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Editorial

Platelet-Rich Plasma therapy. 1
Md.Ghulam Yusuf

Original article

Impact of atorvastatin on serum testosterone in male dyslipidaemic population of northern part of Bangladesh. 3
Md. Maruf Hussain[1], Md. Ruhul Amin[2], Chanchal Kumar Mondol[3].

Study of Diameter and circumference of Human Umbilical Cord in Pregnancy Complicated with Hypertension 11
Nahida Nazmun Naher Akand[1], Selina Anwar[2], Anjum Ara Begum[3], Afsana Khanom[4], Md. Rezaul Islam[5], Happy Roy [6]

Study on Serum Triiodothyronine Hormone level in Menopausal Women. 16
Mahfuza Pervin[1], Chandra Rani Sarkar[2], Neaz Ahmed[3], A. T. M Zoadur Rahim Zahid[4]

Case Report

Holt-Oram Syndrome: A rare congenital anomaly. 20
Ferdous Rahman

College News 23

ISSN: 2226-7964

PRIME MEDICAL JOURNAL

Vol-8 **No: 1** **January - 2018**

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Informations about Prime Medical College, Rangpur

Prime Medical College is one of the best and largest private medical college in Bangladesh. It was established in 2008. The ideas of establishing this Medical College is to provide standard Medical Education and Health Services to the people at an affordable cost.

The objectives of the institute are :

- To promote and provide education in Medical Science and to Provide training in different discipline of medicine recognized by the postgraduate institutes and universities.
- To conduct research work on the diseases prevalent in the country.
- To conduct research on medical education with the aim of uplifting the quality and standard of medical education in the country.
- To produce and provide skilled manpower in the medical, nursing and paramedical fields.
- To provide quality medical care and heath services to the people at reasonable cost.

The first and foremost objective of establishment of this medical college is to offer MBBS degree under Rajshahi University of Bangladesh and to provide good quality medical graduates, who can fulfill the need of health care prevailing in the country.

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Vol. 8 NO. 1. January 2018

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Editorial

Platelet-Rich Plasma therapy.

Md.Ghulam Yusuf

Platelet-Rich Plasma (PRP) therapy is gaining importance as the choice for safe, non-surgical, alternative therapy by activating the body's ability to enhance rapidity of repair, increase healing and regeneration. PRP was first developed in 1970's and first used in Italy in 1987 during an open heart surgery. But in 1985 activated platelet rich plasma also used for the treatment of chronic wound by David Knighton. Again, in 90's PRP was used as surgical glue to seal difficult incisions, so to enhance wound healing in cancer patients and to repair bone fractures in difficult cases. In 1999 Steve Bono introduces PRP in sports medicine too[1]. So Platelet rich plasma therapy is not a new concept. Over the past two decades, PRP therapy has been used to improve wound healing and bone grafting procedures in several clinical areas like neurosurgery; oral, periodontal, cosmetic, and maxillofacial surgery; otolaryngology; head and neck surgery; urology; orthopedic/spinal surgery; cardiothoracic as well as general surgery[2]. Platelet-rich plasma, also referred to as platelet-enriched plasma, platelet-rich concentrate, autologous platelet gel, and platelet releasate, is defined as a plasma fraction of autologous blood having platelet concentration above the baseline level, and prepared from blood drawn from the patient. In addition to platelets, PRP contains a variety of growth factors, including transforming growth factor-β, platelet-derived growth factor, insulin-like growth factor-I, vascular endothelial growth factor, epidermal growth factor, and hepatocyte growth factor. Many of these growth factors have been shown to enhance one or more phases of bone and soft tissue healing[3].

Basic research suggests that PRP exerts its effects through many downstream events secondary to the degranulation of platelets releasing growth factors and other bioactive agents into the local environment, resulting in chemotaxis of inflammatory cells and activation and proliferation of local progenitor cells. It is believed that PRP can augment or stimulate healing by turning on the same biological processes that normally occur to initiate healing after musculoskeletal injury[4].

In vitro, studies have demonstrated that PRP can enhance the proliferation of stem cells and fibroblasts. The initial vascular response to injury includes the release of sub-endothelial factors that attract circulating platelets and activate coagulation proteins. Platelets aggregate and adhere to the site of injury, where they release granules containing serotonin, thromboxane, and adenosine, which initiate coagulation and the subsequent formation of a hemostatic plug that minimizes further bleeding.

Regarding the preparation of PRP, there are 2 techniques:

1. Open technique: In this technique the product is exposed to the environment of the working area and comes in contact with different materials that should be used for their production, such as pipettes or product-collection tubes. In the blood processing to obtain PRP with the open technique, it should be ensured that the product is not contaminated during microbiological handling.

2. Closed technique: It involves the use of commercial devices including centrifuge equipment and application in which the product is not exposed to the environment.

Briefly, the procedure requires the use of relatively small volumes of blood. The PRP is obtained from the blood of patients before centrifugation. The whole blood is obtained by venipuncture in anticoagulated tubes (usually with acid citrate dextrose or sodium citrate solution). The blood is then centrifuged with single- or a double-spin centrifugation, depending on the device. The settings of the centrifuge established to obtain PRP at an adjustable concentration are defined by the

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manufacturer and cannot be changed by the physician.

After centrifugation, the tube shows 3 basic layers: at the bottom of the tube, there are red blood cells with leukocytes deposited immediately above; the middle layer corresponds to the PRP, and at the top, there is the platelet poor plasma (PPP). The PPP is removed, and PRP is obtained. Platelets can be activated before transfusion of the PRP, although there is no consensus on whether or not platelets must be previously activated before their application and with which agonist[5,6].

Non-healing ulcers are a major health problem worldwide and have great impact at personal, professional and social levels, with high cost in terms of human and material resources. It is a major cause of non-traumatic lower limb amputations also. Application of autologous Platelet Rich Plasma (PRP) has been a major breakthrough for the treatment of non-healing and diabetic foot ulcers, as it is an easy and cost-effective method, and provides the necessary growth factors that enhance tissue healing. PRP therapy helps to create a biological environment internally that is most conducive for restoration of tissue homeostasis by providing numerous signaling cytokines and growth factors that are important in tissue repair by diverse mechanisms including the regulation of inflammation, angiogenesis, and synthesis and remodeling of new tissue[7].

Another application of PRP is the improvement of burn scars, postsurgical scars, and acne scars. According to the literature reviews, PRP alone or in combination with other techniques seems to improve the quality of the skin and leads to an increase in collagen and elastic fibers. In 2006, PRP has started to be considered a potential therapeutic tool for promoting hair growth and has been postulated as a new therapy for alopecia, in both androgenetic alopecia and alopecia areata[5].

Platelet-rich plasma therapy is now commonly used to treat chronic tendinopathies, including lateral epicondylosis, plantar fasciitis, Achilles and patellar tendinopathies, and acute ligamentous injuries. Sports medicine clinics are also offering PRP treatments for acute injuries such as acute muscle tears, medial collateral ligament tears, and ankle sprains.

Despite lack of approval by the US Food and Drug Administration, PRP therapy is gaining acceptance as treatment of different pathologies. Therefore, further research and controlled, randomized prospective clinical trials on larger patient population are necessary to validate the results. In addition USFDA and other administritive approval may encourage the surgeons and clinicials to consider it as an effective modality of treatment in wound healing.

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Original article

Impact of atorvastatin on serum testosterone in male dyslipidaemic population of northern part of Bangladesh.

Md. Maruf Hussain[1], Md. Ruhul Amin[2], Chanchal Kumar Mondol[3].

ABSTRACT

INTRODUCTION: *Dyslipidaemia is a general health problem all over the world. It is a major risk factor for cardiovascular disease, stroke, diabetes mellitus, hypertention etc. So the use of lipid lowering drugs is considered to be the main remedy in addition to other life style practices includeing physical activity. The most effective and most commonly used lipid lowering drug is HMG-Co A reductase inhibitor ie atorvastatin, rosuvastatin e.t.c. through out the world.* ***OBJECTIVE:*** *This study was done with an aim to measure the impact of atorvastatin on serum testosterone in male dyslipidaemic adult population of northern part of Bangladesh.* ***METHOD:*** *It was a non randomized control trial carried out in the department of Medicine, Rajshahi Medical college Hospital, Rajshahi from January, 2013 to December, 2014. According to the inclusion and exclusion criteria 40 adult male aged 20-45 years were enrolled. All 40 patients were treated with 10 mg atorvastatin daily. The drug was given for 12 weeks. Fasting lipid profile and serum testosterone were recorded before and after drug therapy. The data were analysed with the help of SPSS software programme 16 and expressed as mean ± SD. P value <0.05 was considered as significant.* ***RESULT:*** *Serum total cholesterol, LDL-C level and testosterone level were markedly reduced after atorvastatin therapy in all 40 (100%) patients. Statistically it was found significant (t=13.24, df=39, p<0.001; t-18.70, df=39, p=<0.001 and t=10.38, df=39, p<0.001 respectively).* ***CONCLUSION:*** *Our study revealed that use of cholesterol-lowering drug atorvastatin can significantly reduce of serum testosterone level in male adult dyslipidaemic population.*

KEY WORDS: Atorvastatin effect, Dyslipidaemia, Testosterone, Male adult.

INTRODUCTION

Testosterone, the principal hormone of the testis, is a c19 steroid with a hydroxyl group in the 17 position. It is synthesized from cholesterol in the Leydig cells and is also formed from androstenedione secreted by the adrenal cortex. Testosterone secretion rate is 4-9mg/d in normal adult male. The plasma testosterone level (free and bound) is 300-1000mg/dl (10.4-34.7nmol/l) in adult men[1].

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The precursor of all steroids is cholesterol. Some of the cholesterol is synthesized from acetate but most of it is taken up from LDL in the circulation. The most effective and commonly used cholesterol-lowering drugs are statins, which reduce cholesterol synthesis by inhibiting HMG-CoA reductase[2].

Atorvastatin works by inhibiting HMG-CoA reductase, an enzyme found in liver tissue that play a key role in production of cholesterol in the body. Atorvastatin was first synthesized in 1985 by Bruce Roth of Parke-Warner Lambert Company[3]. Statin (Atorvastatin) use has become more common globally with the emerging epidemic of cardiovascular disease in developing countries. Ramdomized control trail (RCT) shows that statin reduce mortality

rates more than other commonly used lipid modulating therapies[4,5]. All lipid modulating therapies modulate circulating lipids but only statin inhibit denovo synthesis of cholesterol throughout the body[6].

Concern has always existed that statins (Atorvastatin) might impair testosterone production[7] either by reducing availability of its preferred substrate that is locally produced denovo cholesterol in the gonads[8] and elsewhere, or by inhibiting steps in the steroidogenesis process[9]. The libido and sexual life of man is initiated and maintained by testosterone and its interaction with sex hormone binding globulin (SHGB)[10].

On this basis, statins could potentially decrease serum testosterone levels by reducing the availability of cholesterol for androgen biosynthesis[11,12]. In one study, low testosterone was associated with increased mortality in male veterans[13]. Emerging evidence suggests that statin use is a significant contributor to decrease serum testosterone levels[11, 12, 14-16]. Therefore this study was designed to demonstrate the effect of statin use on serum testosterone level in male dyslipidaemic population.

MATERIALS AND METHODS:

This non randomized control trial study was conducted in Rajshahi Medical College and Hospital, Rajshahi from January, 2013 to December, 2014. A total number of 40 respondents, aged 20 to 45 years of male were included in this study. Diagnosis of dyslipidaemia was done based on clinical suspicion and biochemical test. Inclusion criteria's were male of 20-45 years of age and recently confirmed case of dyslipidaemia. Exclusion criterias were other associated condition or chronic disease that interfere serum testosterone like-burn injury, stroke, traumatic brain injury, myocardial infarction, respiratory illness, cancer, chronic renal failure, surgical stress, sepsis, chronic liver disease, chronic obstructive pulmonary disease, HIV, androgen deprivation therapy.It needs to be mentioned that age group of 18-35 years is considered as young adults & 36-55 years age as middle age[17]. Our selected cases were in between this two groups considering the age of highest productivity. The height and weight of all respondents were recorded and measured as weight in kilogram and height in meter and the BMI was calculated with the help of following formula. BMI= weight in kg/height in meter^2. Blood pressure of all respondents were recorded and categorized as hypertensive and normotensive. For estimation of lipid morning samples were collected and the patient were fasting from night before. Total serum cholesterol was categorized into two groups as less than 200mg/dl and more than 200mg/dl. Serum LDL cholesterol was also categorized into two groups as less than 150mg/dl and more than 150mg/dl. In this study we have followed the kit value of concerned lab. Serum testosterone was also categorized into two groups. Before enrollment of participants an informed written consent was taken from all of them. Ethical committee and thesis protocol review committee of Rajshahi Medical College approved the study protocol. A detailed history of all subjects was recorded in a preformed questionnaire. All patients took 10mg of atorvastatin in the beginning. These patients were followed up at week 6 after intake of atorvastatin to measure the lipid profile and side effect of drug. Serum testosterone and serum lipid profile were measured after 12weeks of atorvastatin therapy. These data were analysed by paired student's 't' test with the help of SPSS software programme 16 and expressed as mean ± SD. p-value <0.05 was considered as significant.

RESULTS AND OBSERVATION

Our study was intended to asses the outcome of drug treatment of dyslipidaemic patients with statin (atorvastatin). The main focus of this study was to observe the impact of atorvastatin on serum testosteron level on male dyslipidaemic patients after 12 weeks of time.

The effect of atorvastatin on serum testosterone was significant (p value$<$ 0.001). The findings of the study obtained from data analysis are chronologically presented below.

The ages of all respondents were categorized in two groups ranging from 20-34 and 35-45 years. Most of the respondents were in age range of 35-45 (77.5%). Mean ages of the respondents were 37.60±5.42 (Table I).

Table I: Distribution of respondents by age (n=40).

Age (year)	Number of Respondents (%)
20-34	9(22.5)
35-45	31(77.5)
Total	40(100)

Mean ±SD = 37.60±5.42; n= total number of respondent

After measuring of blood pressure indices subjects were classified in to hypertensive and normotensive according to the seventh report of the joint national committee on prevention, detection, evaluation and treatment of high blood pressure (JNC 7)[18]. Out of 40 respondents 7(17.5%) were hypertensive and 33(82.5) were normotensive. The distribution of blood pressure category in all 40 dyslipideamic patients was shown in Table II.

Table II: Distribution of respondents by blood pressure (n=40)

Blood pressure	Number Of Respondents (%)
Hypertensive	7(17.5)
Normotensive	33(82.5)
Total	40(100)

n= total number of respondent

The height and weight of all respondents were recorded and measured as weight in kilogram and height in meter and the BMI was calculated with the help of following formula.
BMI= weight in kg/height in meter^2
BMI of most respondents were normal category which is 33(82.5%), only 2(5%) were overweight and 5(12.5%) were found underweight. Mean BMI was found 19.93 ±1.17. Their distribution was shown in table III.

Table III: Distribution of respondents by BMI.

BMI	Number of Respondents(%)
Underweight(<18.5)	5(12.5%)
Normal(18.5-23)	33(82.5%)
Overweight(23.1-24.9)	2(5.0%)
Obese(>25)	0(0%)
Total	40(100%)

Mean ±SD = 19.93±1.17

During this study all the responders were evaluated with serum lipid profile before and 12 weeks after atorvastatin therapy. Total serum cholesterol was categorized into two groups as less than 200mg/dl and more than 200mg/dl. Most of the responders 38(95%) were in high total serum cholesterol group (>200mg/dl), before atorvastatin therapy. Only 2(5%) were total serum cholesterol was less than 200mg/dl before atorvastatin therapy. 12 weeks after atorvastatin therapy total serum cholesterol was less than 200mg/dl in 30 (75%) respondents and total serum cholesterol was found more than 200mg/dl in 10 (25%) respondents (Table IV).

Serum LDL cholesterol were also categorized into two groups as less than 150mg/dl (normal group) and more than 150mg/dl (high LDL group). Most of the responders 30(75%) were in high serum LDL cholesterol. Only 10(25%) were normal level of serum LDL cholesterol. 12 weeks after atorvastatin therapy 38(95%) had less than 150mg/dl serum LDL cholesterol and 2(5%) were more than 150mg/dl serum LDL cholesterol(Table IV).

Lipid profile of the respondents before and after Atorvastatin therapy

Table IV: Distribution of respondents by lipid profile.

Lipid profile		Before treatment		After treatment	
		Number of patient	Percent	Number of patient	Percent
Total Cholesterol[1]	<200mg/dl	2	5%	30	75%
	>200mg/dl	38	95%	10	25%
	Total	40	100%	40	100%
LDL-C[2]	<150mg/dl	10	25%	38	95%
	>150mg/dl	30	75%	2	5%
	Total	40	100%	40	100%

There was significant difference between mean (±SD) value of total serum cholesterol and serum LDL cholesterol level before and after atorvastatin therapy (Table V).

Table V: Mean (±SD) value of Lipid profile of the respondents before and after Atorvastatin therapy (n=40).

Parameters	Before atorvastatin therapy.	After atorvastatin therapy	't'	'df'	p
Total cholesterol	277.80±78.54	185.42±53.93	13.24	39	<0.001
LDL-C	173.72±27.96	121.57±24.48	18.70	39	<0.001

Paired 't' test was done for comparison
n= number of respondent

Serum testosterone of all respondents before and after Atorvastatin therapy

All the responders were evaluated with serum testosterone before and after 12 weeks atorvastatin therapy. In most of the cases serum testosterone were decreased. Most of the responders showed normal serum testosterone level before atorvastatin therapy. Out of 40 respondents 35(87.5%) were within normal range (3.2ng/dl-14.6ng/dl) and 5(12.5%) responders were below normal range (<3.2ng/dl) of serum testosterone before atorvastatin therapy. After atorvastatin therapy more than half that is 22 respondent showed low (<3.2ng/dl) testosterone level and 18 respondent showed normal (3.2- 14.6ng/dl) testosterone level (Table VI)

Table VI: Level of serum testosterone before and after atorvastatin therapy.

Serum testosterone	Before treatment		After treatment	
	Number of respondents	percentage	Number of respondents	percentage
Low(<3.2ng/dl)	5	12.5%	22	55%
Normal(3.2-14.6ng/dl)	35	87.5%	18	45%
Total	40	100%	40	100%

The mean (±SD) value of serum testosterone was significantly ($p<0.001$) decreased after atorvastatin therapy (Table VII).

Table VII : Mean (±SD) value of serum testosterone of the respondents before and after Atorvastatin therapy (n=40).

Parameters	Before atorvastatin therapy.	After atorvastatin therapy	't'	'df	p
Serum testosterone	4.49±1.29	3.30±1.17	10.38	39	<0.001

Paired 't' test was done for comparison.
n= number of respondent.

DISCUSSION

Dyslipidaemia is one of the important risk factor for cardiovascular disease, diabetes mellitus, hypertension, stroke, etc. So the use of lipid lowering drugs is increasing day by day. Statins (atorvastatin) are mostly prescribed drug for dyslipidaemic patients especially for high total cholesterol and LDL-C. Its use in dyslipidaemic patients leads to different clinical side effect, which was observed and published time to time in different parts of the world[10].

Testosterone is one of the most important steroid hormones. It is a cholesterol derived steroid hormone. The libido and sexual life of a man is initiated and maintained by testosterone[10]. Use of cholesterol lowering drug specially statins (atorvastatin) significantly lowers available serum cholesterol which is the precursor for testosterone synthesis[10].

This was studied and results were published from different parts of the world. But in our country there was no such study was carried out. For this purpose, we formulated a protocol of study to select new dyslipidaemic patients after following both inclusion and exclusion criteria out of 70 responders. Total 40 responders were selected for this study remaining 30 were excluded due to old age,

COPD, MI, Renal failure and loss of libido.

All selected responders were evaluated with lipid profile and serum testosterone level before atorvastatin therapy. All patients were given 10 mg of atorvastatin daily per oral. After 6 weeks serum lipid profile of all patients were measured. Significant lipid lowering effect of atorvastatin was observed, so there was no need to increase the dose of atorvastatin in any cases and same dose was continued. Serum lipid profile and serum testosterone were measured after 12 weeks of atorvastatin therapy.

Our study shows a significant reduction of serum testosterone after atorvastatin therapy for 12 weeks ($p<0.001$). Similar results were found by Schooling CM et al.[19] and Stanworth RD et al.[20] ($P<0.01$).

In our study the age limit was 20-45 years. Our study shows most of the dyslipidaemic patients were in the age range 35 to 45 years.

Most of them were normotensive 33 (82.5%), only 7 (17.5%) were hypertensive patients met the JNC VII definition of hypertension and resting BP was > or = 140/90 mm of Hg.[18]

The body mass index (BMI) of all dyslipidaemic patients under this study were from 18.5 to 30. Most of them were within normal BMI 33(82.5%). Only 2(5%) were overweight and 5(12.5%) were underweight in relation to their stature.

During this study the lipid profile of all 40 patients were measured before atorvastatin therapy. Out of 40 responders 38 (95%) shows high level of total serum cholesterol (>200mg/dl) and only 2 (5%) shows normal level of total serum cholesterol (<200mg/dl). Among the 40 responders 30(75%) shows high level of serum LDL-C (>150mg/dl) and 10(25%) shows normal level of serum LDL-C (<150mg/dl). Of the responders 2 were normal level of total serum cholesterol, but due to high level of LDL-C we included in this study. Out of 40 responders 10 were normal LDL-C, but due to high level of total cholesterol we included in this study. After 6 weeks therapy of 10 mg atorvastatin daily, the lipid profile was again assessed in all 40 responders. In this assessment all showed marked reduction of both total serum cholesterol and serum LDL-C. Atorvastatin therapy was continued for another 6 weeks with same dose. At the end of 12 weeks, the lipid profiles were measured. Further reduction of both total serum cholesterol and LDL-C was observed.

This assessment explains excellent lipid lowering effect of atorvastatin in our population. The effect of atorvastatin therapy on serum testosterone level is the important aspect in assessment in our study. For this purpose we measured total serum testosterone of all dyslipideamic male patients before atorvastatin therapy. Out of 40 responders the baseline testosterone level in 35(87.5%) were normal in range and 5(12.5%) lower limit of normal range. After 12 weeks of atorvastatin therapy the serum testosterone level again measured of all 40 patients. In this measurement we found marked reduction of serum testosterone of all patients.

Our study observed reduction of serum testosterone after atorvastatin therapy ($p<0.001$). Sethi MJ et al.[21] also showed that testosterone level declines with statin (atorvastatin) use ($R2=0.014;P<o.o1$). Similar results were found by Graaf et al.[11].

Conclusion

Dyslipidaemia is a general health problem all over the world. Dyslipidaemia is one of the important risk factor for cardiovascular disease, diabetes mellitus, hypertension, stroke, etc. Atorvastatin is one of the important lipid lowering drugs to treat high total cholesterol and LDL-C[3]. Cholesterol is precursor of all steroids. Testosterone is one of the most important steroid hormone. It is a cholesterol derived steroid hormone. The libido and sexual life of a man is initiated and maintained by testosterone[10]. Use of cholesterol lowering drug specially statins (atorvastatin) significantly lowers available serum cholesterol which is the precursor of testosterone synthesis. Our study demonstrates, there is statistically significant reduction of serum testosterone level in patients after atorvastatin therapy for 12 weeks in the adult population.

Recommendation

1. During initiation of statin therapy in adult patient its effect on testostertone and libido is to be considered.
2. Further large scale study may be conducted.
3. Life style advice and dietary modification should be encouraged, rather prescribing directly lipid lowering drugs in an young patients unless compelling indication of documented vascular disease like Ischemic stroke, Ischemic heart disease and Peripheral vascular disease.

Limitation of the study

1. A small scale study was conducted for the time and financial constraints.
2. Longitudinal or interventional studies are also needed to asses the effect of statins on androgen status in various patient groups. and could include assessment of gonadotropins and prolactin, which were not measured here.

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Original article

Estimation of Diameter and Circumference of Human Umbilical Cord in Pregnancy Complicated with Hypertension

Nahida Nazmun Naher Akand[1]*, Selina Anwar[2], Anjum Ara Begum[3], Afsana Khanom[4], Md. Rezaul Islam[5], Happy Roy [6]

ABSTRACT

CONTEXT: *Hypertension is one of the common medical complications of pregnancy. Hypertensive pregnancy may be associated with umbilical cord structure changes and adverse fetal outcome.* ***OBJECTIVE:*** *The present study was done to find out diameter and circumference of umbilical cord in pregnancies complicated with hypertension.* ***MATERIALS*** *and* ***METHODS:*** *This was a cross sectional, analytical study done in Department of Anatomy, Rangpur Medical College Rangpur from july 2014 to june 2015. The study was carried out on 60 (sixty) human umbilical cord with placenta, 30 from babies of normotensive mothers (control group) and 30 from babies of hypertensive mothers (hypertensive group). The umbilical cords were selected from obstetric ward of gynaecology and obstetrics Department, Rangpur Medical College Hospital, Rangpur after taking written permission. Umbilical cords were collected in a fresh state in each group using standard procedure. Diameter and circumference of umbilical cord were measured by proper technique. Statistical significance of difference between two groups was calculated by students unpaired t test as applicable. The difference was regarded statistically significant if the p- value was* ≤ 0.05. ***RESULT:*** *The Mean (±SD) of diameter of umbilical cords were 13.19 ± .91mm and 8.57 ± 1.00 mm, (p<.001) and the mean (±SD) of circumference 41.00 ± 3.70 mm and 32.47 ± 1.74 mm (p<.002) in control and hypertensive group respectively.* ***CONCLUSION:*** *This study revealed that diameter and circumference of umbilical cord were significantly reduced in hypertensive group as compared to control group. These structural changes of umbilical cord lead to obstruction in the flow of blood in umbilical cord vessels leading to acute placental insufficiency which might hamper fetal and maternal wellbeing. Early detection by antenatal check-up can improve pregnancy outcome.*

KEY WORDS: Umbilical cord, Pregnancy, Hypertension, Placenta.

INTRODUCTION

Umbilical cord is the fetal 'lifeline' connecting placenta to the fetus for the supply of oxygen, nutrients and transfer of waste materials, which are necessary for the growth and development of the fetus[1]. The umbilical cord also referred to as 'birth cord' or "Baby's Supply line"[2], perhaps, the only organ of the fetus that dies when life begins[1]. Fetal well-being depends much on normal function and structure of the umbilical cord. Umbilical cord should be important aspects to be considered in understanding feto-maternal functional relationship and related clinical conditions[3].

Diameter of cord is about 1-2cm[4]. The umbilical cord diameter depends upon the number of vessels present, size of the

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umbilical vein and the fluid content of Wharton's jelly. Diameter of cord is reduced in hypertensive pregnancies[5].
Fetal outcomes are better with increased jelly in the cord, while cords with reduced Wharton's jelly are more prone to compression and abnormal fetal heart rate pattern. Absence of Wharton's jelly around umbilical vessels has been reported to be associated with perinatal death[6].

It has been observed that the thickness or circumference of the umbilical cord is not uniform but presents nodes or swelling at places. These swelling presenting false knots may be due to kinking of the umbilical vessels or local collection of Wharton's jelly. As many as 40 twists or false knots have been found in a study[7]. True knots are rare[8].

Hypertension in pregnancy is reflected on umbilical cord and placenta. Their examination after delivery gives an accurate record of the infant's prenatal experiences and provides information that may be important to care of both mother and the infant[5].

Examination of umbilical cord showed reduced diameter and circumference which compress umbilical vessels and produce decreased utero-placental perfusion[9]. These findings can be diagnosed during antenatal check up by available techniques like Ultrasonography and Colour Doppler[5] to improve fetal outcome and to reduce perinatal morbidity and mortality[10]. This study would reveal the changes in umbilical cord structure associated with hypertensive disorders in pregnancy in northern region of Bangladesh and make the clinicians aware about the feto-maternal wellbeing.

MATERIALS AND METHODS

This cross-sectional analytical type of study was carried out on 60 (sixty) human umbilical cords and placenta. Out of the 60 umbilical cords 30 were collected from babies of normotensive mothers of uncomplicated pregnancies (control group) and 30 from babies of mothers with hypertensive disorders of pregnancy (hypertensive group). The umbilical cords were collected from Gynecology and Obstetrics Department, Rangpur Medical College Hospital, Rangpur after taking written permission. Umbilical cords of both normal vaginal and caesarian delivery were included. All samples were collected from singleton live pregnancy. Gestational period was between 35-42 weeks and maternal age was within 20-45 years. An inclusion criterion for control group was umbilical cord and placenta derived from mothers having blood pressure less than 140/90 mmHg. Inclusion criteria for hypertensive disorders group was umbilical cord and placenta derived from mothers having blood pressure 140/90 mmHg and above.

Common exclusion criteria were umbilical cord delivered from mothers with Rh negative blood group, VDRL positive, HBsAg positive, presence of any other known systemic pathology like diabetes mellitus, CLD, CVD, CKD and hematological disorders and congenital anomalies of the baby.

The samples were collected immediately after delivery and were examined for completeness in recent state. Immediately after collection, placenta with the umbilical cord was placed on a tray. Then umbilical cord was cut 2 cm from the site of insertion.

Diameter

Diameter of umbilical cords was measured by slide calipers with vernier scale within 15cm of its placental ends[5] (Figure 1).

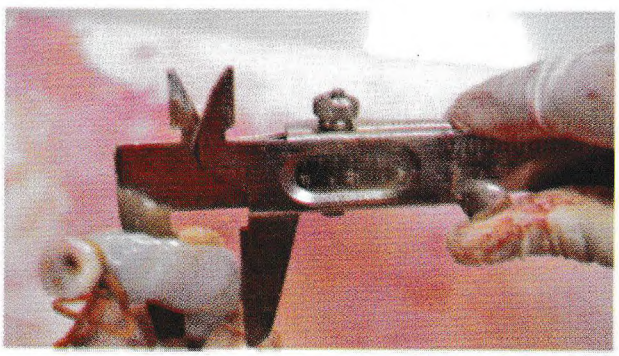


Figure 1: Photograph showing the method of measurement of the diameter of the umbilical cord by slide calipers with vernier scale.

Circumference

Circumference of the cords was measured in three positions with a flexible tape: close to the fetal end of the cord, in the middle part of the cord, and close to the placental attachment. Finally mean circumference of the umbilical cord was calculated from three measurements[11] (Figure 2a and 2b).

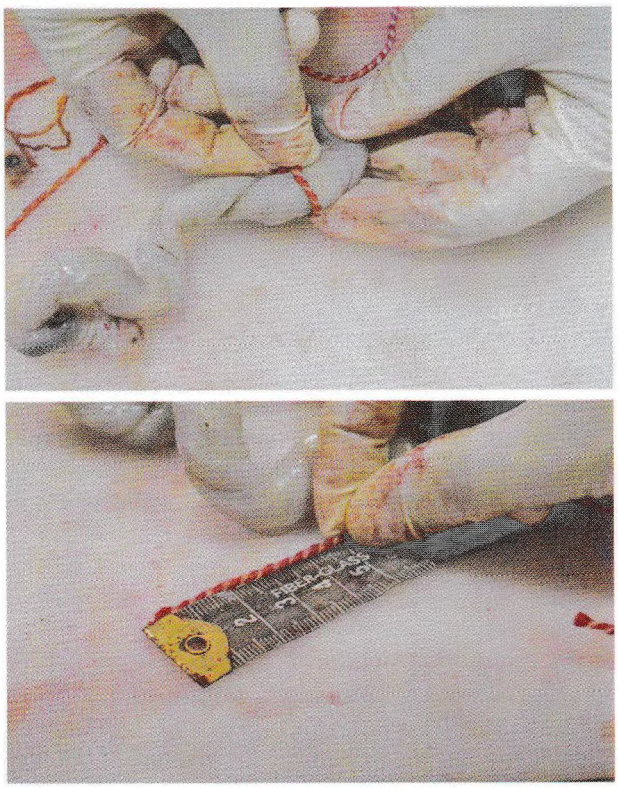


Figure 2a and 2b: Photograph showing method of measurement of the circumference of the umbilical cord.

RESULTS

Diameter of cord

Table1 shows the mean diameter of umbilical cord in hypertensive and control groups. Mean diameter of the umbilical cords were between 13.19 ± .91 and 8.57 ± 1.00 mm in control and hypertensive groups respectively. The mean diameter was significantly ($p<0.001$) lower in hypertensive group.

Figure 3 shows the distribution of diameter of umbilical cord in two groups. It was observed that whereas the highest proportions of umbilical cord had diameter was between 12.5 and 14.4mm (76.66%) in control and the highest proportion 50% had diameter between 8.5 and 10.4 mm (50%) in hypertensive group.

Circumference of the cord

Table1 also shows the mean circumference of umbilical cord was 41.00 ± 3.70 mm and 32.47 ± 1.74 mm in control and hypertensive groups respectively. The mean circumference of umbilical cord was significantly ($p<0.002$) lower in hypertensive group than in control group.

Figure 4 shows the distribution of circumference of umbilical cord in two groups. The highest proportions of umbilical cord have circumference between 39.46 and 45.19 mm (60%) in control and 28 and 33.73 mm (83.33%) in hypertensive group.

Table 1: Diameter and circumference of umbilical cord in control group and hypertensive group.

Variables	Control group (n=30)	Hypertensive group (n=30)	P value
Diameter (mm)	13.19 ±.905 (11.8 – 16)	8.57 ±1.004 (6.5 – 10.5)	0.001*
Circumference (mm)	41.00 ± 3.69 (36 – 57)	32.46 ± 1.74 (28.33 –35.67)	0.002*

Results are shown as mean±SDs and range (parenthesis).
Unpaired t test was done
n= no of umbilical cord
*= Significant at $p< 0.05$

Figure 3.Distribution of diameter of umbilical cord in two groups.

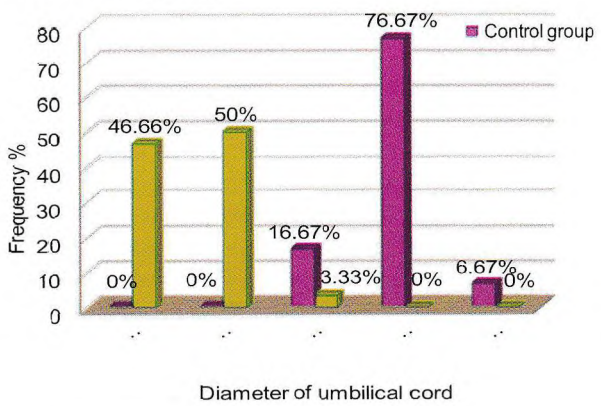
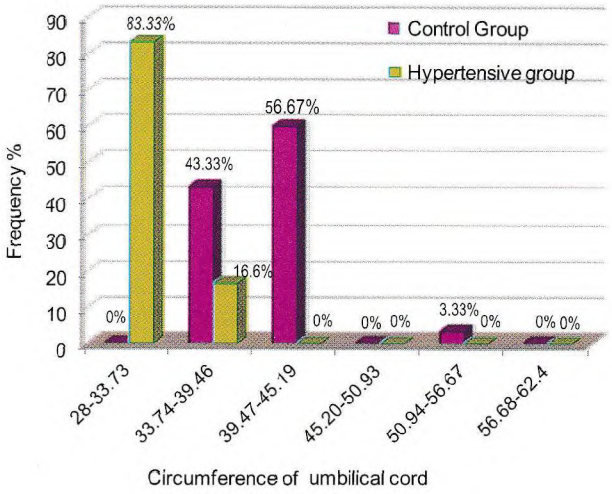


Figure 4. Distribution of circumference of umbilical cord between two groups



DISCUSSION

Diameter and circumference of umbilical cord:

The normal diameter of umbilical cord is about 1-2 cm. Its surface is covered by amnion and the interior contains Wharton's jelly. So cord diameter and circumference may be related to its Wharton's jelly content. It may be that umbilical cords of larger diameter have a large amount of Wharton's jelly, whereas, cords with smaller diameters have relatively little jelly content. Wharton's jelly has a gelatinous consistency and may serve as a cushion for the umbilical vessels. Therefore lean umbilical cords may also be more vulnerable to compression and breaking due to lack of tensile strength. It was reported that cords with little or inadequate Wharton's jelly may suggest poor nutrition and lack of glycogen[2].

In the present study the mean diameter and circumference of umbilical cord were measured both in control and hypertensive groups. Mean diameter and circumference of the umbilical cords were significantly reduced in hypertensive group than control group. This result is inconsistent with a study where umbilical cord diameter in hypertensive group was 1.76 ± 0.28 cm while in the control group it was 1.78 ± 0.26 cm and the difference between the groups was statistically not significant[5].

Younoszai (1969) cited by Gowda (2010)[5] in his study on placental and umbilical cord dimensions in relation to preterm, term and growth retarded infants has stated a significant decrease in cord diameter in intrauterine growth retarded infants. However, this relation could not be established for low birth weight infants. Hypertension causing decrease in cord diameters may affect fetus at the same way.

The awareness of the possible effects of hypertension on the umbilical cord parameter has been discussed in the present study and it has been found that diameter and circumference of cord were significantly reduced in hypertensive group. Umbilical cords without much Wharton's jelly are more prone to compression and breakdown of umbilical vessels[9]. These changes of cord may lead to obstruction in the flow of blood in the umbilical vessels, which causes uteroplacental insufficiency[12], fetal hypoxia and sudden fetal death[13] or IUGR[5].

CONCLUSION

From the present study it could be concluded that the discussed changes in umbilical cord are outcome of a single disease process that is hypertension in pregnancy. Many of these changes can be diagnosed by available routine and special techniques during antenatal check-up and this may help to further strengthen the precautions to be taken before, during and after delivery and thus reduce the fetal morbidity and mortality due to hypertension in pregnancy.

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Original article

Study on Serum Triiodothyronine Hormone level in Menopausal Women.

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ABSTRACT

INTRODUCTION: *Thyroid disorders are highly prevalent, occurring most frequently in menopausal women. Incidence of thyroid disease increases as they experience estrogen dominance at this age. Increased prevalence of subclinical thyroid disease has been observed in this group of people, which is about 5.8% and among them 60.6% were having high TSH levels. So, there may be relationship between estrogen dominance and hypothyroidism.* ***OBJECTIVE:*** *To observe serum triiodothyronine hormone level in menopausal women.* ***METHODS:*** *This cross sectional study was conducted from July 2014 to December 2015 in the Department of Physiology, Rangpur Medical College, Rangpur. For this 54 menopausal women were studied and they were compared with 52 apparently healthy reproductive age women. The serum triiodothyronine hormone level was measured in each subject. For statistical analysis independent sample "t" test was performed by computer based software SPSS- 17.0 version for windows.* ***RESULTS:*** *Mean serum total triiodothyronine level was decreased in menopausal women in comparison to healthy reproductive women, which was highly significant ($p<0.001$). Again, mean serum free triiodothyronine level was lower in menopausal women than those of control subjects but the difference was not significant ($p>0.05$).* ***CONCLUSION:*** *From this study we can conclude that serum triiodothyronine hormone level decreases in menopausal women.*

KEY WORDS: Triiodothyronine, Menopause, Hypothyroidism.

INTRODUCTION

Menopause is defined as the permanent cessation of menstruation. It is characterized by the menstrual changes due to oocyte depletion and subsequent reduction of ovarian hormone production. The manifestations that occur around the time of menopause are due to reduction in ovarian hormones. Natural menopause occurs at or after 40 years of age[1].

Thyroid dysfunction is common, especially among women over the age of 50 years. In caring for peri-menopausal and post-menopausal women, it is important to recognize the changing clinical manifestations of thyroid disease with age[2]. In menopause estrogen dominance occurs when there is high level of estrogen along with normal or low level of progesterone or estrogen normal with progesterone low. Estrogen dominance may cause thyroid imbalance as it can affect the conversion of T_4 into T_3 resulting in low T_3 level. It can block the uptake of iodine by the thyroid gland leading to hypothyroidism. It also increases thyroid binding globulin that carries thyroid hormones to the cells. Free thyroid hormones levels become low because they get attached to the thyroid binding globulin. This effect prevents thyroid hormones entering into the cells and can result in hypothyroidism[3]. Some Researchers found

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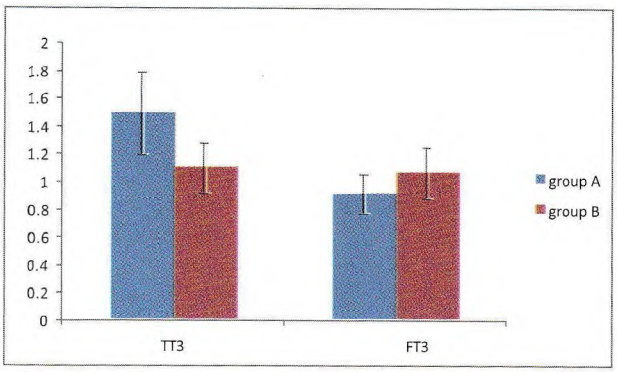
that there are inadequate levels of thyroid hormones and estrogen dominance in menopause. They also reported when estrogen is not properly counterbalanced with progesterone, it can block the action of the thyroid hormones. So, ineffective thyroid hormone leads to hypothyroidism[4]. Hypothyroidism is more common in women and rises with advancing age[5]. Again, there may be imbalances in the thyroid and adrenal glands, which interact with oestrogen and progesterone levels[6]. Thyroid imbalance may not be consistently due to the defect within thyroid gland itself, but rather it may occur in other parts of the endocrine system, like excessive cortisol, an adrenal hormone, in severe stress can blunt the TSH response to TRH or T_4. Too much or too little cortisol can also impair the conversion of T_4 to T_3[7]. This occurs most often when the ovaries cease producing the same amount of ovarian hormones such as estrogen and progesterone 6. Hypothyroidism is seven fold more common in women. NHANES III (National Health and Nutrition Examination survey) and the Framingham study found that women >65 years suffer from mild hypothyroidism 13.7% and 5.9% respectively[8]. If hypothyroidism remains undetected and untreated, it can lead to serious health hazard[4]. In this perspective we have observed serum triiodothyronine hormone level in menopausal women, which would help the physician for early detection and better management of thyroid dysfunction in menopausal women in order to improve their quality of life and also to develop awareness among the general people.

MATERIALS AND METHODS

This cross-sectional study was carried out in the Department of Physiology, Rangpur Medical College, Rangpur, from July 2014 to December 2015. A total number of 106 apparently healthy women subjects were included in this study. Among them 54 menopausal women aged 40-55 years were selected as experimental group (Group B) and 52 women aged 20-35 years were selected as control group (Group A). All the experimental subjects were selected from surrounding community. Subjects, who had at least 12 consecutive months of amenorrhoea from last menstrual period, were selected as study subjects. Induced menopause by chemotherapy, pelvic radiation, bilateral oophorectomy, hysterectomy, menopausal women below 40 years and above 55 years, reproductive aged women below 20 years and above 35 years and subjects suffering from chronic diseases like liver disease, diabetes mellitus, pregnancy and kidney disease were excluded from the study. Study protocol was approved by ethical committee of Rangpur Medical College, Rangpur. After selection of the subjects objectives and benefits of this study were explained to each subject and an informed written consent was taken. Standard questionnaire were filled up after taking history and thorough clinical examinations. 5 cc blood was collected from ante-cubital vein of each subject to estimate serum total triiodothyronine (T_3) and serum free triiodothyronine (FT_3) hormone levels by ELISA method and also to estimate fasting blood sugar, serum creatinine level and serum ALT level by Analyzer machine in the Department of Biochemistry, Rangpur Medical College, Rangpur to exclude diabetes mellitus, liver diseases or renal impairments. All data were recorded systematically in a preformed history sheet and all statistical analysis were done by computer using the software SPSS 17.0 version for windows. Comparison of serum triiodothyronine hormone level in reproductive age women and menopausal women were done by unpaired students 't' test. p value < 0.05 was accepted as level of significance.

RESULTS:

In this study the mean ± SD serum total triiodothyronine levels were 0.910 ± 0.144 ng/ml in group B (Experimental) and 1.491 ± 0.298 ng/ml in group A (Control).The mean value of serum total triiodothyronine level was decreased which is highly significant ($p<0.001$) in experimental group than that of control group.(Fig 1)



Group A = Control; Group B = Experimental
Figures in perenthesis indicates ranges

The mean ± SD serum free triiodothyronine levels were1.0667 ± 0.186 pg/ml in group B (Experimental) and 1.099 ± 0.178 pg/ml in group A (Control). The mean value of serum free triiodothyronine level was lower in lower in experimental group than that of control group but the differences was not statistically significant ($p>0.05$)

DISCUSSION

In our study we have observed the serum total and free triiodothyronine hormone level in menopausal women and also compared this value with apparently healthy reproductive aged women. We have observed decreased level of mean serum total triiodothyronine level and mean serum free triiodothyronine level in menopausal women than those of reproductive age group. Incase of total triiodothyronine level the difference was statistically significant but incase of free triiodothyronine level the difference was not statistically significant. These findings were consistent with those reported by some reasearchers [9,10,11].

In this study significantly decreased serum triiodothyronine level in menopausal women may be due to decreased thyroidal triiodothyronine production and release; as the degradation rate of triiodothyronine increases and thyroxine to triiodothyronine peripheral conversion rates decreases during menopause[9]. Again, it has been observed that primary retardation processes for hormone metabolism within the cell, which is associated with aging process, increases degradation rate of thyroid hormones in menopause, at the same time decline of hepatic 52- deiodinase activity may reduce peripheral conversion of T_4 to T_3 leading to lower level of T_3[10]. In addition, reduced level of serum triiodothyronine in menopausal women might also be due to progressive reduction in the serum level of thyroxine[11].

CONCLUSION

It can be concluded that both serum total triiodothyronine and free triiodothyronine level decreases in menopausal women. However, the exact mechanism can not be elucidated from this type of study. Further study with estimation of ovarian hormones and serum thyroid binding globulin level in menopausal women can give more conclusive findings.

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Case report

Holt-Oram Syndrome: A rare congenital anomaly.

Ferdous Rahman

ABSTRACT

On 3rd July, 2016 a new born female baby was admitted just after delivery in the Department of Paediatrics of Prime Medical College & Hospital, Rangpur with history of difficulty in respiration since birth. On examination, the baby was dyspnoeic and cyanosed and she was having a floating thumb on right hand but her left thumb was absent. In addition to these, X-ray revealed absence of left radius and dextrocardia. Hence, this baby was diagnosed as Holt-Oram syndrome and has been reported as it is a complex congenital deformity.

KEYWORDS: Holt-Oram syndrome, dextrocardia, skeletal abnormalities.

INTRODUCTION

Holt-Oram Syndrome (HOS) is a rare congenital disease of autosomal dominant inheritance, seen in 1 in 100,000 live births[1,2]. It was first described in the year of 1960 by Mary Clayton Halt and Samuel Oram. This syndrome is characterized by triad of congenital cardiac anomalies, cardiac conduction defects and hand malformation such as aplasia or hypoplasia of the thumb. Alternatively it is also known as atrio-digital dysplasia and Heart-Hand syndrome[2].

CASE REPORT

A female baby of Shopna delivered by Caesarean section on 3rd July 2016, at the Department of Obstetrics and Gynaecology in Prime Medical College and Hospital, Rangpur and the newborn was admitted in our Department as she developed respiratory distress immediately after delivery. She was born at term (40 weeks) and her birth weight was 3.4 kg. Mother was on regular antenatal care. There was no history of premature rupture of membrane, prolong labor pain, maternal DM and hypertension. On examination respiratory rate was 55 breaths /min, Heart rate was 120 beats /min and the baby was cyanosed. Occipitofrontal circumference was 33 cm. First and second heart sound were audible more on right side than left. On upper limb examination there was absence of left thumb and floating of right thumb (Fig 1 and Fig 2). No one of family members was having such deformities. During hospitalization we initially kept the baby NPO than NG tube feeding, followed by breast feeding was given. Treatment given was -

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Cell-01712564761

oxygen inhalation, Inj.Ampicillin and Gentamycin. Investigations done were; CBC and PBF, CRP-negative, S.electrolytes. Reports of all these tests were within normal limit. Chest X-ray shows-dextrocardia, X-ray of both forearm shows Radial hemimalia (Fig 3). On echocardiography situs inversus and dextrocardia with D-Bulbo-ventricular looping along with Atrial septal defect (ASD) and Ventricular septal defect (VSD) with trace TR (PASP=28mmHg) were revealed. There was no pulmonary stenosis (PS). Biventricular function was good. After improvement of the general condition for that she was admitted, the baby was discharged and her parents were advised to consult with paediatrics cardiologist



Fig 1: Figure showing floating of right thumb.



Fig 2: Figure showing absence of left



Fig 3: Figure showing left Radial emimalia.

DISCUSSION

Holt-Oram syndrome is an autosomal dominant disorder characterized by skeletal and congenital cardiac defect, where wide intrafamilial variability has been observed[3]. New mutations have been demonstrated in about 40% of cases. The various cardiac manifestations and limb defects are due to T-BoX genes, namely TBX3 and TBX5[4]. These genes play important role in cardiac and skeletal development. Skeletal abnormalities mainly include absence of thumb or abnormal position of thumb, forearm and shoulder, underdevelopment or absence of forearm bone. This case is sporadic as the parents and first degree siblings did not have any feature of Holt-Oram syndrome. Diagnosis of the syndrome was made by clinical examination, X-ray of upper limb and Color Doppler Echocardiography. Molecular genetics confirms the diagnosis but this is not available in our country.

Treatment of Holt-oram syndrome depends on the severity of condition and provided by multi-disciplinary approach. Thumb and forearm deformities can be treated by corrective or reconstructive surgery or artificial prosthetics. Structural abnormalities of heart

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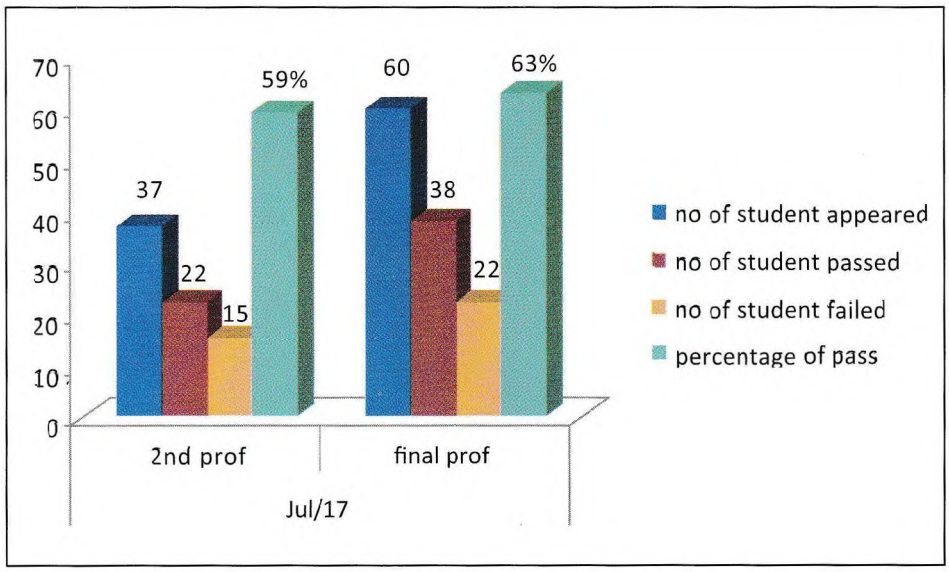
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2nd and final Professional MBBS Examinations were held in July, 2017. The number of students appeared in; total number of students passed, total failed and percentages of pass in the 2nd and final Professional MBBS examinations are shown in the following table and figure (Table I & Figure 1).

Table I: Result of 2nd and final Professional MBBS Examinations in July, 2017.

Exam Year	exam name	no of student appeared	no of student passed	no of student failed	percentage of pass
Jul/17	2nd prof	37	22	15	69
	final prof	60	38	22	63

Figure 1: Result of 2nd and final Professional MBBS Examinations in July, 2016

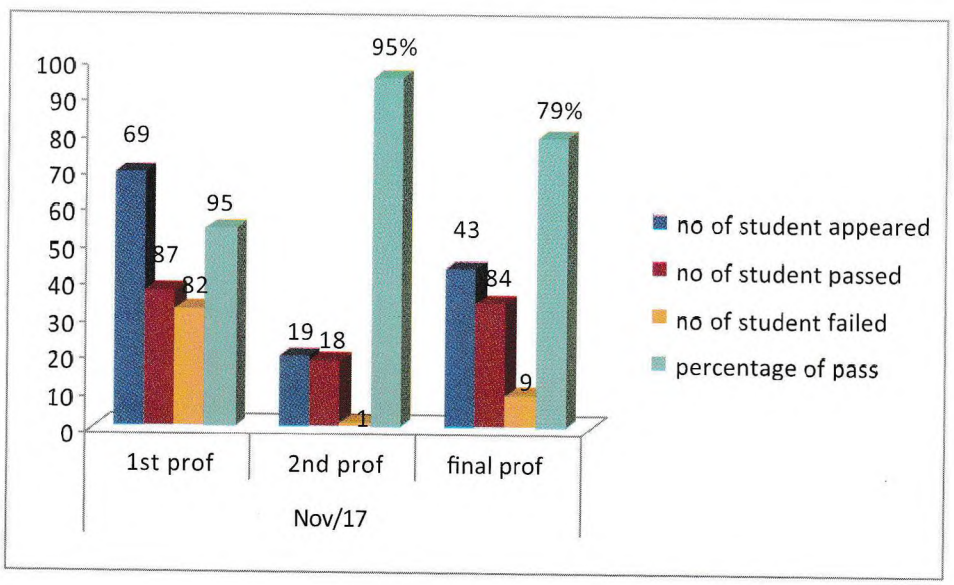


1st, 2nd and final Professional MBBS Examinations were held in November, 2017. The number of students appeared in; total number of students passed, total failed and percentages of pass in the 2nd and final Professional MBBS examinations are shown in the following table and figure (Table II & Figure 2).

Table II: Result of 1st, 2nd and final Professional MBBS Examinations in November, 2017.

Exam Year	exam name	no of student appeared	no of student passed	no of student failed	percentage of pass
Nov/17	1st prof	69	37	32	54
	2nd prof	19	18	1	95
	final prof	43	34	9	79

Figure 2: Result of 1st, 2nd and final Professional MBBS Examinations in November, 2017



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