proportional hazard models", Retrospective thesis and dissertation, Iowa State University. 1993.
- 24. Wei, L. J., D. Y. Lin, and L. Weissfeld. (1989), Regression analysis of multivariate failure time data by modeling marginal distributions. Journal of the American Statistical Association. 84, 1065–1073.
- 25. Yuanxin H. (2013), Survival Analysis of Cardiovascular Diseases. *Washington University in St. Louis.*

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Appendices

Table 1: Test for equality of Survival Distribution for Different level of TB/HIV Therapy

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	9.930	3	.019
Breslow (Generalized Wilcoxon)	8.570	3	.036
Tarone-Ware	9.055	3	.029

Table 2: Description of Variables

Variable	Description	Codes/values
AGE	Age	year(s)
SEX	Patient's sex	0 = Male, 1 = Female
STATUS	Marital status	0 = Single, 1 = Married 2 = Divorce, 3 = Widow
LYMPHABS	Absolute Lymphocytes count	CM-3
WEIGHT	Weight	Kg
BMI	Body Mass Index	Kg/m ²
GLUC	Glucose	G
HAEMO	Haemoglobin	Mg/dL
CREAT	Creatinine level	Mg/DI

Table 3: Cox Proportional Hazard Model Analysis Table

	D	Sig	Evro(D)	95.0% Cl	for Exp(B)
	D	Sig.	Exh(p)	Lower	Upper
CD4	001	.027	.999	.997	1.001
Hemoglobin	160	.035	.852	.735	.989
Creatinine	.002	.188	1.002	.999	1.005
Status	004	.301	.996	.989	1.004
BMI	.366	.048	.694	.138	3.477
Weight	005	.645	.995	.974	1.017
Sex	520	.04	.595	.343	1.030
Glucose	679	.009	.507	.238	1.081

Table 4: (Omnibus	Tests	of Model	Coefficients
i apie 4: (Jmnibus	rests	ot wodel	Coefficients

Ov	Overall (score)		Change From Previous Step		Change From Previous Block	
Chi-square	df	Sig.	Chi-square	Df	Sig.	Chi-square
20.351	8	.009	21.077	8	.007	21.077

Table 5: Log-logistic AFT Model

Covariate	β	Life-Expn	Se(coeff)	Wald p
CD4	-0.013	0.989	0.034	0.689
Weight	-0.061	0.928	0.097	0.510
BMI	0.5612	1.753	0.625	0.410
Glucose	-0.022	0.978	0.016	0.168
Haemoglobin	0.133	1.146	0.178	0.457
Creatine	-0.0001	0.999	0.006	0.984

Covariate	β	Life-Expn	Se(coeff)	Wald p
CD4	-0.014	0.989	0.031	0.659
Weight	-0.061	0.928	0.084	0.465
BMI	0.627	1.858	0.487	0.349
Glucose	-0.023	0.977	0.016	0.852
Haemoglobin	0.146	1.158	0.161	0.009
Creatine	-0.000	0.999	0.006	0.079

Table 6: Weibull AFT Model

Table 7: Log-normal AFT Model

Covariate	β	Life-Expn	Se(coeff)	Wald p
CD4	-0.011	0.919	0.034	0.50
Weight	-0.075	0.908	0.097	0.440
BMI	0.336	1.3959	0.376	0.371
Glucose	-0.022	0.978	0.015	0.145
Haemoglobin	0.136	1.146	0.176	0.438
Creatine	-0.00001	0.999	0.005	0.984

Table 8: The log-likelihoods and likelihood ratio (LR) tests, for comparing the models

No of parameter	Log-likelihood	Testing again	st the Log-normal d	istribution
Distribution	m	L	LR	df
Cox model	2	-42.961	115.142	1
Log-logistic	2	-100.532	326.460	1
Weibull	3	-263.762	440.452	2
Log-normal	2	-43.536		

Table 9: Akaike Information Criterion (AIC) in the AFT models

Distribution	Log-likelihood	k	С	AIC	
Cox Model	-42.961	6	1	256. 214	
Log-logistic	-100.532	6	2	225. 156	
Weibull	-263.762	6	1	218. 079	
Log- normal	- 43.536	6	2	235. 019	









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Analysis of HIV Awareness in Tashkent City

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Abstract- The problem of public awareness about the ways of transmission of HIV (including from mother to child), as well as ways to prevent infection is extremely relevant. Despite the efforts of scientists around the world, a vaccine against HIV has not yet been invented, and prevention remains the only means of containing the epidemic. Information on ways to spread and how to protect against HIV infection is available to the public. Nevertheless, the epidemic is growing. Currently, medicine does not have the means to cure an HIV-infected person. This article analyzes the awareness of the population of Tashkent city on HIV infection, which showed a low level of awareness. In this regard, HIV awareness-raising activities are of particular importance in order to raise awareness and develop a tolerant attitude towards people living with HIV.

Objective: To assess the level of public awareness about HIV infection.

Material and Methods: The survey was conducted among the population of Tashkent city by online survey. We created a site (https://www.survio.com/survey/d/E2X5D2G7Q8H3L1K9C) where we put our questionnaire and invited people to take the survey using social networks like Telegram, Facebook and LinkedIn. A total of 100 people were interviewed during the month, of whom 29 were men and 71 were women.

Keywords: HIV, awareness, tolerance, survey, general population.

GJMR-F Classification: NLMC Code: WC 140



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Abstract- The problem of public awareness about the ways of transmission of HIV (including from mother to child), as well as ways to prevent infection is extremely relevant. Despite the efforts of scientists around the world, a vaccine against HIV has not yet been invented, and prevention remains the only means of containing the epidemic. Information on ways to spread and how to protect against HIV infection is available to the public. Nevertheless, the epidemic is growing. Currently, medicine does not have the means to cure an HIV-infected person. This article analyzes the awareness of the population of Tashkent city on HIV infection, which showed a low level of awareness. In this regard, HIV awareness-raising activities are of particular importance in order to raise awareness and develop a tolerant attitude towards people living with HIV.

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where we put our questionnaire and invited people to take the survey using social networks like Telegram, Facebook and LinkedIn. A total of 100 people were interviewed during the month, of whom 29 were men and 71 were women.

Results: The main method of dealing with new cases is primarily the education of population, but it is necessary to assess the level of awareness of different groups on this issue.

Conclusions: The majority of respondents have a correct idea about the contagion and ways of transmission of infection, while there is a sufficient number of people who are confident in the possibility of infection by vector, contact-household and alimentary routes. High rates were obtained in the analysis of public awareness of measures to prevent infection. The population recognizes the urgency of the problem of HIV infection and is interested in information about it. However, there are still misconceptions about HIV related to myths and discrimination. It is necessary to continue to actively inform the population on the prevention and control of HIV / AIDS, using all available resources.

Keywords: HIV, awareness, tolerance, survey, general population.

I. INTRODUCTION

The problem of the spread of HIV infection remains the most urgent problem for the whole world and for our health care in recent years. regions on the epidemiological situation of HIV infection. The first cases of registration of HIV infection among the population in Uzbekistan were noted in 1987 and until the beginning of the new century, experts observed only isolated cases of infection among citizens of the country. So for

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only 76 cases the first 12 vears. of human immunodeficiency virus infection were registered. The increase in new HIV registrations began in 2000, when the number doubled. The highest number of newly diagnosed HIV cases, according to the latest available data, was in 2013. According to unconfirmed data from official sources, the trend of decline in new HIV cases is observed in 2015 and 2016. According to the electronic media in 2016, the Republican AIDS Center recorded a decrease in the level of new cases of infection among citizens of the country[1].

One of the reasons for the spread of HIV infection in our country, there are low levels of awareness about HIV/AIDS, ways of HIV transmission and prevention. In order to raise public awareness about HIV infection, we have developed a questionnaire to assess the level of knowledge on HIV infection. The questionnaire is anonymous, consists of sixteen questions. The first block contains information about the Respondent: gender, age. The second block contains questions about the ways of transmission, measures of protection against infection. The third block is the question of tolerance. The survey was conducted among the population of Tashkent city by online survey. We created a website (https://www.survio.com/survey/ d/E2X5D2G7Q8H3L1K9C) where we put our guestionnaire and invited people to take the survey using social networks like Telegram, Facebook and LinkedIn. A total of 100 people were interviewed, of whom 29 were men and 71 were women (Fig. 1).



Fig. 1: Distribution of respondents by gender.

Most of the respondents belong to the group of 18-30 years old (32 people). (fig. 2).



Fig. 2: Age of respondent.

67% of respondents responded positively to the question about giving blood for HIV testing. The distribution of answers to the question is shown in Fig. 3.











The majority of respondents are employees (28%) and workers (20%). (fig. 5).



Fig. 5: Distribution of answers to a question about activity.

The majority of those surveyed (85%) believe that HIV infection is an urgent problem for our city. (fig. 6).



Fig. 6: Distribution of answers to the question «Do you think the problem of HIV infection is relevant for your city? ».

Doctors have proven that only four human body fluids contain sufficient concentrations of HIV to infect another person. These are: blood, semen, vaginal discharge and breast milk. If one of the listed fluids of an HIV-positive person enters the body of a healthy one, the probability of Contracting HIV will be very high. Our respondents had the opportunity to choose several options for the answer and many of them (95%) chose the correct answer blood, 54%-sperm, 46% - vaginal secretions and 34% chose breast milk.

The rest of the body fluids, such as urine, sweat, saliva - contain very little or no virus, so they are safe. But our respondents believe that it is possible to get infected with saliva(14%), urine (1%) and could not answer this question at all 3%.(fig.7)



Fig. 7: Distribution of answers to the question: «Through what biological fluids can you get HIV?».

The main routes of transmission of HIV infection are unprotected sexual contact with an HIV-infected person, sharing with HIV-infected injection equipment (syringes, needles) as well as the vertical route of transmission of HIV from an HIV-infected mother to a child (during pregnancy, childbirth or after childbirth, through breast milk).

Other transmission paths are much rarer. Among them, HIV infection from blood transfusions or blood products in countries where all donor blood samples are not tested for HIV. Extremely rare cases of infection when infected blood enters an open wound or mucous membrane. HIV is not transmitted through daily household contact, such as sharing a bathroom and toilet or drinking from the same Cup. There have been no reported cases of a health care worker becoming infected after the saliva, urine or blood of an HIVinfected patient has been exposed to intact skin. Our
respondents were able to select multiple response options and many of them(80%) believe that unprotected sex with a person HIV status is unknown may be at risk of infection and mother-to-child (during pregnancy, childbirth, 48%, through breast milk-25%), use of unsterile equipment for body piercing and tattoos(72%), the use of common razor or manicure sets(43%) and 6% underwent questionnaire survey believed that HIV can be transmitted by insect bites. (Fig.8)



Fig. 8: Ways of HIV transmission.

HIV can be detected in the human body by examining human blood. Usually a blood sample is taken from a vein and sent for analysis to a special laboratory, where studies are carried out by appropriate methods. Since the primary positive result in some isolated cases may be false-positive (for example, if a person has had an acute infectious disease or simply because no test gives an answer with 100% accuracy), then each primary positive result is rechecked by a more accurate method in the laboratory. The testing procedure is quite simple for a person. For example, in an AIDS consultation room, a blood sample and consultation take approximately 20 minutes. Usually the test result can be found out within 3 working days. The test is conducted anonymously. It is impossible to determine HIV infection by external signs, neither in men nor in women. HIV is determined only by a special blood test. 95% of our respondents know that HIV can be detected by blood donation for the presence of antibodies. 3% of respondents mistakenly believe that there are specific external signs that can distinguish a person with HIV infection (Fig.9)



Fig. 9: Distribution of answers to the question: «How can you detect HIV infection in humans?».

In each region of our Republic, in the Republic of Karakalpakstan and Tashkent there are centers to combat AIDS, as well as in 59 districts there are Interdistrict laboratories for HIV diagnosis, where you can get tested and get the necessary additional information. After the diagnosis of "HIV infection" patients get up on dispensary registration in the centers for combating AIDS in the place of residence. AIDS Centers have laboratories for testing patients ' blood for clinical, biochemical and immunological (CD4 cells) parameters. The majority of participants (82%) said that blood should be donated to AIDS Centers.(fig.10)



Fig. 10: Distribution of answers to the question: «Where can I go to get tested for HIV?».

An HIV-positive mother can transmit HIV to her baby in during pregnancy, childbirth (also called labor and delivery), or breastfeeding. If you are a woman living with HIV and you are pregnant, treatment with a combination of HIV medicines (called antiretroviral therapy or ART) can prevent transmission of HIV to your baby and protect your health.

a) Reducing the risk of passing HIV on to your baby

Antenatal testing for HIV (for women not yet diagnosed), early diagnosis and taking HIV treatment all help to reduce the risk of a woman passing HIV on to her baby.

There are two ways in which HIV treatment reduces the risk of passing HIV on to your baby.

Firstly, HIV treatment reduces your viral load so that your baby is exposed to less of the virus while in the womb and during birth.

Secondly, some anti-HIV drugs can also cross the placenta and enter your baby's body where they can prevent the virus from taking hold. This is also why newborn babies whose mothers are HIV positive are given a short course of anti-HIV drugs (this is called infant post-exposure prophylaxis, or infant PEP) after they have been born.

A number of factors can increase the risk of passing on HIV to your baby. These include:

During pregnancy

- Having an HIV-related illness, such as an opportunistic infection like pneumocystis pneumonia.
- Having a high HIV viral load.
- Having a sexually transmitted infection. You should have a sexual health screen if you are diagnosed with HIV when you are pregnant, or when you first become pregnant if you have already been diagnosed with HIV.
- Developing resistance to your HIV treatment through not taking it as prescribed.
- Using recreational drugs, particularly injected drugs, during pregnancy.

During delivery

- Your waters breaking four or more hours before delivery if you do not have an undetectable viral load (that is, your viral load is over 50 copies/ml).
- Having an untreated sexually transmitted infection when you give birth. Other conditions, such as bacterial vaginosis, can also increase the risk of passing on HIV to your baby.
- If you have a vaginal delivery (rather than a caesarean delivery) when you have a detectable viral load.
- If you have a premature baby.

After delivery

 If you breastfeed your baby. To avoid passing HIV to your baby, it is safest to formula feed because breast milk can contain virus. Help should be available with getting formula milk and feeding equipment. Ask your healthcare team about this and how to protect your confidentiality if a friend or family member asks why you are not breastfeeding.[2,9,11]



Fig. 11: Distribution of answers to the question: "Do you think an HIV-infected mother can give birth to a healthy child?".

You get HIV through direct contact with certain kinds of body fluids -- blood, semen, pre-seminal fluid (also called pre-cum), vaginal fluids, rectal fluids, and breast milk. The biggest risks are having vaginal or anal sex without a condom or sharing needles with someone who has HIV. But other things can increase your odds of having it, too.

The CDC recommends that everyone in the United States between the ages of 13 and 64 get tested for HIV at least once as a precaution. In addition, you should ask yourself the following questions, and if you answer yes to any of them, you should get tested:

- Have you had unprotected sex with someone who has HIV or a person whose HIV status you don't know?
- Have you injected drugs (including hormones, steroids, and silicone) and shared needles or syringes with others?
- Have you been diagnosed with an STD?
- Have you been diagnosed with tuberculosis (TB) or hepatitis?
- Have you had sex with anyone who would answer "yes" to any of the questions above?
- Have you been sexually assaulted?[3]



Fig.12: Distribution of answers to the question: "do you think you can be affected by the problem of HIV / AIDS?".

In a society where no discrimination on the basis of actual or imputed HIV status, more open dialogue about HIV, the citizens are not afraid to be screened for HIV, have a wide access to information on methods of protection from HIV infection, treatment, care and support for HIV.

The questionnaire included a question on tolerance towards people living with HIV (PLHIV). More

than half of the respondents showed willingness to accept PLHIV.

The low level of tolerance and uncertainty in the reliability of legal protection indicates the absence of a discrimination-free and safe atmosphere in society.[21,22]



Fig.13: Distribution of answers to the question: "If you find out that your friend has been diagnosed with HIV, what would you do?".

Since the beginning of the HIV / AIDS epidemic, stigma and discrimination have created a breeding ground for HIV transmission and have greatly increased the negative impact of the epidemic. HIV stigma and discrimination continue to manifest itself in all countries and regions of the world, creating serious obstacles to preventing the spread of infection, providing adequate care, support and treatment, and mitigating the impact of the epidemic. Stigma associated with HIV / AIDS hinders an open discussion of the causes of the epidemic and the implementation of appropriate countermeasures. Open recognition of HIV / AIDS is a prerequisite for successful mobilization of the state, communities and individuals to counteract the epidemic. The silence of this problem can lead to the denial of its existence and hinders the adoption of urgent measures to solve it. Because of this, people living with HIV / AIDS are treated only as a source of problems, although they can take part in curbing the epidemic and establishing control over it. Stigma associated with HIV / AIDS is based numerous on factors, including misunderstanding of the disease, misconceptions about the ways of HIV transmission, lack of access to treatment, irresponsible media reports on the epidemic, the incurable nature of AIDS, prejudices and fears for a number of delicate Social issues such as sexual relations, disease and death, illegal drug use. Stigma can lead to discrimination and other human rights violations, which has a very negative impact on the wellbeing of people living with HIV / AIDS. In all countries of the world, there are many cases when people living with HIV / AIDS were denied access to medical services, were not employed and deprived of their rights to education and freedom of movement.[4,12,17]

Based on this we can say that we should not separate people living with HIV from society. This means that they have the right to study and work. But unfortunately among our respondents many discriminate and do not want to have contact with people living with HIV.



Fig.14: Distribution of answers to the question: "Would you buy products from the seller if you knew that he had HIV infection?".

Most children who have been diagnosed with HIV have received it from their mother. Already at 1-2 months of age, a child born to an HIV-positive mother is given a special analysis. The result of this analysis does not remove or diagnose, but with a high probability (95-98%) helps to determine whether the child is sick with HIV or not. It is important to remember that a child can get HIV from the mother through breast milk. Such cases occur when a woman was HIV-negative during pregnancy, became infected before or after childbirth and began to breastfeed. In these cases, HIV infection in children can be detected at a later age, sometimes as early as 10-14 years, usually when the child is hospitalized in a serious condition. Some underage adolescents may become infected with HIV through drug use or sexual contact. HIV infection is a disease for which timely diagnosis is important. This is why early screening of children born to HIV-positive mothers and adolescents who may have had experiences of drug use and/or unprotected sex is necessary![6,7,19]

HIV-positive children have the right to attend regular kindergarten and to attend regular public schools, and their parents are not obliged to notify anyone of their diagnosis. But unfortunately some respondents (22%) believe that they should separate and some respondents (16%) do not know how to act in such cases.(fig.15)



Fig.15: Distribution of answers to the question: "Does an HIV-infected child have the right to attend kindergarten, to study together with everyone in school?".

According to the results of the survey, it can be concluded that respondents are insufficiently tolerant of HIV-infected comrades and teachers. Today, it is still important to form a tolerant attitude towards HIVinfected people and the inadmissibility of discrimination, the promotion of principles based on human rights. In this regard, one of the priorities to ensure the targeted use of resources and a coordinated response to this problem should be to work out the coordination of efforts and the development of inter-sectoral social partnership between the state and society.[4,5,18,20]



Fig. 16: Distribution of answers to the question: "Do you need more information on HIV infection?".

II. Conclusions

People who don't carry themselves to these groups, consider that danger doesn't threaten them and don't safeguard the behavior. They think: "It can't happen to me" But AIDS is not about "us" and about "them". One don't catch HIV because they "bad", and others aren't protected from HIV because, they are "good". The person catches HIV as a result of the acts, but not as a result of that whom he or she is. Any person making the acts adjoining on risk of infection of HIV can get sick with AIDS. Nobody is insured from illness if puts itself at risk. Nobody deserves to receive this illness. And until we don't realize that any can catch HIV, epidemic will continue to extend.

Results of a research showed not only the insufficient general level of knowledge of prophylaxis of HIV, but also low level of knowledge of legal questions, the legislation, moreover, it was noted among professionals who owing to the duties have to possess this information.

Stigmatization of this disease began with the moment of emergence of epidemic of HIV and its distribution in the world and generated a pavor before this illness. Especially the pavor of infection is expressed in need of rendering services for the HIV infected in particular from health workers. Now as a result of carrying out researches and implementation of target programs, many stigmata and forms of discrimination ceased to be shown. Considerably the relation (especially not physicians) to infected improved.

References Références Referencias

- Analiz situasii v kontekste profilaktiki rasprostraneni VICh/SPIDA v Respublike Uzbekistan dlya povishenii adresnosti celevix programm, kachestva ix planirovani i realizasii sovmestnimi usiliyami zatronutix soobshestv LJV// NNO «Ishonch va xayot» 05.12.2017
- 2. http://www.aidsmap.com/about-hiv/pregnancy-andbirth
- 3. https://www.webmd.com/hiv-aids/do-i-have-hiv#1
- Mirkhamidova S.M. Research of level of stigmatization and discrimination in the city of Tashkent// American Journal of Research № 2 (2) 2017 Social Science and Humanities, USA, Michigan, p.13
- 5. UNAIDS. Gap report. 2014. [Google Scholar]
- Yaya S, Bishwajit G, Danhoundo G, Seydou I. Extent of Knowledge about HIV and Its Determinants among Men in Bangladesh. Front Public Health. 2016; 4: 246. 10.3389/fpubh.2016.00246. [PMC free article] [PubMed]
- Unnikrishnan B, Mithra P, Rekha T, et al. Awareness and attitude of the general public toward HIV/AIDS in coastal Karnataka. Indian J Community Med. 2010; 35(1): 142. doi: 10.4103/0970-0218. 62580.

[PMC free article] [PubMed] [CrossRef] [Google Scholar]

- Lanouette N, Noelson R, Ramamonjisoa A, et al. HIV-and AIDS-related knowledge, awareness, and practices in Madagascar. Am J Public Health. 2003; 93(6): 917–919. doi: 10.2105/AJPH.93.6.917. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- Zoboli F, Martinelli D, Di Stefano M, et al. Correlation between knowledge on transmission and prevention of HIV/STI and proficiency in condom use among male migrants from Africa and Middle East evaluated by a condom use skills score using a wooden penile model. BMC Res Notes. 2017; 10(1): 216. doi: 10.1186/s13104-017-2520-1. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- Opio A, Mishra V, Hong R, Musinguzi J, Kirungi W, Cross A, et al. Trends in HIV-related behaviors and knowledge in Uganda, 1989-2005: evidence of a shift toward more risk-taking behaviors. J Acquir Immune Defic Syndr. 2008; 49(3):320–326. doi: 10.1097/QAI.0b013e3181893eb0. [PubMed] [CrossRef] [Google Scholar]
- De Coninck Z, Feyissa IA, Ekström AM, Marrone G. Improved HIV Awareness and Perceived Empowerment to Negotiate Safe Sex among Married Women in Ethiopia between 2005 and 2011. PLoS One. 2014; 9(12):e115453. 10.1371/journal. pone.0115453. [PMC free article] [PubMed]
- Ramirez-Avila L, Regan S, Chetty S, Giddy J, Ross D, Katz J, et al. HIV testing rates, prevalence, and knowledge among outpatients in Durban, South Africa: time trends over four years. Int J STD AIDS. 2015; 26(10): 704–709. doi: 10.1177/ 0956462414551234. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- National Agency for the Control of AIDS, Federal Republic of Nigeria. Global AIDS Response, Country Progress Report. Nigeria: Federal Republic of Nigeria; 2015.
- Fakolade R, Adebayo S, Anyanti J, Ankomah A. The impact of exposure to mass media campaigns and social support on levels and trends of HIV-related stigma and discrimination in Nigeria: tools for enhancing effective HIV prevention programmes. J Biosoc Sci. 2010; 42(3): 395–407. doi: 10.1017/S00 21932009990538. [PubMed] [CrossRef] [Google Scholar]
- Faust L, Yaya S, Ekholuenetale M. Wealth inequality as a predictor of HIV-related knowledge in Nigeria. BMJ Global Health. 2017; 2:e000461. doi: 10.1136/bmjgh-2017-000461. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- Fox AM. The HIV-poverty thesis re-examined: poverty, wealth or inequality as a social determinant of HIV infection in sub-Saharan Africa? J Biosoc Sci. 2012; 44(4): 459–480. doi: 10.1017/S00219320 11000745. [PubMed] [CrossRef] [Google Scholar]

- Brodish PH. An association between neighbourhood wealth inequality and HIV prevalence in sub-Saharan Africa. J Biosoc Sci. 2015; 47(3): 311–328. doi: 10.1017/S00219320 13000709. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- Nordfors N. Economic inequality and HIV in South Africa. Gothenburg: University of Gothenburg; 2015. [Google Scholar]
- Durevall D, Lindskog A. Economic inequality and HIV in Malawi. World Dev. 2012; 40(7):1435–1451. doi: 10.1016/j.worlddev.2011.12.003. [CrossRef] [Google Scholar]
- Berthé A, Huygens P. Communicating with vulnerable women for positive behaviour change: the Yerelon project in Bobo Dioulasso (Burkina Faso) Santé 2007; 17(2): 103-109. [PubMed] [Google Scholar]
- Low-Beer D, Stoneburner R. Behaviour and communication change in reducing HIV: is Uganda unique? Afr J AIDS Res. 2003; 2(1):9–21. doi: 10.2989/16085906.2003.9626555. [PubMed] [CrossRef] [Google Scholar]
- 22. Wamoyi J, Mshana G, Mongi A, Neke N, Kapiga S, Changalucha J. A review of interventions addressing structural drivers of adolescents' sexual and reproductive health vulnerability in sub-Saharan Africa: implications for sexual health programming. Reprod Health. 2014; 11:88. doi: 10.1186/1742-4755-11-88. [PMC free article] [PubMed] [CrossRef] [Google Scholar]



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Effect of Radiotherapy on Renal Function in Cervical Cancer Patients Treated at a Comprehensive Cancer Centre in Nigeria

By Otene Samuel Anaja & Usman M. Aliyu

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Abstract- Background: Cervical cancer is the second commonest malignancy in women worldwide, and a leading cause of cancer-related death for women in Nigeria. Unfortunately, treatment for cervical cancer induces renalfunction injury due the nephrotoxicity of commonly used cytotoxic medications, as well as radiotherapy. Thus, this study seeks to evaluate the effect of radiotherapy on the renal function of cervical cancer patients.

Objectives: 1) To examine if there will a positive of effect of radiotherapy on renal function in patients with cervical cancer after treatment. 2) To ascertain the statistical significance of the difference in renal function of cervical patients before and after treatment.

Method: The study was an ex post facto research, used for retrospective evaluation of documented information on 220cervical cancer patients treated in the department of radiotherapy and oncology UDUTH, Sokoto. The study covered a five-year period, beginning from January, 2010 to December, 2015. Data was obtained from the patients' case notes using a semi-structured data extraction form. Percentage and analysis, independent t-test and chi-square statistics was used to determine the outcome of the findings.

Keywords: cervical cancer, chemotherapy, radiotherapy, renal function.

GJMR-F Classification: NLMC Code: QZ 20.5

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Effect of Radiotherapy on Renal Function in Cervical Cancer Patients Treated at a Comprehensive Cancer Centre in Nigeria

Otene Samuel Anaja ^a & Usman M. Aliyu ^o

Abstract- Background: Cervical cancer is the second commonest malignancy in women worldwide, and a leading cause of cancer-related death for women in Nigeria. Unfortunately, treatment for cervical cancer induces renalfunction injury due the nephrotoxicity of commonly used cytotoxic medications, as well as radiotherapy. Thus, this study seeks to evaluate the effect of radiotherapy on the renal function of cervical cancer patients.

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Results: There is both positive and negative effect of radiotherapy of renal function of patients with cervical cancer. However, there was no statistically significant difference in the GFR of the patients, measured before and after treatment (t (219) = -0.66, P> 0.5).

Conclusion: Cancer treatment with radiotherapy has not only the potential to cause renal impairment but can as well enhance the renal function of patients with cancer of the cervix. Notwithstanding, there should be a constant monitoring of the GFR for every patient with cervical cancer underdoing radiotherapy.

Keywords: cervical cancer, chemotherapy, radiotherapy, renal function.

I. INTRODUCTION

ancer of the cervix (CC) is the second commonest cancer affecting women worldwide and about 86% of cervical cancer cases occur in developing countries⁽¹⁾. According to statistical data, 8-30 new cases of cervical cancer occur in 100,000 females within a year, depending on the region and state ⁽²⁾. Cervical cancer is recognized to be one of causes of illness and death leading among women worldwide, especially in developing countries¹ (including Nigeria)⁽³⁾. Unfortunately, most of the patients in Nigeria present at late stages and often have evidence of renal impairment at presentation ⁽³⁾. The renal system is one of the first body systems to be directly affected by cancer of the cervix, especially in advanced cases⁽¹⁾. Renal impairment was seen in more than a quarter of patients presenting with cancer of the cervix prior to commencement of treatment⁽⁴⁾. These complications are often preventable or reversible with prompt diagnosis and treatment ⁽⁵⁾. Treatment of cervical cancer commonly requires the use chemotherapy, which can be given at the same time with radiotherapy (concurrent chemotherapy/radiotherapy- CRT), or alone as neo-adjuvant or adjuvant chemotherapy. The treatment is usually stratified by stage to include External Beam Radiation Therapy (EBRT), which is done by the use of CT-based treatment planning and conformal blocking, to complete the standard of care for EBRT⁽⁶⁾.

Regarding the effect and outcome of chemotherapy and radiation therapy on renal functioning in patients, it has been shown that these treatments have a mixed effect, based on the classification of the cancer stages. For example, Okadema et al showed that Radiotherapy and chemotherapy may have adverse effects on renal and urological function³. The same study showed that a relatively high percentage of women with pelvic radiotherapy and/or chemotherapy had a ≥20% reduction in their estimated Glomerular Filtration rate (eGFR).Other studies report primarily that chemoradiation therapy has the negative effect of renal impairment (evidenced by a reduction in GFR) in patients with cervical or pelvic malignancy. Many studies have also shown that the presence of renal impairment in patients with carcinoma of the cervix is a poor prognostic indicator ⁽⁷⁾. Patient with evidence of renal impairment relating to the cervical cancer are said to be stage 3b according to the widely used International Federation of Obstetrics and Gynaecology (FIGO) staging for cancer of the uterine cervix ⁽⁸⁾. Varlotto et al

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found that radiotherapy is associated with a rise in renal dysfunction⁽⁹⁾.

However, other reports based on comparison tests, have shown a significantly statistical difference between GFR values at the beginning vs. three months after using the therapy, while there was no difference between GFR values at three months into treatment vs. six months into treatment⁽²⁾. Specifically for patients with cervical cancer, studies have shown a significant statistical difference between the average values of GFR after therapy. This led Horan, McArdle, Martin, Collins & Faulto assert that pelvic radiation does not induce any deterioration of renal function or degree of hydronephrosis. Overall, the kidney function was found to improve at three and 6 months in the majority of patients⁽¹⁰⁾.

II. AIM AND OBJECTIVES

The primary aim of the study was to evaluate the effect of radiotherapy on the GFR of cervical cancer patients that underwent this treatment procedure at the department of Radiotherapy and Oncology, Usman Danfodiyo University Teaching Hospital (UDUTH) Sokoto state. The objectives are:

- 1. To determine the effect of radiotherapy on renal function in patients with cervical cancer after treatment.
- 2. To ascertain the statistical significance of the difference in renal function of cervical patients before and after treatment.

III. Research Questions

- 1. Would there be a positive or negative effect of radiotherapy on renal function in patients with cervical cancer?
- 2. Would there be a significant difference in renal function of cervical cancer patients after radiotherapy, as compared to their renal function before radiotherapy?

IV. Method

a) Research design

The study adopted an ex post facto design for retrospective evaluation of cervical cancer patients that underwent radiotherapy treatment at the Department of Radio-Oncology, Usman Danfodiyo University Teaching Hospital (UDUTH), Sokoto. The study covered a 5-year period of treatment for patients with cervical cancer, starting from January 2010 and December 2015. In this context, the authors did not manipulate the independent variables (radiotherapy and chemotherapy) to observe their effect on the dependent variables (Renal function, eGFR).

b) Participants

Participants were cervical cancer patients that received radiotherapy treatment in the department of Radiotherapy-Oncology UDUTH, Sokoto. The sample consisted of 220selected case notes of cervical cancer patients that were exposed to radiotherapy treatment. The patients' demographic characteristics include sex, age, marital status, and occupation. Participants were both young and old patients, withe age ranging from 28-87years.

c) Materials

Data was collected from secondary sources. This comprised of patients case notes obtained in the archive of the department of Radio-Oncology UDUTH, Sokoto. The treatment information documented in patients' was obtained using a semi-structured data extraction form. For the radiotherapy procedure, patients were simulated in a computed tomography simulator with thermoplastic immobilization device and positioning devices such as knee-rests, to reproduce the same position during treatment. Three-dimensional conformal radiotherapy was planned using the Monaco treatment planning system (version 5.0). Radiation was delivered by linear accelerator with 6 MV or 10 MV photons. Four conformal fields were used in treating all carcinoma of cervix patients. Adequate coverage of target volumes and sparing of organs at risk was achieved. Treatment verification with Electronic Portal Imaging Devices (EPID) was done. The GFR values were calculated using Cocroft-Gault equation at first clinic visit, and repeated at first follow-up after treatment (radiotherapy).

d) Statistical Analysis

The data were analyzed using the Microsoft excel, then exported into SPSS version 20 (Chicago IL) for windows; for statistical analysis. The data were analyzed for frequency distribution, generated for all categorical variables. Mean and standard deviation were determined for quantitative variables. Comparison of the differences of the patients renal function status before treatment and after treatment was determined through the use independent t-test.

V. Results

The purpose of the study was to evaluate the effect of radiotherapy of the GFR of cervical cancer patients. The GFR were calculated using Cocroft-Gault equation at first clinic visit, and repeated at first follow-up after treatment (radiotherapy). The results obtained from the statistical analysis is tabulated and interpreted as follows:

Age (Year)	Frequency	Percent
20-29	9	4.1
30-39	27	12.3
40-49	69	31.4
50-59	53	24.1
60-69	47	21.4
70-79	11	5
>80	4	1.8
Total	220	100
House wife	135	61.4
Civil servant	35	15.9
Trader (Business)	31	14.1
Farmer	14	6.4
Others	5	2.3
Total	220	100

Table 1: Demographic Distribution of Cervical Cancer Patients

The demographic distribution of patients on table 1shows that the peak age incidence occurred with age range of 40-49 year (31.4%), while the second most affected age group was 50-59 years (24.1%). The mean age of the cancer patients was 49.9, SD \pm 11.9, and the age range of 24-87 years. Occupationally, 134(61.4%)

were housewives, 35 (15.9%) were Civil servants, 31(14.1%) were traders/businesswomen, 14(6.4%) were farmers and 5(2.3%) had other occupations. The mean age of the cancer patients was 49.9, SD \pm 11.9, and the age range of 24-87 years.

Table 2: Stages of cervical cancer presented by the patients

Stage	Frequency	Percent
1b	11	5
2a	33	15
2b	51	23.2
3a	49	22.3
3b	46	20.9
4a	19	8.6
4b	11	5
Total	220	100

 Table 2 shows the classification of cancer
 51(23.2%), 3a 49 (22.3%), 3b 46(20.9%), 4a 19(8.6%),

 stages. Stage 1b accounted for 11(5%), 2a 33(15%), 2b
 and 4b accounted for 11 (5%).

Table 3: Distribution of effect of radiotherapy on eGF	FR of patient with cervical cancer
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		Change in eGFR			2	D < 0.05	
Variables	(N) N	egative(%)	(N) Po	sitive (%)	χ	r < 0.05	
Stages of Ca:							
G1 b	13	63.6	20	36.4	.284	.288	
G2a	12	39.4	17	60.6			
G2b	21	49.0	28	51.0			
G3a	20	42.9	26	57.1			
G3b	12	43.5	7	56.5			
G4a	8	63.2	3	36.8			
G4 b	106	72.7	114	27.3			
Total	100	48.2	100	51.8		NS	

Table 3 shows that there is both positive and negative effect of radiotherapy on renal function of patients with cervical cancer after treatment. In analyzing these effect by percentages based on patients' disease stages, G1b indicates 63.6% negative effect and 36.4% positive effective. G2a 39.4% negative effect and 60.6% positive effect, G2b 49.0% negative effect and 51.0% positive effect. G3a 42.9% negative effect and 57.1% positive effect, G3b 43.5% negative effect and 56.5% positive effect. G4a 63.2% negative effect and 36.8% positive, G4b 72.7% negative effect and 27.3% positive effect. Overall, the finding shows 51.8% positive effect and 48.2% negative effect on renal function of the 220 patients. This result indicates that radiotherapy has both positive and negative effects on renal function of patients with cervical cancer after treatment. However, this effect of radiotherapy on renal function of the patients with cervical cancer was not found to be of statistically significant difference, with χ^2 (1, N=220) = .284, P = 288.

Variables	Stages	eGFR group	Frequency	Percent
eGFR Before Treatment				
Normal or high	G1b	>90	21	9.5
Mildly decreased	G2	60-90	117	53.2
Mild to Mod decreased	G3a	45-59	67	30.5
Mod to severely decreased	G3b	44-30	14	6.4
Severely decreased	G4	15-29	1	0.5
Kidney failure	G5	<15	0	0
eGFR After Treatment				
Normal or high	G1	>90	38	17.3
Mildly decreased	G2	60-90	109	49.5
Mild to Mode decreased	G3a	45-59	58	26.4
Mod to severely decreased	G3b	44-30	14	6.4
Severely decreased	G4	15-29	1	0.5
Kidney failure	G5	<15	0	0

Table 4: Summary of calculated eGFR of patients before and after treatment

Table 4 shows the pattern of the eGFR status among the patients before and after completion of their treatments. The GFR measurement for the patients was done before and after radiotherapy.

Table 5: S	Summary o	of independent	t-test of	difference o	of GFR b	efore and	after treatn	nent
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Variables	Group	Ν	М	SD	t	df	P = 0.05
GFR:	Before	220	69.67	19.48	-0.66.2	210	0 505
	After	220	70.87	20.38	-0.00.2	219	0.000

Table 5 shows there was a marginal difference in the mean score of patients GFR before and after radiotherapy intervention. The mean scores (M= 69.67, SD=19.48, N=220) for GFR before treatment and the mean scores of (M=70.87, SD= 20.38, N=146) for GFR

after treatment. However, there was no statistical significant difference in the patients GFR between before and after treatment as was(t (219) = -0.66, P< 0.5).

VI. DISCUSSION

Cervical cancer is the second most common malignancy in women and it is a leading cause of cancer-related death for women in Nigeria. Unfortunately, treatment for cervical cancer induces renal function injury due to the impact of high doses of ionizing radiation on the renal system in the course of radiotherapy. Following the known deleterious effect of radiotherapy on renal function, this study seeks to investigate the change in Glomerular Filtration Rate(GFR) among cervical cancer patients that have undergone radiotherapy in the department of Radio-Oncology UDUTH, Sokoto.

The mean age of the cancer patients in this study was 49.9 (SD \pm 11.9), with an age range of 24-87years. The peak incidence of (31.4%) of the disease occurred in people age 40-49 years, just as it been established in previous researches done in Nigeria^(11, 12, 13).

The statistical analysis on table 2 shows the classification of cancer stages presented by patients. Stage1b 5%, stage2a 15%, and 2b 23.2%, stage3a 22.3%, and 3b 20.9%, stage4a 8.6%, and 4b was 5% respectively. This shows that there was 80% incidence of advanced disease (Stage 2b and above). This corresponds to other similar studies ^(15, 16) which describe the late presentation of cervical cancer cases in Nigeria, compared to high-income countries where early presentation of cases predominates the disease⁽¹⁷⁾. This supports the importance of screening and early testing, which significantly reduces the incidence of cervical cancer and increases early detection of new cases, thereby improving prognosis for survival following treatment⁽¹⁹⁾.

Regarding the research questions which were put forward to be answered in this study, the statistical analysis for question one shows a bidirectional effect of radiotherapy on renal function of patients with cervical cancer. The bidirectional outcome of the result implies that application of radiotherapy as an intervention procedure in the treatment of cervical cancer has both negative and positive effects. This was established in the study from the derived findings which shows 51.8% positive effect of radiotherapy on renal function and 48.2% of its negative effect, in the 220 cervical cancer patients treated. These findings support the evidence from Okadema et al⁽³⁾, who assert that radiotherapy and chemotherapy may have adverse effects on renal and urological function. Their claim is supported by many prospective studies, which indicate that major genitourinary complications (or a significant rise in renal dysfunction) associated with postoperative are radiotherapy (3, 9).

On the contrary, despite the availability of extant literature showing that radiotherapy has a negative effect on renal function of the cervical cancer patients, there is also empirical evidence from studies that show the positive effect of radiotherapy on renal function of patients with cancer of the cervix, in tandem with the findings of this study. For example, Horan and his fellow researchers declared that pelvic radiation does not induce any deterioration of renal function or degree of hydronephrosis⁽¹⁰⁾. Another study also shows that kidney function was improved between the third and sixth months, in the majority of their patients⁽²⁾. Some studies have shown that the dose (Gy) of radiation given and the Stage of the disease (especially among patients with stages III and IV cancer) are often responsible for the renal complication imposed by the use of radiotherapy in treatment of cervical cancer. For example, it found that that patients with KV_{20Gv} values < 10% retained significantly better renal function than did patients with KV_{20Gv} values > 10% (P = 0.002)⁽¹⁴⁾. The incidence of complications may be reduced to some extent by careful dose planning and continuous observation of the patient during the irradiation^(9, 16).

Turning to the second research question, the findings show that there was a marginal difference in the mean score of patients' GFR before and after radiotherapy intervention. The mean scores were (M= 69.67, SD=19.48, N=220) for GFR before treatment and the mean scores were (M=70.87, SD=20.38,N=146) for GFR after treatment. This marginal difference observed in the mean scores of the patients' GFR before and after treatment is a supportive evidence to the findings on question one, which shows a variance51.8% positive effect and 48.2% of negative effect in the 220 cervical cancer patients evaluated in the study. Despite the findings that radiotherapy has both negative and positive effect of renal function, it shows that there was no statistical significant difference in the patients GFR before and after treatment at (t (219) = -0.66, P< 0.5). Therefore, there was no statistical significant difference found regarding the effect of radiotherapy on renal function of patients with cervical cancer $\chi 2$ (1, N=220) = .284, P = 288. This supports findings from other studies, which showed that there was no statistical difference in the risk between patients treated with radical hysterectomy with postoperative radiotherapy and radiotherapy alone⁽¹⁵⁾. However, the latency period between radiotherapy and the manifestation of urological complications may be relatively long, as radiotherapy has both acute and chronic side-effects.

VII. Conclusion

Cervical cancer remains a disease of great public health importance in most of the developing world, Nigeria inclusive. The various modalities for managing this disease, have been associated with documented deleterious effects on the renal function of patients treated. Although this study shows a marginally predominant positive effect of radiotherapy on renal function of patients with cervical cancer, radiotherapy has been known to cause serious renal injury, especially due to the anatomical location of the cervix. The incidence of complications may be reduced to a large extent by careful dose planning and continuous observation of the patient during the irradiation. Consequently, it is necessary for the radiation oncologists to maintain the standard dose applications and procedures for treatment of cervical cancer patients, as well as to monitor patients closely so as to either prevent complications or identify them early.

References Références Referencias

- Janaki, MG, Mukesh, S, Arul Ponni, Nirmala, S. Aggressive approach in a case of cancer cervix with uremia. Indian J Palliat Care; 2010 dio: 10:4103/ 0973-1075.63136
- Goga-Cmega, V, Tozija, L, Spasovski G. Influence of radiation therapy on glomerular filtration rate after treating pelvic malignancy. Mac Med Review 2016; 70(2): 88-93, DOI: 10.1515/mmr-2016-0017
- 3. Okadome et al. Renal function and urological complications after radical hysterectomy with postoperative radiotherapy and platinum-based chemotherapy for cervical cancer. Japanese Journal of Clinical Oncology, 2018, 48(2) 115–123 doi: 10.1093/jjco/hyx160
- Abdus-salam, AA, Bojude, AD, Abdus-salam, RA. Renal Status of Patients with Cervical Cancer Prior to Treatment Commencement. Tropical Journal of Nephrology, Vol.4 No1, 2009 p 17-20. Retrieved from https://www.tjn.online.com
- Mutambara J, Mutandwa P, Mahapa M, Chirasha V, Nkiwane S, Shangahaidonhi T. Knowledge, attitudes and practices of cervical cancer screening among women who attend traditional churches in Zimbabwe. Journal of Cancer Research and Practice, 2017 4(2): 53-8.
- Bruheim K, Guren MG, Skovlund E, et al. Late side effects and quality of life after radiotherapy for rectal cancer. Int J Radiat Oncol Biol Phys 2010; 76: 1005-1011.
- Chao KS, Leung WM, Grigsby PW et al. The clinical implications of hydronephrosis and the level of ureteral obstruction in stage IIIB cervical cancer, Int J Radiat Oncol Biol Phys. 1998 Mar 1 5; 40(5): 1095-1100.
- Musa J, Nankat, J Achenbach C, Shambe I, Taiwo B, Mandong B, Daru P, Murphy R, & Sagay A. Cervical cancer survival in a resource-limited setting-North Central Nigeria. Infectious Agents and Cancer 2016 dio: 11. 10.1186/s13027-016-0062-0
- 9. Varlotto JM, Gerszten K, Heron DE, Comerci J, Gautam S, Selvaraj R, et al. The potential nephrotoxic effects of intensity modulated

radiotherapy delivered to the para-aortic area of women with gynecologic malignancies preliminary results. Am J Clin Oncol. 2006; 29:281–9.

- Horan G, McArdle O, Martin J, Collins CD, Faul C. Pelvic radiotherapy in patients with hydronephrosis in stage IIIB cancer of the cervix: renal effects and the optimal timing for urinary diversion? Gynecol Oncol, 2006 101:441–4.
- 11. Mohammed A, Ahmed SA, Oluwole OP, Avidime S. Malignant tumours of the female genital tract in Zaria, Nigeria. Ann Afr Med 2006; 5:93-6.
- Babarinsa A, Akang EE, Adewole IF. Pattern of gynecological malignancies at the Ibadan cancer registry (1976-1995). Nig Q J Hosp Med 1998; 8:103-6.
- 13. Airede LR, Malami SA. A five year review of female genital tract malignancies in Sokoto, Northwestern Nigeria. Mary Slessor J Med 2005; 5:51-6.
- Kunogi, H, Yamaguchi, N, Terao, Y, Sasai, K. dosimetric predictors of nephrotoxicity in patients receiving extended-field radiation therapy for gynecological cancer. Radiat Oncol 2021; 16-25
- Li F, Guo H, Qiu H, Liu S, Wang K, Yang C, Tang C, Zheng Q, Hou Y. Urological complications after radical hysterectomy with postoperative radiotherapy and radiotherapy alone for cervical cancer. Medicine (2018) 97: 13. Retrieved from http://dx.doi.org/10.1097/MD.000000000010173
- Anorlu RI, Orakwue CO, Oyeneyin L, Abudu OO. Late presentation of patients with cervical cancer to a tertiary hospital in Lagos: what is responsible? Eur J Gynaecol Oncol. 2004; 25(6): 729-32. PMID: 15597852.
- Adegoke O, Kulasingam S, Virnig B. Cervical cancer trends in the United States: a 35-year populationbased analysis. J Womens Health (Larchmt) 2012 Oct; 21(10): 1031-7. Doi: 10.1089/jwh.2011.3385. Epub 2012 Jul 20. PMID: 22816437; PMCID: PMC3521146.
- Chapman BV, Swanick CW, Ning MS, Allen PK, Soliman PT, Westin SN, et al. Adjuvant combinedmodality therapy for stage IIIC endometrioid and non-endometrioid endometrial cancer. Gynecol Oncol, 2019 154: 22–8.
- Ali F, Kuelker R, Wassie B. Understanding Cervical Cancer in the context of Developing Centres. Ann Trop Med Public Health 2012; 5: 3-15.



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The Impress of Low Level Lasers in the Treatment of Patients with in Virus COVID-19 (SARS-Cov-2)

By Ehsan Kamani

University of Medical Sciences

Introduction- Coronavirus disease 2019 (COVID-19) originated in the city of Wuhan, Hubei Province, Central China. COVID-19 is caused by a novel coronavirus, named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). At present, the newly identified SARS-CoV-2 has caused a large number of deaths with Millions person of confirmed cases worldwide, posing a serious threat to public health. However, there are no clinically approved vaccines or specific therapeutic drugs available for COVID-19(1). The evidence shows that blue 450 nm light is antimicrobial against numerous bacteria, and that it accounts for Niels Ryberg Finsen's Nobelwinning treatment of tuberculosis. Further evidence shows that blue light inactivates several viruses, including the common flu coronavirus, and that in experimental animals, red and near infrared light reduce respiratory disorders, similar to those complications associated with coronavirus infection. Moreover, in patients, red light has been shown to alleviate chronic obstructive lung disease and bronchial asthma(2). LLLT can be added to the conventional treatment in COVID-19 at different stages of the disease.

Keywords: Low-level laser therapy; Covid19; laser blue; laser red; Virus; SARS-CoV-2, Corona.

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The Impress of Low Level Lasers in the Treatment of Patients with in Virus COVID-19 (SARS-Cov-2)

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INTRODUCTION

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prevented the virus from invading the heart and lungs(6). Effects and mode of operation of intravenous Low-Level-Laser-Therapy of the blood.

One under laser blood irradiation, antiinflammatory effects were observed that improved the immunologic activity of the blood.

A diminishing tendency of aggregation of thrombocytes and an improved deformability of erythrocytes result in an improved oxygen supply and with that to a decrease of partial carbon dioxid pressure, which is particularly relevant to wound healing.

Furthermore, the activation of phagocytic activity of macrophages was proved in conjunction with structural modifications. A positive effect on the proliferation of lymphocytes and B- and T-cell-subpopulations could be verified too [7]. According to all studies, low-level laser, whether Therapy or intravenous, can cause the following factors for the recovery of patients with Covid 19 virus:

- 1. Reduce inflammation
- 2. Lymphocyte proliferation
- 3. Increase in nitric oxide
- 4. Increase vitamin D.
- 5. Increase oxygen
- 6. Improve the activity of red blood cells

Ethical Considerations

Not applicable.

Conflict of Interests

The authors declare no conflict of interest.

References Références Referencias

- H. Li, S.-M. Liu, X.-H. Yu, *et al.* Coronavirus disease 2019 (COVID-19): current status and future perspectives Int J Antimicrob Agents (2020), p. 105951
- Enwemekaa CS, Bumahab VV, Masson-Meyersc DS. Light as a potential treatment for pandemic coronavirus infections: a perspective. J Photochem Photobiol B 2020; 111891. doi: 10.1164/ajrccmconference.2019.199.1_MeetingAbstracts.A6152
- Mokmeli S, Vetrici M. Low level laser therapy as a modality to attenuate cytokine storm at multiple levels, enhance recovery, and reduce the use of ventilators in COVID-19. Can J Respir Ther 2020; 56:25–31. doi: 10.29390/cjrt-2020-015.

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- Kamani, E., & Razaghi, M. (2020). Application of Laser Blue Light With a Wavelength of 405 nm in the Treatment of Patients with the Virus COVID-19. Journal of Lasers in Medical Sciences, 11(4), 361-362. https://doi.org/10.22037/jlms.v11i4.30498
- Razzaghi MD, Kamani E. Role low-power blue laser with a wavelength of 405 nm in increasing the level of nitric oxide in increasing the resistance of cells to the virus (COVID-19) and its effect on virus (COVID-19) mortality in vitro. OSP J Case Rep. 2020; 2(3): 1-3.
- Kamani E. (2020) Effect of Low Level Yellow Laser Light 589nm on Virus Prevention Corona Virus (COVID-19). OSP J Case Rep 2. JCR-2-112.
- Sirous Momenzadeh, Mohammadzaki Abbasi, Asghar Ebadifar, Mohammadreza Aryani, Jafar Bayrami, et al. (2015) The Intravenous Laser Blood Irradiation in Chronic Pain and Fibromyalgia J Lasers Med Sci 6: 6-9.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

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

Final points:

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

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

The discussion section:

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

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

General style:

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

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



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Mistakes to avoid:

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

Title page:

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

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

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

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

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

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

Approach:

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

Introduction:

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

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

Approach:

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

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

Procedures (methods and materials):

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

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

Materials:

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

Methods:

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

Approach:

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

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

What to keep away from:

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

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Results:

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

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

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

Content:

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

What to stay away from:

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

Approach:

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

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

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

Figures and tables:

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

Discussion:

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

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

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

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

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

Approach:

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

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

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

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

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