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Pediatric Surgery Department Outcome of Distal Hypospadias

Highlights

Discovering Thoughts, Inventing Future

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Outcome of Distal Hypospadias Repair in Pediatric Surgery Department at Alribat Teaching Hospital

By Yassir H A Ismail, Omar A M Khair & Atahir Bagadi
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Abstract- *Background:* Hypospadias is a common congenital anomaly affecting the penis in which the opening of the urethra is on the ventral surface of the penis, usually associated with ventral curvature of penis (chordae). Treating hypospadias is a challenging mission for the surgeons. Many techniques have been descried in the literature for the repair of hypospadias with variable results.

Objectives: To evaluate the surgical and cosmetic outcome of distal hypospadias repair including different procedures used to repair distal hypospadias and to identify complications and suggest solutions.

Keywords: *distal hypospadias, urethra.*

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Outcome of Distal Hypospadias Repair in Pediatric Surgery Department at Alribat Teaching Hospital

Yassir H A Ismail [α], Omar A M Khair [σ] & Atahir Bagadi [ρ]

Abstract- *Background:* Hypospadias is a common congenital anomaly affecting the penis in which the opening of the urethra is on the ventral surface of the penis, usually associated with ventral curvature of penis (chordae). Treating hypospadias is a challenging mission for the surgeons. Many techniques have been descried in the literature for the repair of hypospadias with variable results.

Objectives: To evaluate the surgical and cosmetic outcome of distal hypospadias repair including different procedures used to repair distal hypospadias and to identify complications and suggest solutions.

Patients and methods: This study was conducted at Pediatric surgery department of Alribat University Hospital from August 2012 to September 2013, during this period 31 patients with anterior hypospadias with or without chordee underwent hypospadias repair using different techniques.

Result: The common operation done in repair was MAGPI 51.6% (16 patients), then TIPS in 29% (9 patients). Over all complications rate of hypospadias repair were 35.5%. And the most common complications were fistula 16.1% and stenosis 6.5%. 50% of patients with chordee had developed complications compared to 29% of patients without chordee.

*Conclusion:*The MAGPI is an excellent choice for glandular and coronal hypospadias without chordee. Proper patient selection is mandatory for success.

TIP urethroplasty is an excellent technique for the majority of boys with subcoronal hypospadias. Urethrocutaneous fistula remains the commonest complication after distal hypospadias repair. There is no single ideal operation for all hypospadias, therefore, the urologists have to be proficient in performing a number of procedures in order to be prepared for all eventual possibilities. Hypospadias surgery is still challenging, however, adherence to the basic principles of surgery and postoperative care can markedly reduce complications.

Recommendations: Mean age for surgical repair of hypospadias should be less than 3 years. Long follow-up of young children underwent surgery and they should bereassessed after adulthood for functional, cosmetic and psychosexual outcomes.

Keywords: *distal hypospadias, urethra.*

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I. Introduction

Is derived from the Greek word 'hypos' meaning "under" and 'spadon' meaning "rent" or "fissure." (1) Hypospadias is one of the most common congenital anomalies of the male newborns affecting 1 in 300(2). Urethral meatus lies ectopically on the ventral surface of penis proximal to its normal position, from just below the tip of the glans to the perineum in the most severe cases.

The purpose of hypospadias repair is to construct a urethra which enables the patient to urinate adequately and to have a penis with satisfactory cosmetic result and adequate for coitus in adulthood (3).

Hypospadias constitute major challenges both functional and psychological. Parents may be the term hypospadias aware about both however, the psychological impact on the child is great especially if hypospadias was not repaired till school age. In communities where circumcision was conducted for religious or traditional requirements and in these communities where circumcision was prohibited for religious requirements, the presence of normally appearing complete circumferential prepuce is mandatory and this is the main source for the psychological burden(4).

Hypospadias is divided into three types of posterior (proximal), middle and anterior (distal), regarding the position of meatus. In anterior type, meatal orifice opens either on distal penile shaft, on corona, or under the glans (5). The majority of cases are distal hypospadias, and many different techniques have been described for their repair.

Repair of hypospadias is a challenging undertaking and there is a learning curve for every surgeon (6).

Different techniques for hypospadias repair have been described and newer methods continue to evolve. There is no one standard procedure for all hypospadias repair. A technique must be adapted for each individual patient. Therefore, the surgeon ought to be proficient in performing number of procedures in order to be prepared for all possible eventualities.

Currently, the aim of hypospadias repair is to provide a semi normal-looking straight penis with the meatal opening at the tip in a single-stage procedure (7).

II. Patients and Methods

The current study is done at Alribat University hospital, department of paediatric surgery, for patients who underwent distal hypospadias repair in the period August. 2012 to September using patient's record.

a) Material and method

31 children (aged between 2 years and 13 years) with distal hypospadias have been treated from August 2012 to September 2013. The average age at operation was 5.8 years.

They underwent primary repair using different type of operations, and they had no history of previous hypospadias repair. The preoperative meatal sites were glandular in 7patients, coronal in 8 patients, and subcoronal in 16 patients.

Data collected using predesigned questionnaire including information such as age, family history, type of hypospadias, type of surgery, complications ect…..
Statistical analysis of the data were performed with the statistical software package SPSS

III. Result

- All patients enrolled in this study have no family history of hypospadias
- Most of the patients were diagnosed at birth (87.1%), and only 12,9% diagnosed at circumcision (Table 1)
- The most common presentation of our patients is abnormal shape of penis and abnormal stream of urine (71 % and 25,8% respectively) (Fig 1)
- According to the site of meatus subcoronal hypospadias is the commonest 51.6% of patient. (Fig 2)
- Associated chordee is present in 19.4% of patients (6 patients) (Table 2)
- Associated external genitalia anomalies are inguinal hernia and undescended and they are equals 3.2% for each. (Table 3)
- Only one patient had been circumcised before surgery representing about 3.2% (Table 4)
- Mean age at time of surgery was 5.8 and 74.2% of patients underwent surgery after 3 year of age (Table 5)
- The common operation done in repair of our patients is MAGPI 51.6% (16 patients), then TIPS in 29% (9 patients), and UGPI in 9.7 (3 patients) (Fig 3)
- Post-operatively 35% of our patients had been catheterized more than 7 days (Table 6)
- This study showed that over all complications rate of hypospadias repair were 35.5%. And the most common complications were fistula 16.1%, stenosis 6.5%, and infection 3.2%. (Table 7 and Fig 4)
- 50% of patients who had hypospadias with chordee had developed complications, compared to 29% of those who had no chordee. (Table 9 & Table 10)

IV. Discussion

Hypospadias is one of the most common congenital male birth anomalies, occurring in approximately 1 out of 200–300 live male births (49) Anterior or distal hypospadias comprises 50% to 70% of all hypospadias according to Barcat (1973) and Duckett (1992).(8)(9)Several surgical techniques have been advocated for repairing anterior hypospadias. Some of these techniques are MAGPI, Mathieu, GAP, Snodgrass, Mustard, and Barcat, among which MAGPI, Mathieu and Snodgrass are the most commonly used techniques.

In the present study, the median age for primary hypospadias repair was 5.8 years (range from 2years to 13 years). The majority of boys (21patients) were above the age of 3 years, which is not preferable. Having observed disturbing behavioral changes in boys undergoing hypospadias repair between the ages of 2 and 6 years, Manley and Epstein reduced age at operation to 10 to 18 months, and noted marked improvement emotionally and psychologically compared to the older age group. (84)Also, boys undergoing staged hypospadias repair, did significantly better psychologically with one stage repair at age 6 months compared to those undergoing two stage repair at age 3 years. (10)

One of the major changes that have occurred over the past 2 decades is the recommendation for age of surgical correction of hypospadias, it is clear that the window between 6 and 18 months is the optimal time for hypospadias repair. This is due to better understanding the developmental, psychosexual, anesthetic and surgical factors involved in surgical decision (11).

In this study the suture material used for repair of all patients is polyglactin (vicryl). Fine 6/0 and 7/0 polyglactin absorbable suture (vicryl) are the standard sutures used in hypospadias repair. Several studies have shown that polydiaxanone (PDS) reacts with urine and causes a chemical reaction that increases the chances of fistula and complications. (12)

Ulman et al. (1997) found that in urethroplasty with 6/0 vicyrile exact fold continued repairing had higher fre¬quency of occurence fistula development, than in urethro¬plasty with 7/0 PDS subcuticular continued repairing.

Penile curvature associated with hypospadias may be caused by deficiency of the normal structures on the ventral side of the penis. (13)Distal hypospadias is the least type of hypospadias that associated with

chordee.Barcat(1973) reported 15% incidence of chordee in anterior hypospadias.

In the present study, penile curvature occurred in 19.4% (6 patients) of cases. This is in agreement with Barcat (1973) (14)

In the present study, the incidence of undescended testis and inguinal hernia is 3.2% for each and this is in agreement with that of John M Gatt-Andrew J they report 4.8% for undescended testis, and 7.1% for inguinal hernia with anterior hypospadias (15)

This study showed a complication rat of fistula 16.1%, and stenosis 6.5% (Table 7 and Fig 4). Our results are in agreement with those reported by Spence JR(16)who reported incidence of fistula 16.7% in patients underwent urethral advancement for distal hypospadias repair, and this figure is higher than Cakan et al.(17) who reported a frequency of fistula of 11% after TIPU for distal hypospadias repair.

Holland et al performed a study on 59 patients with a mean age of 13 months, using Snodgrass technique, and followed them for 9 months. Fistula and meatal stenosis were reported in 10%, and 5% of cases, respectively. Appearance and functional results were reported to be acceptable. (18).

Haq AU13 observed meatal stenosis in 5.5%, and low incidence of fistula in 3.3%, of patients operated with Snodgrass procedure.

Uygur et al. (2002) reported 7.7% of 91patients underwent MAGPI had meatel stenosis (19)

The best results for MAGPI procedure has been reported by the original authors (Duckett and Snyder, 1992) (20).They reported a complication rate of 1.2%, which, was much less than that in the remaining literature.

Elbakry and Snodgrass showed in their studies that regu¬lar urethral dilatation after Snodgrass surgery can decrease the development of narrow meatus and occurrence of fistulas (21) (22)

We checked our patients' urethral meatus calibre postoperatively in the 2nd week, and use nasogastric tube size 5 or 8 for dilatation of the urethral meatus.

V. Conclusion

Hypospadias is one of the commonest congenital anomalies of male children and distal hypospadias is the commonest type.

Undescended testis and inguinal hernia were the most common associated anomalies with distal hypospadias.

Distal hypospadias is the least type of hypospadias that associated with ventral curvature (chordee).

The MAGPI is an excellent choice for glandular and coronal hypospadias without chordee. Proper patient selection is mandatory for success.

TIP urethroplasty is an excellent technique for the majority of boys with subcoronal hypospadias.

Urethrocutaneous fistula remains the commonest complication after distal hypospadias repair.

There is no single ideal operation for all hypospadias, therefore, the urologists have to be proficient in performing a number of procedures in order to be prepared for all eventual possibilities.

Hypospadias surgery is still challenging, however, adherence to the basic principles of surgery and postoperative care can markedly reduce complications.

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Can a Negative C-Reactive Protein Rule out Appendicitis?

By Wadah A Ali, Juanita A Bonila, Ali A Yammahi, Faisal Badri & Yousif H ElTayeb

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Abstract- *Background:* Acute appendicitis is one of the commonest causes of acute abdomen. Several studies have looked at the role of C-reactive protein (CRP) and white cell count (WCC) in diagnosing acute appendicitis with varying results but there is a scarcity of such data in the U.A.E. The aim of this study was to determine the sensitivity and specificity of CRP, WCC and neutrophils count in the diagnosis of acute appendicitis.

Methods: The study was carried out between December 2011 and December 2012. This was a prospectively conducted, retrospectively analyzed study. 535 patients underwent appendicectomy during the study period (418 laparoscopic and 117 open appendicectomies). Two hundred and forty nine patients were eligible for inclusion in the final analysis. The patients preoperative CRP, WCC and Neutrophils count were measured and compared to the histopathology of the appendix which was grouped into either positive or negative for appendicitis.

Keywords: *appendicitis, c-reactive protein, white cell count, neutrophils count.*

GJMR-I Classification : *NLMC Code: WJ 768*

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Can a Negative C-Reactive Protein Rule out Appendicitis?

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Results: Out of 249 patients, 198 (79.5%) were male and 51 (20.5%) were female. The sensitivity and specificity of CRP were 77.31% (CI 71.74%-82.88%) and 51.51% (CI 34.54%-68.48%) respectively. Leukocytosis (WCC ≥12x109/L) had a sensitivity of 73.14% (CI 67.26%-79.02%) and a specificity of 51.51 %(CI 34.54%-68.48%), whereas a left shift (neutrophils count≥ 80%) showed 66.66% (CI 60.47% - 72.85%) sensitivity and 75.75 % (CI 61.23%-90.27%) specificity

Conclusion: In this study CRP, WCC and neutrophils count showed medium sensitivity and specificity for the histopathological diagnosis of acute appendicitis. This is consistent with other studies and with the wide range of sensitivity and specificity in published literature. Therefore, these tests should always be considered in the light of the clinical context whilst also judiciously utilizing other available resources such as radiological studies.

Keywords: appendicitis, c-reactive protein, white cell count, neutrophils count.

I. Introduction

Acute appendicitis is one of the commonest causes of acute abdomen.[1, 2] Appendicitis occurs most frequently in the second and third decades of life. The incidence is approximately 233/100,000 population and is highest in the 10 to 19 year-old age group. It is also higher among men (male to female ratio of 1.4:1), who have a lifetime incidence of 8.6 percent compared to 6.7 percent for women.[3]Although history and physical examination are of paramount importance in the diagnosis of acute appendicitis many patients do not have a typical presentation, highlighting the need for laboratory investigations and diagnostic imaging. Delay in diagnosing acute appendicitis is associated with significant morbidity and mortality.

C-reactive protein (CRP) was first discovered in the serum of patients during the acute phase of pneumococcal pneumonia. [4, 5] it consists of five identical, non-covalently associated subunits, each with a molecular weight of approximately 23 kD, which are arranged symmetrically around a central pore. [6] CRP and related proteins with this structure are termed pentraxins; others include serum amyloid P and a number of pattern recognition molecules referred to as long pentraxins.[7] The level of CRP that is truly normal or clinically innocuous is not known. Data from a study conducted by the National Health and Nutrition Evaluation Survey of over 21,000 people revealed that CRP levels vary with age, sex, and race.[8]

Several studies have looked at the role of CRP and white cell count (WCC) in diagnosing acute appendicitis with varying results but there is a scarcity of such data in the U.A.E. In a review of 283 patients, John S et al. concluded that CRP estimation complements clinical diagnosis by a consultant surgeon, and should be included in the diagnostic work-up of acute appendicitis. CRP level estimation yielded a sensitivity of 98% (95% CI 95%-100%) and specificity of 87% (95% CI 73%-94%) and was labeled as an inexpensive test that does not add an undue burden to the cost of management.[9] Contrastingly, Jangjoo et al found CRP to be neither sensitive nor specific enough to be used as a single test for diagnosing or ruling out acute appendicitis. CRP showed 59% sensitivity (95% CI, 48-69%) and 68% specificity (95% CI, 47-88%). [10]

In a meta-analysis of 22 articles and 3436 patients, the sensitivity of CRP ranged from 0.40 to 0.99, and the specificity from 0.27 to 0.90. The cut-off values for a positive test varied from 5 to 25 mg/L. Summary receiver operating characteristic (SROC) curve analysis showed that CRP performed significantly better in acute abdomen populations (11 studies) than in populations already selected for appendectomy (11 studies). The diagnostic accuracy of CRP tended to be a little inferior to that of total leukocyte count (13 studies) CRP was described as a test of medium accuracy in diagnosing acute appendicitis. The distractingly wide range of sensitivity and specificity was attributed at least in part

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due to variations in cut-off values and to differences in study populations. However, definitive conclusions on the clinical usefulness of the test could not be drawn.[11]

Another meta-analysis found the sensitivity and specificity of CRP for suspected acute appendicitis to be 57 (39 to 73) and87 (58 to 97) per cent respectively, compared to 62 (47 to 74) and 75 (55 to 89) per cent for WCC. ROC curve analysis showed that CRP had the highest accuracy (area under ROC curve 0·75, 95 per cent CI 0·71 to 0·78), followed by for WCC (0·72, 0·68 to 0·76) and procalcitonin (0·65, 0·61 to 0·69). [12]

II. Materials and Methods

The study was carried out between December 2011 and December 2012. This is a prospectively conducted, retrospectively analyzed study. All adult patients who presented to the emergency department of Rashid Hospital, Dubai with suspected acute appendicitis who subsequently underwent open or laparoscopic appendicectomy were the target population. 535 patients underwent appendicectomy during the study period (418 laparoscopic and 117 open appendicectomies). Immunocompromised patients, pregnant females, patients below 16 and above 60 years of age, those who were managed conservatively and those in which the CRP value was not measured were excluded. Similarly patients in whom the appendix was not removed and presumed normal on gross assessment by the surgeon were excluded from the study. Two hundred and forty nine patients were included in the final analysis.

The patients' preoperative CRP, WCC and neutrophils count values were obtained from the online hospital SAM system (Shared Medical Systems-Albabtain Trading Est Version 2.9.62) and it was compared to the final histopathology. A CRP value of 10mg/dL or more was considered positive and similarly a cut off of 12x109/L was set for the white cell count. A left shift was considered present when the neutrophils count was above 80 percent. The histopathology result was categorized into either positive or negative for acute appendicitis. A third category was added where the appendix was negative on histopathological examination but there was an alternative surgical diagnosis intra operatively. This data was recorded in a special questionnaire.

The statistical analysis was performed on all collected data using SPSS programme to calculate the sensitivity and specificity of elevated C-reactive protein, white cell count and neutrophils count.

III. Results

535 patients underwent appendicectomy during the study period (418 laparoscopic and 117 open appendicectomies) (Figure 1). Immunocompromised patients, pregnant females, patients below 16 and above 60 years of age, those who were managed conservatively and those in which the CRP value was not measured were excluded. Similarly patients in whom the appendix was not removed and presumed normal on gross assessment by the surgeon were excluded from the study. Two hundred and forty nine patients were included in the final analysis (198 male and 51 females) (Figure 2). The mean age was 30.06 years. The overall rate of non therapeutic (negative) appendicectomies was 13.25% (Figure 3). The sensitivity and specificity of CRP were 77.31% (CI 71.74%-82.88%) and 51.51% (CI 34.54%-68.48%) respectively. Leukocytosis (WCC≥12x109/L) had a sensitivity of 73.14% (CI 67.26%-79.02%) and a specificity of 51.51 %(CI 34.54%-68.48%).A left shift (neutrophils count ≥ 80%) showed 66.66% (CI 60.47% - 72.85%) sensitivity and 75.75 % (CI 61.23%-90.27%) specificity (Figure 4). The positive predictive value for CRP was 91.25% while the negative predictive value was 25.75%. The positive and negative predictive values for WCC were 90.80% and 22.66% respectively. The positive predictive value for neutrophils left shift was 94.73% and the negative predictive value was 25.77%. When male patients were considered separately, the sensitivity and specificity for CRP were 76.96% (CI 70.77%-83.15%) and 55% (CI 32.27%-76.73%) respectively compared to 78.94% (CI 75.97%-91.91%) and 46.15 (CI 19.07%-73.23%) in females (Figure 5).

The positive and negative likelihood ratios for CRP were 1.59 and 0.44 respectively compared to 1.50 and 0.52 for WCC and 2.74 and 0.44 for neutrophils count.

IV. Discussion

Appendicectomy is one the most commonly performed abdominal operations. Delay in the diagnosis of acute appendicitis is associated with significant morbidity and mortality. The negative appendicectomy rate in published literature remains 15-30% despite of the range of available laboratory and imaging tests. Several studies have looked at the sensitivity and specificity of CRP and WCC in the diagnosis of acute appendicitis with somewhat conflicting results. In one meta analysis the sensitivity of CRP ranged from 0.40 to 0.99, and the specificity from 0.27 to 0.9011. This wide range was attributed in part to the different cut off values used in the measurement of CRP and the different study populations. In this study CRP, WCC and neutrophils count showed medium sensitivity and specificity for the histopathological diagnosis of acute appendicitis. This is consistent with other published studies11,12 and with the wide range of sensitivity and specificity in published literature.9-12 At 77.31%, CRP showed a slightly superior sensitivity when compared to WCC (73.14%) and neutrophils count (66.66%) while neutrophils count was the most specific of the three tests(75.75%).The positive likelihood ratio of CRP was 1.59, that is to say a

person with acute appendicitis is about 1.5 times more likely to have a positive test than a person who does not have the condition. It is worthwhile to mention that in four cases where both the CRP and WCC were positive and the histopathology was negative for appendicitis, there was an alternative intra operative diagnosis (perforated duodenal ulcer, ischemic bowel, carcinoid tumour of the appendix and a ruptured ovarian cyst) which required surgical intervention. Therefore, these tests should always be considered in the light of the clinical context whilst also judiciously utilizing other available resources such as radiological studies. Asfar S et al concluded that a normal pre-operative CRP measurement in patients presenting with suspected acute appendicitis is mostly associated with a normal appendix and that deferring surgery in these patients would probably reduce the rate of unnecessary appendicectomies13; the authors of this study disagree with this conclusion. Our findings suggest that a negative CRP and an absence of leukocytosis do not completely exclude a diagnosis of acute appendicitis, this is to be kept in mind when evaluating patients presenting with acute abdomen.

Figures

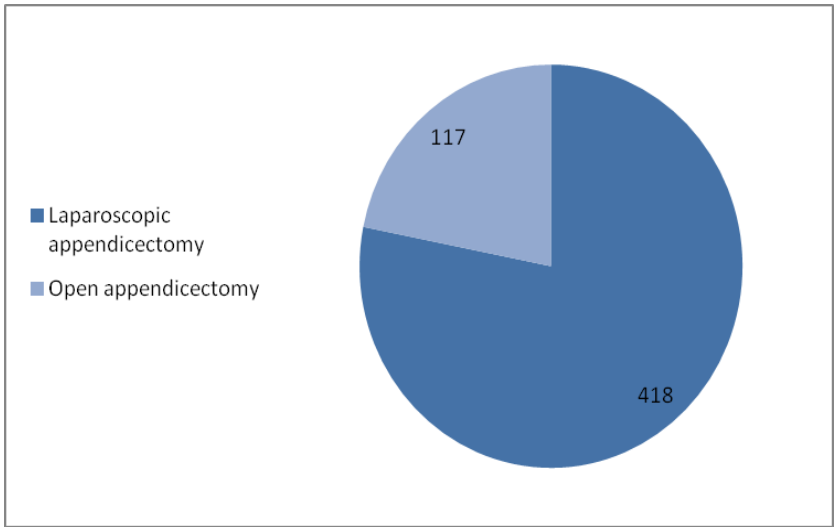

Figure 1 : Total appendicectomies: 535

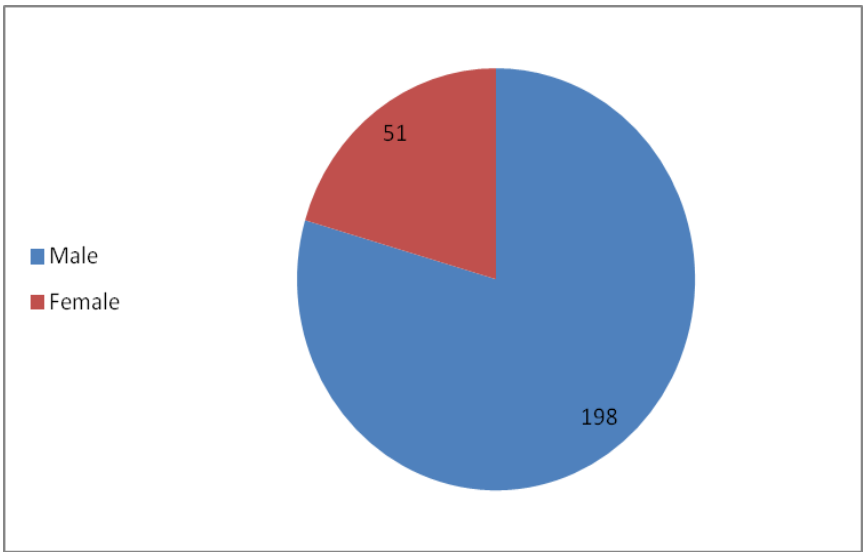

Figure 2 : Gender distribution

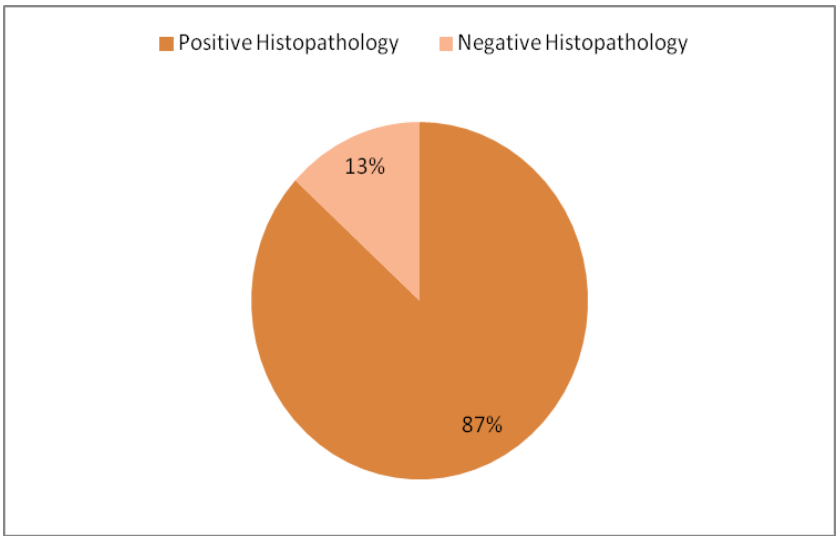

Figure 3 : Negative appendicectomy rate

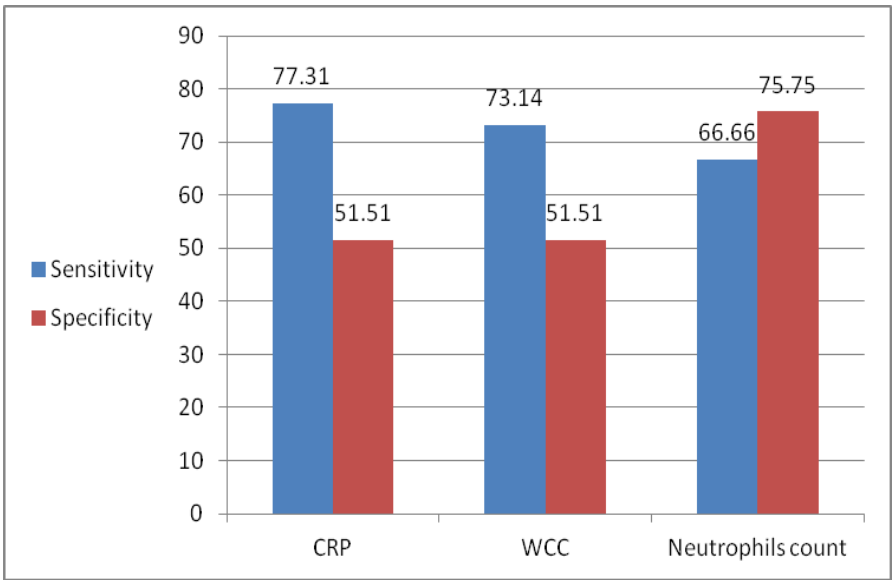

Figure 4 : Sensitivity and Specificity

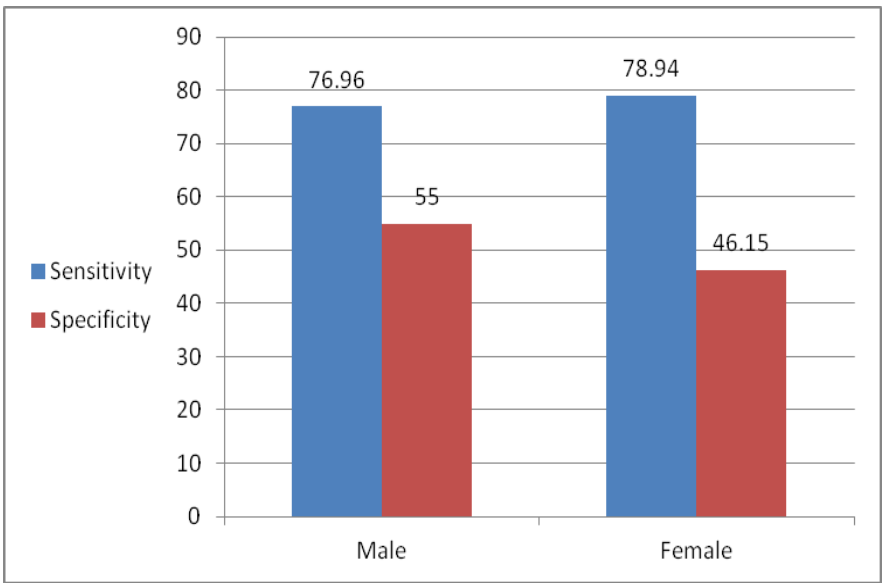

Figure 5 : CRP Sensitivity and Specificity Males /Females

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Moderate Versus Low Intensity Aerobic Exercise on Bone Mineral Density in Patients on Hemodialysis

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Abstract- Chronic kidney disease (CKD) is recognized as a major health problem reflecting the growing elderly population and increasing numbers of patients with diabetes and hypertension. Medical researches confronted with mana-gement of complex medical problems that are unique to patie-nts with chronic renal impairment and renal dialysis where pati-ents suffer from hypocalcemia that subjected them to oste-oporosis.

Objective: The aim of this study was to compare the effect of two different intensities of aerobic exercises on bone mass density in patients on haemodialysis.

Keywords: bone mass density /osteoporosis/ renal haemodialysis/ aerobic exercises.

GJMR-I Classification : NLMC Code: WB 541

Strictly as per the compliance and regulations of:

Moderate Versus Low Intensity Aerobic Exercise on Bone Mineral Density in Patients on Hemodialysis

Nesreen G. El-Nahas [α], Heba A. Bahey [σ] & Shimaa N. Aboelazm [ρ]

Abstract- Chronic kidney disease (CKD) is recognized as a major health problem reflecting the growing elderly population and increasing numbers of patients with diabetes and hypertension. Medical researches confronted with management of complex medical problems that are unique to patients with chronic renal impairment and renal dialysis where patients suffer from hypocalcemia that subjected them to osteoporosis.

Objective: The aim of this study was to compare the effect of two different intensities of aerobic exercises on bone mass density in patients on haemodialysis

Subjects: Thirty m-ale patients underwent renal haemodialysis for 2 years ago with mean age (52.75±4.51)were recruited from Police hos-pital .

Methods: They were assigned randomly into two groups, 15 patients in each group. Group (A) attended a program of moderate intensity aerobic treadmill exercise (60-70%MHR), where Group (B) attended a program of light intensity aerobic treadmill exercise (40-60%MHR), both for 6 months (3 sessions of exercise per week) prior to the dialysis session. Laboratory investigations for serum calcium and phosphorus level in addition to a dual X ray absorpimetry (DXA) were applied at baseline and after 6 months of training for both groups.

Results: The study revealed a significant difference in bo-ne mineral density in favor of group A with P- value 0.01 as w-ell as a significant increase in serum calcium by 12.29 %, 4.23 % and significant decrease in serum phosphorus with 21.67 %, 6.52 % for group A and B respectively. Conclusion: Mod-erate intensity aerobic exercise is more effective than light inte-nsity aerobic exercise in modulating serum calcium and pho-sphorus and thus improving BMD in patients with hemod-ialysis.

Keywords: bone mass density /osteoporosis/ renal haemodialysis/ aerobic exercises.

I. Introduction

Chronic kidney disease (CKD) is a progressive condition that often comes with other multiple complications, such as diabetes, hypertension, renal osteodystrophy, anemia, cardiovascular disease, and malnutrition. The earlier the recognition of CKD and trea-tment of its complications the better the long-term out-comes [(1).] kidneys have many important roles, such as regulating fluid and minerals in the body, they stimulate bone marrow to make red blood cells, synthesize vitamin D, regulate blood pressure, excrete waste chemicals in the urine and regulate acid-base levels. In kidney failure, the blood concentrations of calcium and phosphorus become abnormal. Calcium level drop is a condition called hypocalcaemia that can cause muscle weakness and nerve problems. In contrast, phosphorus levels rise. This is a condition called hyperp-hosphatemia, which can cause bone problems and itching. [(2).]

Hypocalcaemia occurs in kidney failure for at least two reasons. First, kidneys cannot synthesize vitamin D which normally raises the level of calcium in the body. Without vitamin D, calcium is not absorbed from the diet. Second, high levels of phosphate that could not bind to calcium deposit in the tissues as the diseased kidney could not excrete it. Low calcium levels encourage the release of parathyroid hormone (PTH). This hormone increases blood calcium by reabsorbing calcium from the bones. This can lead to a condition called renal osteodystrophy(ROD) [.(3)]. The syndrome known as chronic kidney disease–mineral and bone disorder (CKD-MBD) is composed of clinical, biochemical and radiological abnormalities where progressive bone loss and muscle cramping frequently occur [(4)].

Bone strength reflects the integration of two main features: bone density and bone quality. Bone density is expressed as grams of mineral per area or volume, and in any given individual is determined by peak bone mass and amount of bone loss. Bone quality refers to architecture, turnover, damage accumulation (e.g.,micrfractures) and mineralization [(5)] .Normal bone density is dfined as being (-1 standard deviation) or greater than the mean at 30-40 years (peak bone mass). Bone density between -1 SD and -2.5 SD of peak bone mass (T sc-ore between−1.5 and −2.5) has been defined by the WHO as osteopenia, and equal or below 2.5 SD of peak bone mass (a T score ≤ − 2.5), as osteoporosis [(6)] .However, not every person diagnosed with osteopenia will develop osteoporosis [(7)].

Renal osteodystrophy (ROD) is a spectrum of bone mineral changes that could range from the high-

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turnover lesions of secondary hyperparathyroidism to the low-turnover lesions of a dynamic bone disease .The impact of different types of ROD on bone density in patients with CKD remains undefined. Dual energy X-ray absorp-tiometry (DXA) is the commonest method used to screen for osteoporosis in adults due to its precision and accuracy, short scan time and low radiation [3].

Aerobic exercise increases bone mass by using body weight as the resistance. Walking and running are great ways to increase or maintain bone mass while increasing cardiovascular fitness. [8]

Exercise training in adults with CKD can affect the following factors: Muscular hypotrophy, strength, endurance & physical functioning [9,10].The structure and number of capillaries and mitochondria [11]. Glucose meta-bolism[12]. Aerobic capacity [13].Blood pressure [14]and Cardiac performance [11].

It is known that inactivity, muscle wasting and reduced physical functioning especially for those on long-term dialysis are associated with increased mortality in CKD. Exercise in patients receiving regular dialysis as a treatment for end-stage renal disease was first introduced 3 decades ago, but is still only offered in a minority of renal units around the world, despite a significant body of evidence to support its use. Work is needed to increase awareness of the potential benefits of increased physical activity for patients with advanced CKD [15].

This study was conducted to compare the effect of two different intensities of aerobic exercises on bone mass density in patients with haemodialysis.

II. Subjects, Materiales and Methods

a) Subjects

Thirty male patients with mean age (52.75-±4.51) years were enrolled in this study; they underwent renal haemodialysis for 2 years ago with rate of 3 times/week. They were randomly selected from Police hospital using one to one base. All patients gave their written informed consent for the participation in the stu-dy that had been preceded by the explanation of the aim of the study and its course, their role in it with regard to time and money, assurance of protection of the obtained data, and information about free-willingness to participate in the study and the possibility to withdraw from the study at any time.

b) Inclusion crieteria

- body mass index ranged from 25 to 29 kg/m^2.
- systolic blood pressure ranged between 130-190 mm Hg.
- diastolic blood pressure between 85-100 mm Hg).
- T- score between -1.1and -2.4 SD according to DEXA measurements.
- Male subjects with age ranged from 45 to 55 years

c) Exclusion crieteria

- chest ,cardiac, or hepatic diseases.
- severe life limiting illness (e.g. malignancy).
- marked anaemia(Ht<25%).
- using of weight-loss medications.
- smoking.
- neurological or other endocrinal disorders.
- Laboratory investigation kit.

d) Insrumentations

i. *Evaluation tools*

- RTZ-120 health scale was used to measure subject's weight
- Height scale
- 3-Body composition was assessed by dual-energy X-ray absorpiometry (DEXA) using a Lunar DPX-L densitometer. (Lunar Prodigy Bone Densitometer)

ii. *Treatment tools*

- Electronic treadmill and pulsometer were used to perform walking training program

e) Procedures

Evaluation: All patients were initially assessed for their weight, and height to calculate body mass index, heart rate and blood pressure.

The other 2 steps of evaluation were assessed at the beginning of the study and after 8 weeks of training: (a) Laboratory investigations (Before dialysis sessions), blood samples are collected by venipuncture for detecting the levels of Serum Calcium and Phosphorus. (b) A DEXA scanner was used for evaluation of BMD.

Subjects were placed in a supine position or on their side while the x-ray scanner performed a series of transverse scans, moving from top to bottom of the region being measured at 1-cm intervals. Three separate scans were performed:
1) AP view of the lumbar (L1–L4) spine.
2) AP view of the left hip providing information on the femur.
3) AP view of the left wrist with the subject supine.

While the scanner moved across the left hip, providing information on the femur neck (whole hip), left wrist (33% of left radius), and measure lateral view of the lumbar (L1–L4) spine. Regional and total body BMD measurements with this technique are highly reliable when subject positioning is carefully standardized [16]..
The test results included the following scores:
T score, Z score, Bone mineral density, Percentage, Age matched percentage.

f) Training program

Patients were randomly assigned into two groups of equal number, Group A and Group B (each group consists of fifteen patients) Patients were recruited two hours early prior to dialysis session . electronic treadmill and pulsometer were used to perform walking training program, with maximum Heart Rate (MHR) calculated according to (220-Age) for men.

Group A received a program of moderate intensity aerobic exercise (60%-70% MHR) with an exercise period of 40 minutes divided as warming up phase:3-5 min. with 30% MHR, actual phase:20-30 min. with 60%-70% MHR and cooling down phase:3-5 min. with 30% MHR three times weekly for six months.

Group B received a program of light intensity aerobic exercise (40%-60% MHR) with an exercise period of 40 minutes divided as warming up phase : 3-5 min. with 30% MHR, actual phase: 20-30 min. with 40%-60% MHR and cooling down phase:3-5 min. with 30% MHR three times weekly for six month. The training program was performed under careful supervision for both groups.

III. Results

Table 1 : Demographic characteristics of the patients in both groups (A&B)

Items	Group A		Group B		Comparison		S
	Mean	±SD	Mean	±SD	t-value	P-value	
Age (yrs)	51.86	±4.22	53.6	±4.82	1.04	0.3	NS
Weight (Kg)	86.26	±10.06	84.66	±7.37	0.49	0.62	NS
Height (cm)	172.26	±5.68	169.33	±6.97	1.26	0.21	NS
BMI (Kg/m^2)	29.02	±2.61	29.56	±2.53	0.57	0.57	NS
Systolic blood pressure (mmHg)	162.66	±17.91	165.33	±15.52	0.43	0.66	NS
Diastolic blood pressure (mmHg)	93.66	±5.49	91.66	±5.87	0.96	0.34	NS

Yrs: years, Kg.: Kilograms, Cm. centimeters, Kg/m^2: Kilogram per meter square, mmHg: millimeters mercury

Table 2 : Statistical Analysis of Calcium levels pre and post treatment for both groups (A & B)

Calcium level	Group A		Group B		Between both groups	
	Pre	Post	Pre	Post	Post	post
Mean ± SD	7.97±0.72	8.95±0.61	8.03±0.5	8.38±0.52	0.06	0.57
t-value	7.5		3.02		0.26	2.75
P-value	0.0001*		0.009*		0.79	0.01*
Percentage of improvement	12.29 %		4.23 %			

*SD: Standard Deviation, *: Significance*

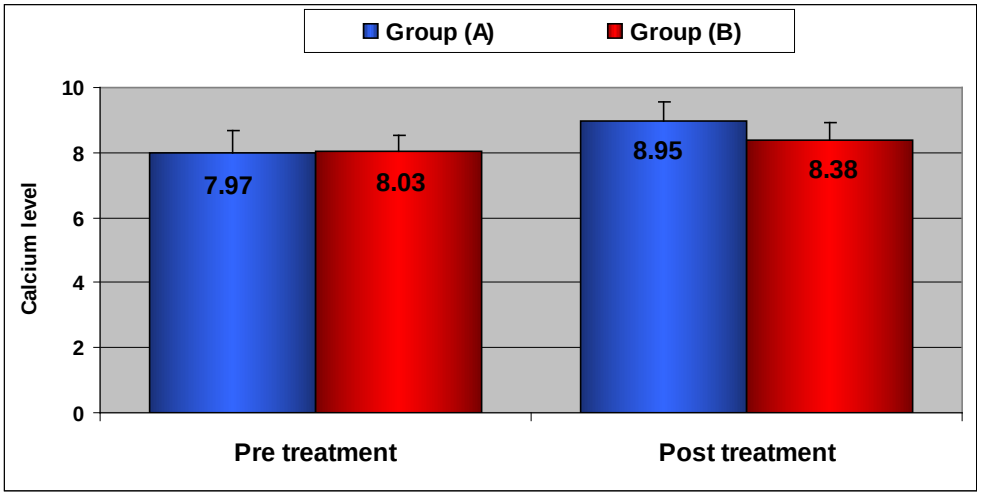

Figure 1 : Mean and ±SD of Calcium level pre and post treatment of groups (A,B)

Table 3 : Statistical Analysis of Phosphorus levels pre and post treatment for both groups (A & B)

Phosphorus level	Group A		Group B		Between both groups	
	Pre	Post	Pre	Post	Post	post
Mean ± SD	6.46±1.39	5.05±1.21	6.44±0.8	6.02±0.78	0.01	0.96
t-value	6.71		3.09		0.03	2.59
P-value	0.0001*		0.008*		0.97	0.01*
Percentage of improvement	21.67 %		6.52 %			

*SD: Standard Deviation, *: Significance*

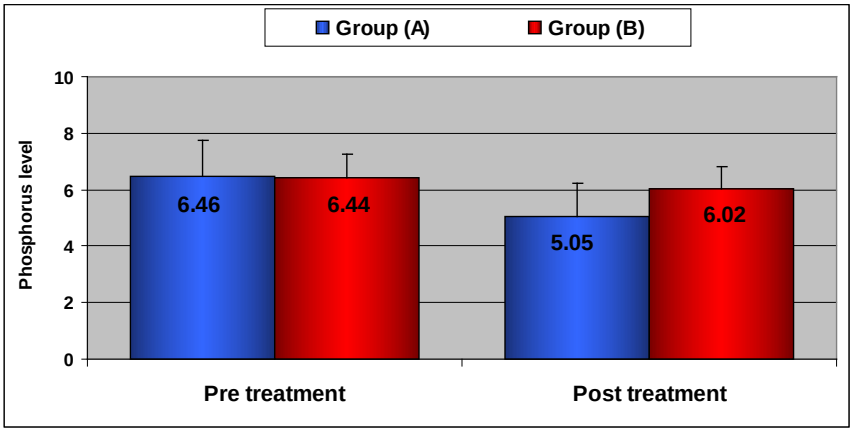

Figure 2 : Mean and ±SD of Phosphorus level pre and post treatment of groups (A,B)

Table 4 : Mean values of T score pre and post treatment at lumbar spine, left hip, left wrist for group A

Group A	pre exercise	Post exercise	T- value	P- value	Percentage of change
Lumbar spine	1.30 ± 0.747	1.10 ± 0.759	6.96	0.001*	18.2%
Left hip	1.36 ± 0.894	1.20 ± 0.928	6.07	0.001*	13.3%
Left wrist	1.40 ± 0.692	1.30 ± 0.776	7.22	0.001*	7.69%

: Significance

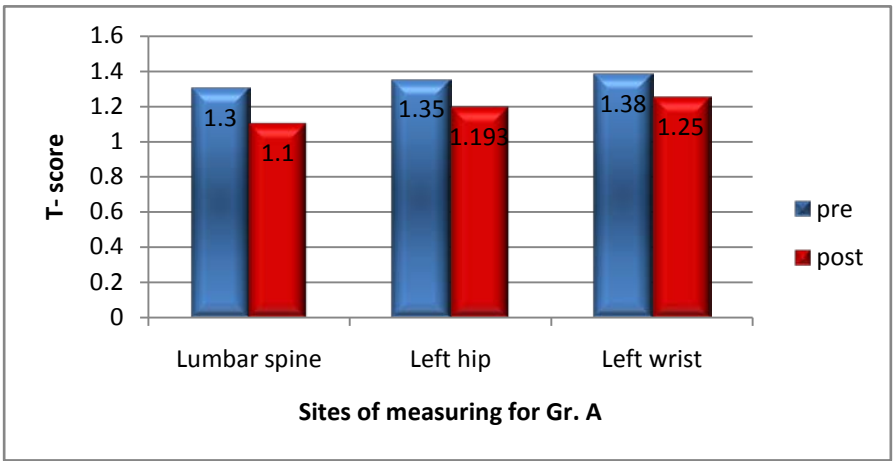

Figure 3 : The mean values of T score before and after exercise at lumbar spine, left hip, left wrist in group A.

Table 5 : Mean values of T score pre and post treatment at lumbar spine, left hip, left wrist for group B

Group B	Pre exercise	Post exercise	T- value	P- value	Percentage of change
Lumbar spine	2.17 ± 0.72	1.95 ± 0.90	6.96	0.001*	11.3%
Left hip	1.53 ± 0.91	1.50 ± 0.95	6.07	0.001*	2%
Left wrist	1.89 ± 1.0	1.87 ± 0.97	7.23	0.345	---------

: Significance

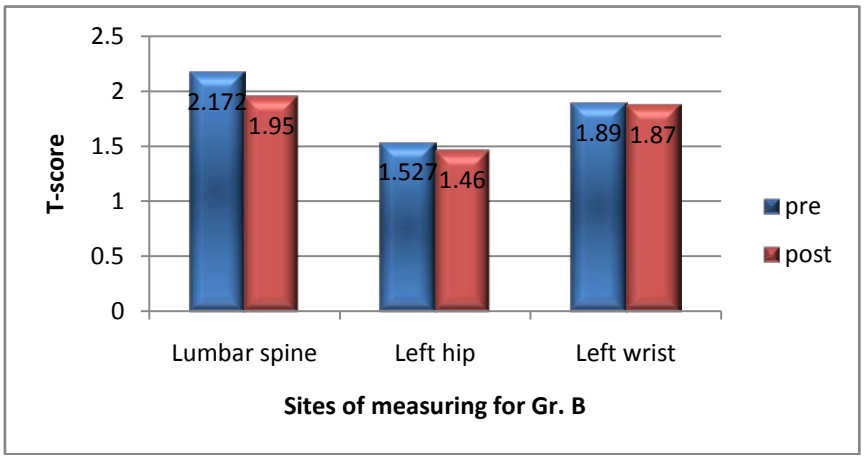

Figure 4 : The mean values of T score before and after exercise at lumbar spine, left hip, and left wrist in group B

Table 6 : Comparison between post treatment between both groups (A&B)

	Group A	Group B	T- value	P- value
Lumbar spine	1.95±0.82	1.10±0.75	-2.779	0.010*
Left hip	1.50±0.95	1.20±0.92	-0.735	.467
Left wrist	1.90±0.96	1.40±0.77	1.51	0.14

IV. Discussion

Changes in calcium metabolism during exercise are dependent on the exercise intensity. Moderate endurance exercise increases serum calcium level [(17)] but decreases serum PTH [(18)]. In bone, endurance exercise increases bone mineral density (BMD), bone strength [(19)] and bone formation rate [(20)]. Thus, moderate endurance exercise seems to induce positive calcium balance, and has a beneficial effect on bone metabolism. In addition, a combination of moderate-impact exercise and adequate calcium intake can increase bone strength during childhood [(21)]. Interestingly, modes of exercise, such as running (weight-bearing exercise) and swimming (non-weight-bearing exercise) can affect bone calcium metabolism in a different way.

It is established that physical activity before dialysis treatment increases urea Kt/V through improved perfusion of muscle, the main urea-containing body compartment. Similar effects have been described for phosphate removal with predialysis physical activity increasing phosphate removal by 6% and intradialytic activity even by 9% [(22)].

Even moderate exercise is related to an enhanced bone mineral density in peripubertal boys and also in young men compared to controls with a low level of physical activity. Animal studies have demonstrated that such an increase in bone mass is the result of an enhanced formation of organic bone matrix and a higher apposition rate of minerals such as calcium (Ca). A moderate level of physical exercise can already acutely influence various Ca metabolic parameters in untrained human subjects: Alterations can include a decrease in ionized serum Ca levels and an increase in serum parathyroid hormone (PTH) levels [(23)].

In the present study there were significant difference between the two groups (group A &B) in serum blood sample of calcium and phosphorus, as there were significant increase in groups (A& B) in serum calcium (12.29%, 4.23%) respectively, and significant decrease in serum phosphorus in group A compared to group B (21.67%, 6.52%) respectively in response to the designed aerobic exercise program.

As well as increased percent of improvement in T score for group A in the measured sites lumbar spine, left hip and left wrist by 18.2%,13.3% and 7.69% respectively. Regarding to group B the percent of impovement was less as shown in lumbar spine by 11.3% and left hip by 2% with no change in the left wrist. That dragged the emphasis to the effect of the moderate exercise applied to group A that gives significant increase in bone mineral density for patients on renal hemodialysis.

The results of the study after the suggested period of treatment confirmed the findings of **John et al., 2007** [(24)] who stated that moderate exercise intensity results in regional increase in bone mass.

This Coincided with **Asadi et al., 2007** [(25)] who studied the effects of exercise in reducing phosphorus levels and reported that although exercise decreased the level of phosphorus, the significant effects and changes could be observed in long-term and perhaps more intense exercise might be required for some patients.

The rehabilitation of the hemodialysis patients is enh-anced, most likely because aerobic exercise induces elongation and an increase in the diameter of the striated muscle fibre, improves their capillary vasculature, as well as their aerobic capacity, and positively affects their blood pressure measurements, their brain function and the lipid profile. The increased ionic calci-

um of the cell sarcoplasma in the skeletal muscles, which is prevalent during the muscle contractions [26]

The results of numerous studies have shown that exercise training to be of benefit for dialysis patients[27]during haemodialysis on physical perfo-rmance and nutrition assessment that agreed with resu-lts of this study. In addition to its well-known ben-eficial effects on cardiovascular fitness and mortality [28] exercise also has an anabolic effect and has been shown to reduce muscular atrophy in dialysis patients [29]

The results of the present study showed significant improvement in calcium and phosphorus electrolytes with aerobic exercise during hemodialysis that coincided with the data presented by **Vaithilingam et al., 2004** [22], who suggest that an aerobic exercise movement's regimen for 15 minutes during hemodialysis sessions improve serum phosphate and calcium levels in a period of 8 weeks. This observation might be due to direct beneficial effects of aerobic exercise or general effects of regular intradialytic exercise.

These findings agree with **Hagberg et al., 2001** [30] who stated that prolonged low-to-moderate-intensity physical activity was associated with higher BMD.

The results supports the findings of **Vencint and Braith, 2002** [31] who reported that, regional BMD can be increased via high-intensity resistance exercise even in healthy elderly persons. The results also indicate that both high- and low-intensity resistance exercises can change biochemical indices of bone turnover. As evidenced by increased OC/PYD and BAP/PYD ratios, these changes seemingly favor increased bone form-ation.

The results of this study are also consistent with that stated by **Hurley and Stephen ,2000** [32] who reported that strength training is considered a promising inte-rvention for reversing the loss of muscle function and the deterioration of muscle structure that is associated with advanced age as well as osteoporotic effects due to renal dialysis. This reversal is thought to result in imp-rovements in function abilities and health status in pati-ents on dialysis by increasing muscle mass, strength and power and by increasing bone mineral density (BM-D).

V. Conclusion

The results of this study supported the good effect of aerobic exercise on serum calcium and phosphorus in patients under renal hemodialysis. Aerobic exercise showed a significant increase serum calcium and significant decrease serum phosphorus in both groups in addition to increased BMD. The result of this study concluded that moderate intensity aerobic exercise (60%-70%MHR) is beneficial than light intensity aerobic exercise (40%-60%MHR) in modulating serum calcium and phosphorus in hemodialytic patients reflected on BMD.

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Breast Conserving Surgery and Whole Breast Radiation therapy Followed by High Dose Rate Brachytherapy Boost Versus Electron Beam Boost in the Treatment of Early Breast Cancer in Young Indian Women: Which is Cosmetically Better?

By Dr. Aseemrai Bhatnagar, Dr. Rameshwaram Sharma & Dr. Prashant Kumbhaj
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Background- Breast conserving treatment (BCT) is the treatment of choice in early breast cancer. Despite years of observation it is still regarded as controversial – not in regard to the very idea; the controversy pertains rather to the way it is being performed by radiation oncologists and surgeons. There are no uniform indic-ations as far as the optimal surgery range is concerned (lumpectomy alone, lumpectomy with the macroscopic margin of 1cm, excision of the breast tissue block of a segment or a quadrant). BCT has produced survival equivalent to mastectomy in the treatment of patients with early-stage invasive breast carcinoma in several randomized Phase III clinical trials.

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BREAST CONSERVING SURGERY AND WHOLE BREAST RADIATION THERAPY FOLLOWED BY HIGH DOSE RATE BRACHYTHERAPY BOOST VERSUS ELECTRON BEAM BOOST IN THE TREATMENT OF EARLY BREAST CANCER IN YOUNG INDIAN WOMEN WHICH IS COSMETICALLY BETTER?

Strictly as per the compliance and regulations of:

Breast Conserving Surgery and Whole Breast Radiation therapy Followed by High Dose Rate Brachytherapy Boost Versus Electron Beam Boost in the Treatment of Early Breast Cancer in Young Indian Women: Which is Cosmetically Better?

Dr. Aseemrai Bhatnagar [α] Dr. Rameshwaram Sharma [σ] & Dr. Prashant Kumbhaj [ρ]

I. Background

Breast conserving treatment (BCT) is the treatment of choice in early breast cancer. Despite years of observation it is still regarded as controversial – not in regard to the very idea; the controversy pertains rather to the way it is being performed by radiation oncologists and surgeons. There are no uniform indic-ations as far as the optimal surgery range is concerned (lumpectomy alone, lumpectomy with the macroscopic margin of 1cm, excision of the breast tissue block of a segment or a quadrant). BCT has produced survival equivalent to mastectomy in the treatment of patients with early-stage invasive breast carcinoma in several randomized Phase III clinical trials.

Breast irradiation is an essential element of the conservative approach. Local recurrence risk after surg-ery alone reaches 35%, compared to 10% in patie-nts undergoing adjuvant radiotherapy [1]. First, the who-le breast is irradiated using external beam technique, us-ally with a dose of 50Gy. Subsequently it is nec-essary to increase the dose delivered to the tumour bed using a so called "boost".

Primary boost dose methods include telera-diotherapy (TRT) with external photon or electron beam (usually) and high dose rate (HDR) or low dose rate (LDR) brachytherapy (BT) [2]. The cost and time requ-ired (for both the patient and physician) for these two boosting techniques differ greatly. Whole-breast EBRT Inv-olves a 6-week course of fractionated treatments.

In contrast, BT can be completed in a 4- to 5-day tr-eatm-ent course. In addition, BT adds the risk of an in-vasive procedure with an outcome that is highly dep-en-dent upon the expertise of the physician/physicist tea-m.Biomathematical models are often used to estimate equivalent high-dose-rate regimens. For exam-ple, linear quadratic modelling has suggested that a hi-gh-dose-rate regimen of 5 fractions of 310 cGy per fraction should approximate the early and late effects of a 20-Gy low dose rate delivered at 0.5 Gy/h. Although biomathematical models can be used to estimate the appropriate dose, there is no standardized high-dose-rate fractionation schedule that can be recommended [3,4,5].

In two studies the efficacy of HDR BT and TRT as a boost in non-advanced breast cancer patients with breast conserving treatment was compared. First, whole breast irradiation was performed using an external photon beam (50Gy in classical fractionation). Subse-quently Hammer et al. delivered a boost to the tumour bed using either an electron beam (TRT-11Gy in 5 fractions) or HDR BT (single 10Gy boost). Local recurence rates were 8.2% and 4.3% ($p<0.04$), respe-ctively. Excellent or good cosmetic results were achiev-ed in 70% and 88%, respectively ($p<0.0001$) [6].

Polgar et al., in a randomized clinical Phase III trial, after the first stage of the study randomized the patients into 2 groups. In the first group the patients received external electron beam therapy of 16Gy in 8 fractions. In the second group the same total dose was delivered in the form of HDR BT. Local recurrence rates were 6% and 8.5%, respectively. Excellent or good cosmetic results were achieved in 83% and 88%, respe-ctively [7]. The differences between rates in the two gro-ups were not statistically significant.

Kulik from the Oncology Centre in Warsaw presented the results of a HDR BT boost study in 93 patients undergoing conservative treatment. During the 3-year follow-up one case of local recurrence was obs-erved; excellent or good cosmetic results were achieved in 85% of patients. In a ProbRough rule induction anal-

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ysis including all clinical and therapeutic variables it was shwn that patients with a mammography diameter of tumour not exceeding 11mm have the best chance of excellent or good cosmetic results [8].

We undertook this study, the second such study in our Department, to evaluate the effect of HDR BT boost versus electron beam boost on local tumor control, side effects and cosmesis after breast conserving surgery in early breast cancer

II. Methods

40 patients with invasive early-stage breast cancer (Stage I–II as defined by the AJCC 7th edition guidelines) were treated prospectively with breast conservation surgery. All patients signed informed consent forms prior to treatment. All the patients underwent tumorectomy ie. macroscopic total resection of the primary tumor. Re-excision to achieve negative surgical margins was performed as needed to obtain margins of 2 mm, if initially the surgical margin was positive. All patients underwent full axillary lymph node dissection (all III levels of the axillary fossa). The median number of lymph nodes excised was 16.

In all patients, adjuvant EBRT to the whole breast was used. Patients were positioned supinely on a breast board with both arms raised overhead. 3D CT planning of the breast was used. Patients were treated with two tangential fields with either gamma-rays from a cobalt unit or with 4-6 MV photon X-rays. Whole breast radiotherapy was delivered as 50 Gy in 25 fractions over 5 week.

Boost to the tumor bed was given to an equivalent dose of 15-16 Gy with either HDR BT using Iridiuim-192 interstitial temporary implants or electron beam using a linear accelerator. Electron beam boost was given in continuation with EBRT to maintain the continuity. There was one week gap between completion of EBRT and HDR BT boost to reduce chances of infection. In the HDR BT boost group, implants were designed to irradiate the lumpectomy cavity with at least a 1–2 cm margin. The dose rate was 350 cGy twice a day for two days. In the electron group the boost was 250 cGy once daily with 9-12 MeV electron over 6 days.

The toxicities and cosmesis were assessed at a specific time point: at 1.5 years of follow-up. The toxicity parameters examined included the following: breast edema, erythema, fibrosis, hyperpigmentation, hypopigme-ntation, breast pain, breast infection, telangiectasia, and fat necrosis. Toxicities were graded by using the Radiation Therapy Oncology Group (RTOG) / European Organization for Research & Training of Cancer (EO-RTC) late radiation morbidity scoring scheme and Com-mon Terminology Criteria for Adverse Events (CTC-AE) for skin, subcutaneous tissues, pain and derm-atitis. B-reast edema, erythema, pigmentary changes, and telan giectasia fell under the domain of radiation dermatitis and skin; breast fibrosis and breast pain were under the domains of subcutaneous tissues and pain due to radiation, respectively. Breast infections and fat necrosis were either present or not and were noted accordingly.

In accordance with the guidelines of Common Toxicity Criteria, version 4.0, toxicities were graded by using the acute/chronic radiation morbidity scale: Grade 0 - no observable radiation effects;
Grade 1 : mild radiation effects;
Grade 2 : moderate radiation effects;
Grade 3 : severe radiation effects.

Cosmetic evaluation was based on the standards set forth by the Harvard criteria as shown below in Table 1. The treating physician at a scheduled follow-up visit scored the cosmetic result. No patient-reported scoring of cosmetic outcome was done. Likewise, the treating radiation oncologist did all toxicity scoring for each patient.

Table 1

Harvard/NSABP/RTOG Breast Cosmesis Grading Scale

1. Excellent	When compared to the untreated breast, there is minimal or no difference in the size or shape of the treated breast. The way the breast feels (its texture) is the same or slightly different. There may be thickening, scar tissue, or fluid accumulation within the breast, but not enough to change the appearance.
2. Good	There is a slight difference in the size or shape of the treated breast as compared to the opposite breast or the original appearance of the treated breast. There may be some mild reddening or darkening of the breast. The thickening or scar tissue within the breast causes only a mild change in the shape or size.
3. Fair	Obvious difference in the size and shape of the treated breast. This change involves one-quarter or less of the breast. There can be moderate thickening or scar tissue of the skin and the breast, and there may be obvious color changes.
4. Poor	Marked change in the appearance of the treated breast involving more than one-quarter of the breast tissue. The skin changes may be obvious and detract from the appearance of the breast. Severe scarring and thickening of the breast, which clearly alters the appearance of the breast, may be found.

NSABP = National Surgical Adjuvant Breast and Bowel Project; RTOG = Radiation Therapy Oncology Group.

The statistical method employed for the incidence/severity of toxicities and cosmetic outcome with various parameters was Pearson chi-square analysis stratified for no toxicity versus any toxicity.

III. Results and Discussion

a) Review of Literature

Oedema of the breast, hyperpigmentation, hypopigmentation/ depigmentation of the nipple and papillae, teleangiectases and fibrosis are all cons-equences of radiation therapy [10]. Generally breast pain, edema, erythema, and hyperpigmentation all dim-inish in frequency over time. Edema of the breast is observed mainly during and directly the end of radiot-herapy. In 10-20% of patients, it can appear as a late reaction after 18-36 months after radiotherapy; in such cases it is moderate and reversible [10].

Sequelae that increases until the 2-year mark and later stabilizes includes breast fibrosis and hypopigmentation. Fat necrosis and telangiectasia increase with the passage of time. A study from Peter Y. Chen et al showed fat necrosis increased from 1% at 6 months to 9% at 2 years and 11% at 5 years. The median time to occurrence of fat necrosis was 5.5 years after completion of radiation therapy and HDR BT.

Telangiectases are observed mainly in areas of high doses of radiotherapy given by electrons or HDR BT or in areas of skin folds. They can be observed in 30% of patients and time to their appearance is the longest out of all side effects of radiotherapy. Contrary to other side effects, the probability and intensity of telangiectases increases in the course of follow-up. The most important late effect of radiation is breast fibrosis. Contrary to other factors, which are reversible (oedema) or limited to a small area of the breast (telangiectases), fibrosis encompasses the whole breast and is the most important factor of breast's retraction [10]. Fibrosis appears after 6-18 months and the highest intensity is observed after 3 years. Longer observations of patients did not reveal progression of the retraction of the treated breast. It is advised to perform cosmetic evaluation 3 years after primary treatment because at this point most late effects already appear. Late effects, those that appear years after, don't affect final cosmesis.

In our study we evaluated the cosmetic outcomes and adverse events at 1.5 years after the completion of whole breast EBRT and boost. So we did not evaluate the changing trends for these events and as such our study follow up was short.

Table 2 : Adverse events

	HDR BT Boost (% of patients)			Electron Beam Boost (% of patients)			p-value
	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3	
Breast Pain	15	5	0	15	0	0	0.211
Breast edema	15	0	0	10	0	0	0.161
Erythema	15	0	0	15	0	0	1.000
Hyperpig menatation	40	5	0	30	0	0	0.002
Hypopig Mentation	35	0	0	20	0	0	0.001
Fibrosis	50	5	5	30	0	0	<0.001
Telangiect Asia	25	5	0	20			0.029
Fat necrosis	10			5			0.095
Breast Infection	5			0			0.021

**Fat necrosis and infection are not graded.*

For the implant group, nearly all pigmentary changes, whether hyperpigmentation or hypopig-ment-ation, were pinpoint rather than diffuse, corresp-onding to the sites where the HDR catheters were been placed. Excellent or good cosmetic results were achi-eved in 10-0% and 90% patients of electron boost and HDR BT Boost respectively (p=0.0009), as shown below in table 3.

Table 3 : Cosmetic outcomes

	HDR BT Boost (% of patients)	Electron Beam Boost (% of patients)
Excellent	25	60
Good	65	40
Fair	10	0
Poor	0	0

In assessing toxicities and cosmesis, interpretations of changes like fibrosis and cosmetic outcomes are not entirely objective. In our study, grading of fibrosis was based on the degree of induration palpated at the time of each follow-up visit. Because induration dimesions were not always recorded, the grading by the examining clinician became the basis on which the degree of fibrosis was assessed. Fibrotic changes can be difficult to differentiate between sequelae from postsurgical changes and sequelae from radiation effects. Reexcision, such second surgical procedure, also contributed to breast fibrosis/induration. Thus, fibrosis is a conti-nuum and a morbidity of both surgical excision and a late radiation effect. It would be difficult to determine the proportional contribution of surgery versus the contribution of radiation that leads to fibrosis. However, we conservatively assigned any degree of induration under subcutaneous tissue-late RT morbidity scoring (fibrosis) solely related to a late radiation sequelae.

There was no significant difference in local tumor control between patients treated with electron bosst or HDR BT boost over a period of one and a half year in our study. The rate of local recurrence was same between the 2 patient groups: The HDR BT group demonstrated a local recurrence rate of 5% compared with patients who received electron beam boost, who had a similar 5% risk of local failure (p=1.00).

IV. Conclusions

Breast conservation therapy nowadays is an effective treatment for early breast cancer with more and more patients preferring this option due to better psychosexual quality of life. Breast conserving therapy in patients with early breast cancer allows us to achieve an excellent and good (satisfactory) cosmetic effect in a majority of cases (95% in our study). The results of the quailtative cosmetic evaluation vary between the patients and the physicians. We have done two such

studies to address cosmesis in BCT in our Department. In one of our studies, patients with early breast cancer after undergoing breast conserving surgery and whole breast irradiation have better cosmetic results and reduced chances of fibrosis at one and a half years of follow-up, when they are given electron boost as compared to HDR BT boost. Local tumor control rates were similar between the two groups. For local tumor control assessment long term follow up studies are needed.

Reaching an unequivocal opinion on which of the two boost techniques, TRT boost with electrons or HDR BT, is more efficient is not an easy task. Hammer et al. showed significantly lower local recurrence rates with significantly higher rate of excellent and good cosmetic results for the HDR BT, while the group from the National Oncology Institute in Budapest did not confirm these results in the settings of a randomized study [6,7].

It has been stated that publications showing inferior cosmetic outcomes after brachytherapy boost have lacked the necessary attention to technical details such as dose homogeneity. But this was not seen in our study. Recent experiences have demonstrated equivalent or superior results for HDR BT as compared to electron-beam boosting—despite the higher doses. Irrespective of the dose rate (HDR or LDR) better cosmetic results by BT boost can be explained by the lower dose delivered to the skin. This results from the fact that the distance between the most "superficial" interstitial guide needle and the skin should reach 5mm. Thus the danger of teleangiectasias and fibrosis, which significantly influences cosmetic outcomes, is reduced. Due to the beam geometry this cannot be achieved using electron beam TRT [9]. So the debate as to which is the optimal boosting technique goes on.

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Is there Need for Assessing Cardiometabolic Risk Factors in Young Urban Healthy Asymptomatic Individuals?

By Yogitha C Kiran, Manohar Kn, Vijay Kumar, Shekar Yadavalli & Anish Kumar

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Abstract- *Introduction:* Cardiovascular diseases are the most common cause of death and disability in both developed and developing countries. This is attributed to the stress, high incidence of hypertension and the steep rise in the metabolic parameters like blood sugars, cholesterol. Studies on the prevalence of these risk factors especially in the younger age group are warranted to study the trend and to institute guidelines for periodicity of monitoring and management. Justifying the need for routine health screening for cardiometabolic risks in young urban asymptomatic healthy individuals is the main aim of our study. Primary prevention seeks to prevent new onset atherosclerotic cardiovascular diseases (ASCVD).

Keywords: *young asymptomatic individuals, cardiometabolic risks, coronary artery disease ASCVD.*

GJMR-I Classification : *NLMC Code: QV 150, WG 120*

Strictly as per the compliance and regulations of:

Is there Need for Assessing Cardiometabolic Risk Factors in Young Urban Healthy Asymptomatic Individuals?

Yogitha C Kiran [α], Manohar Kn [σ], Vijay Kumar [ρ], Shekar Yadavalli [ω] & Anish Kumar [¥]

Abstract- Introduction: Cardiovascular diseases are the most common cause of death and disability in both developed and developing countries. This is attributed to the stress, high incidence of hypertension and the steep rise in the metabolic parameters like blood sugars, cholesterol. Studies on the prevalence of these risk factors especially in the younger age group are warranted to study the trend and to institute guidelines for periodicity of monitoring and management. Justifying the need for routine health screening for cardiometabolic risks in young urban asymptomatic healthy individuals is the main aim of our study. Primary prevention seeks to prevent new onset atherosclerotic cardiovascular diseases (ASCVD).

Methods: Young asymptomatic healthy individuals were subjected to history, examination and biochemistry as a prerequisite for joining various IT / BT companies. Dyslipidemia risk and impaired blood sugar levels were determined. Obesity classification based on BMI was as per the WHO Asiapacific criteria. We are incorporating the Lloyd-Jones/Framingham algorithm for estimating absolute risk for total ASCVD to age 80.

Results: Prevalence of hypertension was 9% (reconfirmed on subsequent visits) while 9% had diabetes. Dysglycemia was thrice more common in males (M: F 3.1:1). Dyslipidemia was 3.3 times more common in males. Increased prevalence of dyslipidemia in young adults was found to be one of the major contributors of cardiovascular disease. Compared to the western population a relatively low level of cholesterol appears to predispose Indians to Coronary Artery Disease. Males with 91.47% and females with 2.02% were with high risk of ASCVD.

Conclusion: Prevention and early recognition and intensive treatment are the best options to reduce the morbidity and mortality. Blood sugar and lipid analysis can be recommended at predefined intervals in young healthy asymptomatic individuals.

Keywords: young asymptomatic individuals, cardiometabolic risks, coronary artery disease ASCVD.

I. Introduction

Cardiovascular diseases (CVD) are the most common cause of death and disability in both developed and developing countries and approximately accounts for one-third of the deaths worldwide.[1] According to World Health Organization, by the year 2020 cardiovascular disease will be the leading cause of death and disability worldwide. Coronary artery disease (CAD) is predominant among the cardiovascular diseases and ranked number one in prevalence among the developing countries.[2] South Asians especially Indians have the highest rate of coronary artery disease.[3]

As per the National Commission on Macroeconomics and Health (NCMH) there would be 62 million patients with CAD by 2015 in India and of these at least 50% of them would be patients younger than 40 years of age. CVD rate is increasing in both developing and developed countries as risk factors for the disease increase. This rise is attributed to the stress, high incidence of hypertension, dyslipidemia, steep rise in the metabolic parameters like blood sugars, cholesterol, obesity, physical inactivity, poor diet and smoking. Also long term epidemiological studies have shown consistently that persons with healthy lifestyles and few risk factors have a low risk of cardiovascular diseases.[4]

Studies on the prevalence of these risk factors especially in the younger age group are warranted to study the trend and to institute guidelines for periodicity of monitoring and management. This helps us to understand why the cardiovascular diseases are 'breaking the age barrier.' Also identification of risk factors operating in young age group is important since correction of modifiable risk factors was found to be more yielding in this age group than in older patients.[5]

Atherosclerotic cardiovascular diseases (ASCVD) is the leading cause of death in the world. It is observed more when the when countries become urbanized and industrialized. A vast database of population research relates cholesterol and lipoproteins to ASCVD. These relationships make it possible to determine optimal cholesterol levels for ASCVD prevention. The International Atherosclerosis Society (IAS) has developed a guide for dyslipidemia intervention. Primary prevention seeks to prevent new onset atherosclerotic cardiovascular diseases (ASCVD). These diseases include coronary heart disease (CHD), stroke, and other atherosclerotic vascular diseases.[6]

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II. Aims & Objectives

The present study is focused mainly to justify the need for routine health screening for cardio metabolic risks in young asymptomatic healthy individuals.

III. Material & Methods

Four hundred and fifty-four young adult people had been included in the study (males=352 and females=102). All these young asymptomatic healthy individuals were subjected to history, examination and biochemistry including blood sugar and lipid profile between 1st January 2008 to 30th December 2008 as a prerequisite for joining various IT / BT companies. The study included a sample of subjects with an age group of 21-30 years.

a) The studied variables

The data on each participant covered the following areas:

a. Medical history, family history of diabetes, hypertension, asthma, etc., smoking habits, alcohol.
b. Measurement of BMI: Standing height without shoes was measured to the nearest 0.5 cm using a stadiometer attached to the weighing scale. Body weight was measured with light clothes as possible on a calibrated scale to the nearest 0.5 Kg. BMI was then calculated using Quetlet index (weight kg / height m^2) to find out the obesity among participants.
c. Physical examination includes measurement of blood pressure in a sitting position. Two measurements were taken and the value that was used was the mean bloodpressure.
d. All participants were requested to fast for 12 hours before blood samples were drawn. Blood samples were taken and were examined either immediately or within 2 hours for determination of total cholesterol, triglycerides, LDL, HDL, blood glucose measurements that include both fasting blood sugar and post prandial blood sugar values.

Dyslipidemia risk and impaired blood sugar levels were determined as per National Cholesterol Education Program (NCEP) – Adult Treatment Panel III guidelines[7] and American Diabetes Association[8] respectively. Obesity classification based on BMI was as per the WHO Asiapacific criteria.[9]

NCEP – Adult Treatment Panel III guidelines: According to these guidelines, hypercholesterolemia is defined as TC >200mg/dl, hypertriglyceridemia as TG > 150mg/dl and low HDL-C as < 40mg/dl. Dyslipidemia is defined by presence of one or more than one abnormal serum lipid concentration. For serum glucose levels, we referred to American Diabetes Association (ADA) guidelines. Subjects with fasting blood glucose >100mg/dl were considered as having impaired blood glucose levels. According to the Framingham risk calculator the following four factors are considered as risk factors. Risk factors included total cholesterol, systolic blood pressure, cigarette smoking, and diabetes. Risk categories are classified as low, moderate, moderately high and high risk.

IV. Observations & Results

a) Patient Characteristics

Study constituted four hundred and fifty four subjects of which 61.5% were males and 38.5% were females. Other patient characteristics included (Table 1)

Table 1: Patient Characteristics

No. of males	61.5%
No. of females	38.5%
Mean age	26 years
Patients with family history of cardio-metabolic risk	34%
Patients with no family history of cardio-metabolic risk	66%
No. of smokers (males)	28%
No. of non-smokers (males)	72%

b) Obesity

As per Indian Council of Medical Research (ICMR), 22% of subjects were overweight while 40% of subjects were obese. The male to female ratio for obesity was 2.1: 1. (Figure 1)

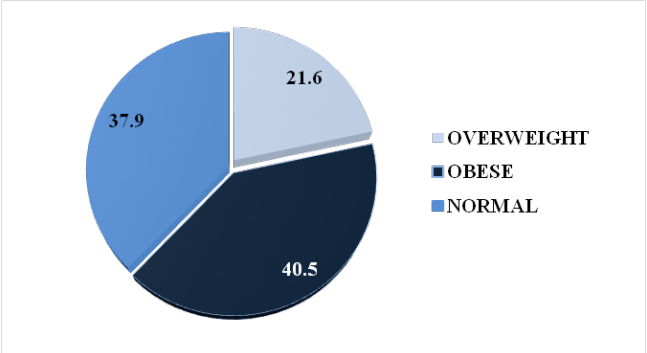

Figure 1 : Obesity

c) Hypertension risk

Hypertension was found to be five times more prevalent in men than in women. Amongst people with hypertension 16% had diabetes & 60% had abnormal lipid parameters. Of the cohort, only 44% had all lab parameters (blood sugars and cholesterol) in normal range. Resting ECG was normal in all cases

d) Diabetes risk

Dysglycemia was thrice more common in males (M: F 3.1:1). Of the 21% people with abnormal

carbohydrate tolerance, 16% had a positive family history of diabetes, 14% had associated hypertension and 35% had dyslipidemia.(Figure 2)

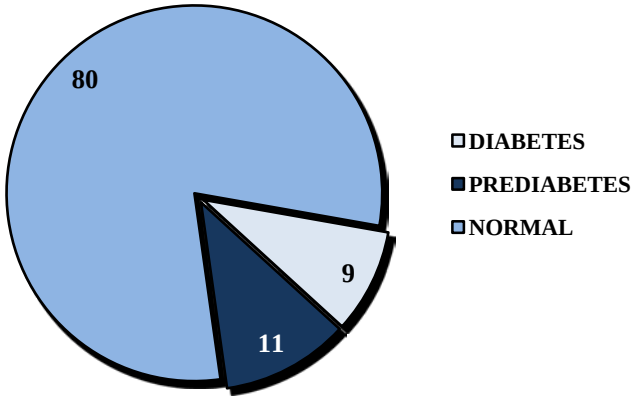

Figure 2 : Diabetes risk

e) Dyslipidemia

Most alarming abnormality was in lipid profile at 46% (Figure 3). Dyslipidemia was 3.3 times more common in males. Of the 21% people with abnormal carbohydrate tolerance 35% had associated dyslipidemia. Amongst people with hypertension 60% had abnormal lipid parameters.

Of the cohort, only 44% had all lab parameters (blood sugars and cholesterol) in normal range. Resting ECG was recorded by 12 LEAD ECG and was normal in all cases.

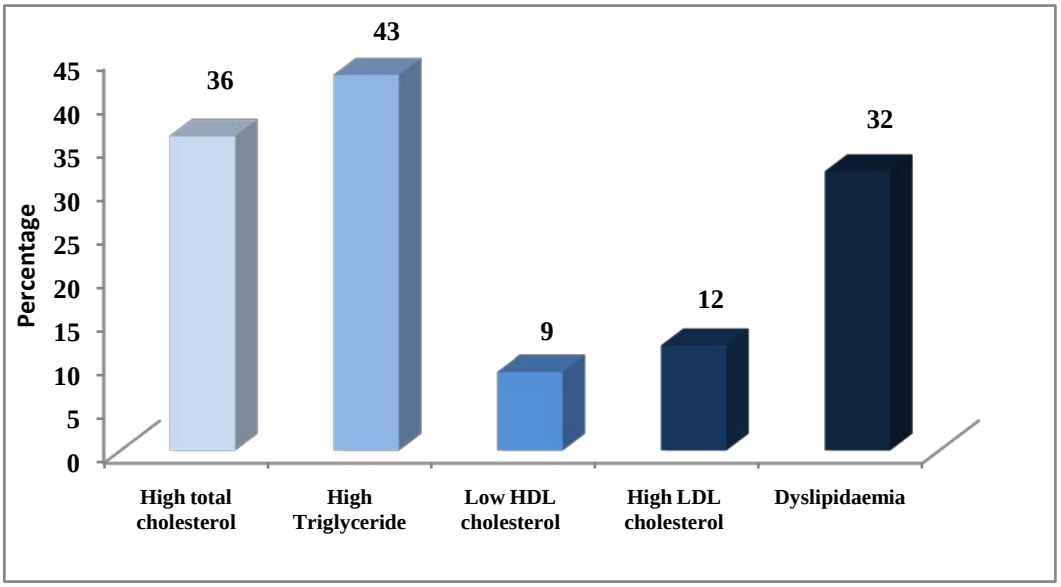

Figure 3 : Dyslipidemia

Table 2 : Long-term Risk for ASCVD by age 80

Risk category	Number (N)	Percentage (%)
Males with low risk	N=30	8.522
Males with high risk	N=322	91.47
Females with low risk	N=19	19.19
Females with moderate risk	N=42	42.42
Females with moderately high risk	N=36	36.36
Females with high risk	N=2	2.02

V. Discussion

This study was taken to validate the pre-employment medical checkups done for assessment of the cardiometabolic risk factors in young individuals. The study reveals that incidence of hyperc-holesterolemia, hypertriglyceridemia, hypertension,

blood sugar, obesity and abnormally high LDL-C and low HDL-C levels which are well-known risk factors for cardiovascular diseases occur in young patients. The

results are consistent with Sawanth et al, where 80% of the subjects showed at least one abnormal parameter but the cohort age group ranged from 20 to 40 yrs old. [10] Dysglycemia was noted in 34.1% males as compared to 22.1% females. Dyslipidemia was noted in 80% of their population, but they noted high LDL as the

most common abnormal lipid parameter (74.3%), we had observed hypertriglyceridemia as the commonest abnormality. Our reports also are consistent with another study done in selected industrial population where in increased prevalence of dyslipidemia in young adults was found to be one of the major contributors of CVD.[11]

Risk factor reduction is of major importance in young patients, as young patients, however, are more likely than older patients to be smokers, male, obese, and to have a positive family history. The diet in young patients may also attribute to such risk. According to Leino et al., cardiovascular risk factors of young adults are related to parental socioeconomic status. The diet of young adults from farming families and from rural areas contained more saturated fatty acids and less monounsaturated and polyunsaturated fatty acids. Also, subjects with the highest parental occupational status smoked less compared with those with the lowest status. [12]

Elizabeth et al., reported that risk of CVD can be decreased by adhering to dietary and lifestyle modifications which results in lower risk factor levels.[13] It has also been observed that compared to the Western population a relatively low level of cholesterol appears to predispose Indians to CAD.[14] Higher percentage of risk for ASCVD is observed in males compare to the females.

A potential weakness of this algorithm is that it is based on estimated risk from age 50. However, it can reasonably be assumed that an individual's risk factors (other than age) will remain constant throughout middle age and into older years.

VI. Conclusion

Cardiometabolic risk factors are breaking the age barrier. We Indians have risk of CAD occurring at a much younger age due to the genetic factors, life style and deranged metabolic factors as compared to the Caucasians. Prevention and early recognition and intensive treatment are the best options to reduce the morbidity and mortality. "Catch them young" should be the dictum. Indian dyslipidemia is unique and it termed atherogenic dyslipidemia with higher incidence of hypertriglyceridemia and LDL cholesterol and very low levels of HDL. We recommend blood sugar and lipid analysis apart from physical examination at predefined intervals in young healthy asymptomatic individuals. We can take the advantage for pre-employment health check in young adults to unfold such abnormalities and initiate therapeutic methods at an early stage, to stall the progression in to cardiovascular disorder – up holding the traditional method of 'Prevention is better than Cure'.

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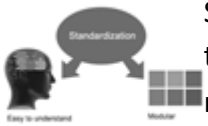

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The recommended size of original research paper is less than seven thousand words, review papers fewer than seven thousands words also.Preparation of research paper or how to write research paper, are major hurdle, while writing manuscript. The research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

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

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

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

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

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

(e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition; sources of information must be given and numerical methods must be specified by reference, unless non-standard.

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

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

(h) Brief Acknowledgements.

(i) References in the proper form.

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

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

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

Format

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

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

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

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

Structure

All manuscripts submitted to Global Journals Inc. (US), ought to include:

Title: The title page must carry an instructive title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) wherever the work was carried out. The full postal address in addition with the e-mail address of related author must be given. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining and indexing.

Abstract, used in Original Papers and Reviews:

Optimizing Abstract for Search Engines

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

Key Words

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

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

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

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

- One should start brainstorming lists of possible keywords before even begin searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in research paper?" Then consider synonyms for the important words.
- It may take the discovery of only one relevant paper to let steer in the right keyword direction because in most databases, the keywords under which a research paper is abstracted are listed with the paper.
- One should avoid outdated words.

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

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

Acknowledgements: Please make these as concise as possible.

References

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

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

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

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

Tables, Figures and Figure Legends

Tables: Tables should be few in number, cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g. Table 4, a self-explanatory caption and be on a separate sheet. Vertical lines should not be used.

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

Preparation of Electronic Figures for Publication

Even though low quality images are sufficient for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit (or e-mail) EPS (line art) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings) in relation to the imitation size. Please give the data for figures in black and white or submit a Color Work Agreement Form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

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

Color Charges: It is the rule of the Global Journals Inc. (US) for authors to pay the full cost for the reproduction of their color artwork. Hence, please note that, if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a color work agreement form before your paper can be published.

Figure Legends: Self-explanatory legends of all figures should be incorporated separately under the heading 'Legends to Figures'. In the full-text online edition of the journal, figure legends may possibly be truncated in abbreviated links to the full screen version. Therefore, the first 100 characters of any legend should notify the reader, about the key aspects of the figure.

6. AFTER ACCEPTANCE

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

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The corresponding author will receive an e-mail alert containing a link to a website or will be attached. A working e-mail address must therefore be provided for the related author.

Acrobat Reader will be required in order to read this file. This software can be downloaded

(Free of charge) from the following website:

www.adobe.com/products/acrobat/readstep2.html. This will facilitate the file to be opened, read on screen, and printed out in order for any corrections to be added. Further instructions will be sent with the proof.

Proofs must be returned to the dean at dean@globaljournals.org within three days of receipt.

As changes to proofs are costly, we inquire that you only correct typesetting errors. All illustrations are retained by the publisher. Please note that the authors are responsible for all statements made in their work, including changes made by the copy editor.

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Before start writing a good quality Computer Science Research Paper, let us first understand what is Computer Science Research Paper? So, Computer Science Research Paper is the paper which is written by professionals or scientists who are associated to Computer Science and Information Technology, or doing research study in these areas. If you are novel to this field then you can consult about this field from your supervisor or guide.

TECHNIQUES FOR WRITING A GOOD QUALITY RESEARCH PAPER:

1. Choosing the topic: In most cases, the topic is searched by the interest of author but it can be also suggested by the guides. You can have several topics and then you can judge that in which topic or subject you are finding yourself most comfortable. This can be done by asking several questions to yourself, like Will I be able to carry our search in this area? Will I find all necessary recourses to accomplish the search? Will I be able to find all information in this field area? If the answer of these types of questions will be "Yes" then you can choose that topic. In most of the cases, you may have to conduct the surveys and have to visit several places because this field is related to Computer Science and Information Technology. Also, you may have to do a lot of work to find all rise and falls regarding the various data of that subject. Sometimes, detailed information plays a vital role, instead of short information.

2. Evaluators are human: First thing to remember that evaluators are also human being. They are not only meant for rejecting a paper. They are here to evaluate your paper. So, present your Best.

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

4. 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.

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

6. Use of computer is recommended: As you are doing research in the field of Computer Science, then this point is quite obvious.

7. Use right software: Always use good quality software packages. If you are not capable to judge good software then you can lose quality of your paper unknowingly. There are various software programs available to help you, which you can get through Internet.

8. Use the Internet for help: An excellent start for your paper can be by using the Google. It is an excellent search engine, where you can have your doubts resolved. You may also read some answers for the frequent question how to write my research paper or find model research paper. From the internet library you can download books. If you have all required books make important reading selecting and analyzing the specified information. Then put together research paper sketch out.

9. Use and get big pictures: Always use encyclopedias, Wikipedia to get pictures so that you can go into the depth.

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

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

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

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

14. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several and unnecessary diagrams will degrade the quality of your paper by creating "hotchpotch." So always, try to make and include those diagrams, which are made by your own to improve readability and understandability of your paper.

15. Use of direct quotes: When you do research relevant to literature, history or current affairs then use of quotes become essential but if study is relevant to science then use of quotes is not preferable.

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

17. Never use online paper: If you are getting any paper on Internet, then never use it as your research paper because it might be possible that evaluator has already seen it or maybe it is outdated version.

18. Pick a good study spot: To do your research studies always try to pick a spot, which is quiet. Every spot is not for studies. Spot that suits you choose it and proceed further.

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

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

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

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

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

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

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

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

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

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

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

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

31. Adding unnecessary information: Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

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

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

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

Informal Guidelines of Research Paper Writing

Key points to remember:

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

Final Points:

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

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

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

General style:

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

To make a paper clear

· Adhere to recommended page limits

Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

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

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

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

· Align the primary line of each section

· Present your points in sound order

· Use present tense to report well accepted

· Use past tense to describe specific results

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

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

Title Page:

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

Abstract:

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript--must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

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

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

- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including definite statistics - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness 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 to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

- 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 with every section. If you make the four points listed above, you will need a least of four paragraphs.

- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
- Shape the theory/purpose specifically - do not take a broad view.
- 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 sound written Procedures segment allows a capable scientist to replacement 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 for the least amount of information that would permit another capable scientist to spare 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 object, mention the specific item describing a way but draw the basic principle while stating the situation. The purpose is to text 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:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

Methods:

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

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

What to keep away from

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

Results:

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

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.

Content

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

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.
- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables

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

Discussion:

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a argument should be. Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.

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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
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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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