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Editorial

PARADIGM SHIFT IN APPROACH TO REDUCE ATHEROSCLEROTIC CARDIOVASCULAR DISEASE BURDEN

Tariq Waseem

Despite advances made in medical science, genetics, epidemiology, risk assessment, and cardiovascular imaging, Atherosclerotic Cardiovascular Disease (ASCVD) remains the number one killer globally with 17.3 million deaths worldwide and 3.16 million in Southeast Asia.[1] Newer medicine, devices, and interventional procedures have been developed, tested in different outcome trials, and recommended as practice guidelines by professional societies and organizations such as the world health organization (WHO), in situ hybridization (ISH), embryonic stem cell (ESC), American hospital association (AHA), etc.[2]

Efforts to decrease the ever-rising disease burden have fixated more on the apparent illness and less on prevention. The improvement seen in ASCVD mortality and morbidity is mostly due to timely transfer of acutely sick patients to secondary and tertiary healthcare facilities, setting up of CCUs and Stroke units, early interventions, and secondary prevention strategies that allow patients to survive the acute attack and to live longer with heart failure and disabilities.[3]

The majority of patients at high risk for ASCVD or with the manifest disease are still either untreated or inadequately treated.[4] The Framingham Heart Study, which was propelled in 1948, for the first time established the principle of cardiovascular disease risk identification and predicting future events.[5] The Multiple Risk Factor Intervention Trial (MRFIT) in which 12 866 men were followed-up for an average period of 7 years showed that predefined cardiac endpoints such as fatal or nonfatal myocardial infarction, and all-cause mortality were significantly less in the group assigned to multiple risk factor intervention versus those assigned to usual care.[6] Scandinavian Simvastatin Survival Study (4S) undertaken in 1994 followed by scores of various randomized control trials over the next two decades validated the effectiveness of statins in reducing CVD events and all-cause mortality in patients having high ASCVD risk.[7,8]

Remarkable improvements in CV outcomes were reported in reduction of cardiovascular events with Icosapent Ethyl-intervention trial (REDUCE-IT) which tested the Eicosapentaenoic acid (EPA) add up of 4g/day with statin therapy in comparison to placebo among the patients with confirmed ASCVD along with diabetes, with at least one more risk factor.[9] Further a recent, Proprotein Convertase/Subtilisin Kexin type 9 (PCSK9) that acts to regulate LDL-C in plasma has altered our consideration about lipid metabolism. Antagonism of a couple of complete human monoclonal antibodies presented PCSK9 action attained by Food and Drug Administration (FDA) in U. S. for approval to be used in humans to treat dyslipidaemias.[10]

A recent survey estimated that 41% of the adult Pakistani population has hypertension, 21% use tobacco,17.3% have high cholesterol, 21% are obese.[11] The prevalence of diabetes mellitus in Pakistan is 17.1% and in 2019 over 19 million adults in Pakistan were living with diabetes.[12] Combined these multiple ASCVD risk factors undermine any progress made through setting up tertiary care centers for the management of CVD, especially in low- and middle-income countries where ASCVD prevention has received little attention.

ASCVD can be prevented through a multifactorial approach well before it

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manifests as Angina, Myocardial infarction, Stroke, Heart Failure, or critical limb ischemia. Early identification of individuals at risk and a focus on lifestyle interventions such as adopting "Life's Simple Seven" (LS7 score)[13]

1. Quit smoking
2. A healthy diet plan
3. Regular physical activity
4. Ideal body weight
5. lower cholesterol level
6. Blood pressure
7. Fasting blood sugar

A high LS7 score ($\geq$ 5) is associated with a lower risk of future deadly or disabling cardiovascular events. Adults who are >40 years of age should have their 10-year ASCVD risk calculated and advised on adopting lifestyle changes.[14] An interdisciplinary team approach and collaboration with patients and families to adopt a healthy lifestyle, practicing and promoting healthy behaviors and eating can effectively reduce ASCVD burden.[15]

The increasing burden of CVD demands a paradigm shift in approach with more focus on primary care and prevention than on setting up expensive tertiary care hospitals. A multifaceted primary prevention approach for the high-risk population is the need of the hour. All stakeholders such as patients, health care providers, ministries of health, finance, education, and agriculture, and other regulatory bodies must join hands in efforts to reduce the ASCVD burden.

The preventive providers of the forthcoming need formal expertise and training beyond that is presently being delivered. A preparation program for primary care physicians is designed to better equip them with knowledge and skills required to impart preventative techniques to their patients aimed at achieving a healthy lifestyle which translates into a reduction in adverse cardiovascular outcomes.[16] A postgraduate fellowship or master's degree program in preventive cardiology be offered to cardiologists, internists, and public health specialists and research into finding indigenous solutions based on local and regional data.[17]

The resources needed to prevent ASCVD are far less than required to treat manifest ASCVD presenting as myocardial infarction, stroke, heart failure, or gangrene.[18]

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Original Article

EFFECTIVENESS OF FOOT ORTHOSIS IN FLAT FEET CHILDREN OF AGE 6-15 YEARS; A QUASI-EXPERIMENTAL STUDY

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ABSTRACT

Flat foot (also called pes planus or fallen arches) is a postural deformity but a relatively common and usually painless condition. This is categorized as a childhood developmental issue when arches fail to develop owing to multiple reasons resulting in the problem in both ankle and legs. The study aimed to Determine the effectiveness of Foot orthosis in relation to foot flat. And to study the time duration for the correctness of flat foot through soft foot orthosis in children.

Material and Methods: This Quasi-experimental study was conducted at the Pakistan Institute of Prosthetic and Orthotic Sciences (PIPOS) rehabilitation program, Peshawar, Pakistan. The study was conducted over a period of 6 months (July 2018 - December 2018). A stratified random sampling technique was adopted for the study and 10 flat feet patients aged 6-15 years were inducted. Data were collected in two steps i.e. (Pretest and post-test data). Data was analyzed using SPSS Version-22.

Results: The mean age of study participants was 10.5± 2.8 years. Post-test measurement for 3 (30%) patients was less than 1cm, while that of 7 (70%) patients scored 1cm or above. Participants (40%) with pretest measurements more than 5mm have shown significant improvement in achieving the target value except one, while correction of flat feet was slow in participants with measurements less than 5mm.

Conclusion: The study suggests that soft foot orthosis has a good effect on children with flat feet. Early treatment for children with flat feet is too much necessary.

Key Word: Flat Foot, Foot Orthosis, Ankle

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INTRODUCTION

The foot is a complex structure comprised of 28 different bones including sesamoids, which combine forming different joints that adapt towards the level of walking, jumping, walking up or down the hill, or even towards uneven surfaces. Dysfunction of the foot can often arise by losing its normal structural support, thus altering its shape. Prolong abnormal forces on the foot tends to disturb the normal arch of the foot which results in loss of the medial longitudinal arch support.[1] Children with flat feet also known as pes planus, do not have a normal medial arch. It means that when the child is standing, the plantar surface of the foot contact with the ground.[2] The foot has three arch support; medial longitudinal arch, lateral longitudinal arch, and transverse arch.

Foot orthosis is commonly recommended for the treatment of the flat foot.[3] The biomechanical effects of such orthoses are not yet fully clear and the time duration of correctness for the follow-up is not clear.[4] Foot orthoses are specially designed shoe inserts that help to support the feet and correct foot imbalances. Some of the foot and lower limb problems that can be successfully treated in the long term with orthoses include Flat feet, corns and calluses, foot ulceration, recurrent ankle sprain, plantar fasciitis, or heel spur syndrome.[5] Feet provide the base of support and flat foot is common in children if not treated well in time can lead to pain in the foot and various knee problems including hallux valgus. It needs proper treatment which is necessary for children, but currently, the time duration for the correctness of flat feet in children with soft foot orthosis is unknown which is very necessary for a proper treatment protocol, so that the children

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can follow that time duration for using soft of foot orthosis made from EVA. Foot orthosis prescription had always been beneficial for the patients as its customized and as per the measurements of the patient's sizes causing less discomfort and more durable.[6]

This particular experimental research was conducted to check the effectiveness and time duration of the correctness of flat feet with soft foot orthosis i.e. made from EVA so that we can check the effectiveness of soft foot orthosis.

MATERIAL AND METHODS

A Quasi-experimental study was carried out to determine the effectiveness of Foot orthosis in relation to foot flat and to know about the time duration for the correctness of flat foot through soft foot orthosis in children at PIPOS rehabilitation program Peshawar, Pakistan. The duration of the research study was six months (from July 2018 to December 2018). Every part of the ethical issues associated with the research study was comprehensively reviewed with the responsible representative of the PIPOS rehabilitation program Peshawar. A stratified random sampling technique was adopted. The sample size for the research study was 10 and children with the flat foot were inducted into the study. The intervention was given by making soft foot orthosis made from EVA foam. Data were collected in two steps i.e. (Pretest and post-test data). Pre-measurements were taken at the start of the study and post measurements were recorded after 3.5 months. Data were analyzed by using SPSS- Version 22 mean ± SD of parameters were determined post-test achievements are given as a percentage.

RESULTS

The mean age of study participants was 10.5± 2.8 years. Post-test measurement for 3 (30%) patients was less than 1cm, while that of 7 (70%) patients scored 1cm or above. Participants (40%) with pretest measurements more than 5mm have shown significant improvement in achieving the target value except one, while correction of flat feet was slow in participants with measurements less than 5mm.

On average, soft foot orthoses remain effective in achieving a 3.8mm increase in measurements for flat feet children during three and half month (3½) period. Surprisingly, 50% of participants with flat feet showed effectiveness only between 1-2 mm. However, only one patient achieved the target value (1cm) while its pretest data was 2mm which shows more improvement than others.

Overall, it is concluded that soft foot orthosis has a good effect in treating children with pes planus.

Table-1: Pre-& Post Measurements for Foot Orthosis and achievement after intervention

Sr. N0.	Devices	Pre-intervention measurements	Post-intervention measurements	Achievement
1	Device 1	5mm (Rt)	7mm (Rt)	2 mm
2	Device 2	5mm (Lt)	6mm (Lt)	1 mm
3	Device 3	6mm (Rt)	12mm (Rt)	6 mm
4	Device 4	8mm (Lt)	13mm (Lt)	5 mm
5	Device 5	6mm (Rt)	10mm (Rt)	4 mm
6	Device 6	2mm (Rt)	10mm (Rt)	8 mm
7	Device 7	8mm (Lt)	10mm (Lt)	2 mm
8	Device 8	5mm (Rt)	11mm (Rt)	6 mm
9	Device 9	8mm (Lt)	10mm (Lt)	2 mm
10	Device 10	6mm (Rt)	8mm (Rt)	2 mm

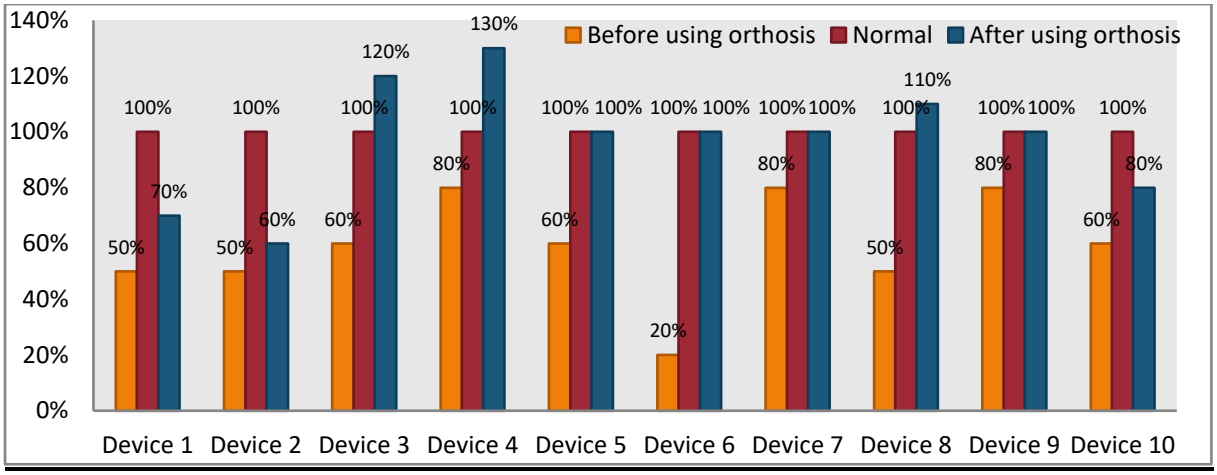

Figure 1: Graph showing normal medial arch, flat and achieved medial arch results

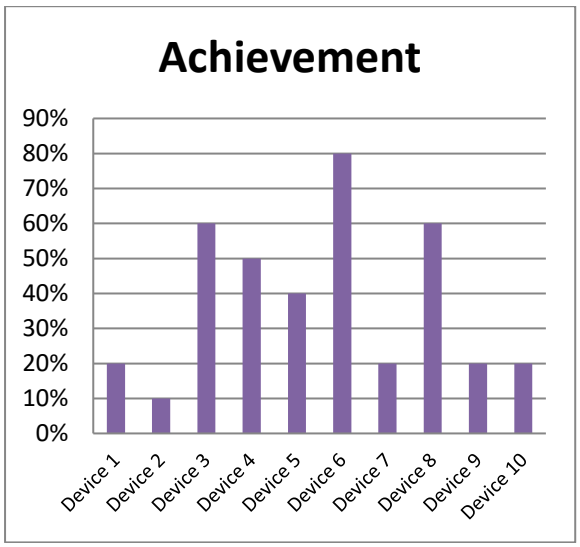

Figure-2: Achievement with Foot Orthosis

DISCUSSION

The objective of the study was to know the effectiveness of soft foot orthosis for children having flat feet. From the results, it's clear that soft foot orthosis had positive results on treating flat feet and it increases the height of the medial arch if used properly. Secondly, the results from the other literature say that the time that should be given for the use of foot orthosis should have 4 ½ months, and studies have reported results in 4 months[7] but this research study concluded that within 3 ½ months the medial arch starts going to elevate through soft foot orthosis in flat feet children. In the current study, some of the participants scored very low readings and are far from the target value, which can be due to the reason that the participants didn't follow the proper time duration to use the orthosis as it was advised to them. Another reason can be the vigorous use of orthosis. Secondly, maybe the patient feels uncomfortable while walking with insoles as it was a new modification to their feet so they quite it most frequently.

Arch development occurs during the first 10 years of life. A foot orthosis is an effective approach towards the pronated feet. Some studies found an immediate effect of foot orthosis on foot structure, which goes in a similar direction as found in our study.[8,9]

The results of several studies indicated that foot orthoses are very useful in treating flat feet.[10-13] The age limit is very necessary for using soft foot orthosis. i.e., the soft foot orthosis is beneficial for children age 6 to 15 years. But the researchers conduct the study on large scale and more time duration was given for the follow-up and thus achieved excellent results as compared to this study, had given 3 ½ months for follow up duration that's why it scored comparatively less while the same age patients are included in this research study that shows the good effect on medial arch.[14,15]

One of the studies concluded that soft foot orthosis when combined with foot exercises and activity modification, it plays an important role in maintaining medial arch, the study achieved good results as compared to this study due to the inclusion of regular foot exercises which enhance the function of muscles and more prone to achieve effective

results, but this research study had achieved the same results only by using soft foot orthosis for flat feet children due to which the study has shown more effectiveness then this study.[16]

Another study summarized the use of soft Fo's, prefabricated and therapeutic insoles for the treatment of medial arch and concluded that it creates a notable difference in the medial arch of flat feet children's which is similar to the result of this study only by using soft Fo's made from EVA. The prefabricated insoles have a good biomechanical effect but are more expensive while the custom-made foot orthosis is not costly and thus produces the same effect on flat feet.[17,18]

Martin Pfeiffer summarized that boys had a significantly greater tendency to maintain medial arch through the use of soft Fo's as compared to girls which are similar to the results of this study when the comparison between the results of boys and girls takes place and support the results of this study as boys use to walk and run more as compared to girls so by that reason boys are more prone to achieve the best results due to regular use of foot orthosis in proper shoes. In the case of girls, they have a large amount and different designs of sandals in which the insoles cannot be used and thus needs more time for the treatment of flat feet.[19]

CONCLUSION

The study suggests that soft foot orthosis has a good effect on children with flat feet. The foot orthosis reduces the pressure on the medial side of the foot and tends to stabilize the foot and most importantly the structure of the foot is reinstated as the normal foot. Early treatment for children with flat feet is inevitable, but the medial arch starts going to its normal position within the first 3 months of using soft foot orthosis. So proper time duration must also be followed to achieve the best results. Proper donning of foot orthosis is important and the parents need to be educated for proper hygiene in order to sustain its form.

RECOMMENDATIONS

The study population should be increased for future researches. Comparison between a normal child and fleet feet should be done to check the activities of daily life bases. More time duration should be given for the use of orthosis to get the best results and get the proper medial arch. The effect of soft foot orthosis on gait kinetics should be studied in the future for detailed study.

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AUTHOR'S CONTRIBUTION

AH: Design and study conception, data collection, and data analysis
SA: Drafting the article, literature review, and approval of the final draft

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Original Article

ASSOCIATION BETWEEN BACTERIAL VAGINOSIS AND PREMATURE RUPTURE OF MEMBRANE (PROM) IN PREGNANT WOMEN PRESENTING IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Premature rupture of the membranes (PROM) is a frequent pregnancy problem. One of the most frequent causes of vaginal discharge in women is bacterial vaginosis. It has been hypothesized that PROM risks and the prevalence of bacterial vaginosis in pregnancy, as well as its connection with PROM, vary across populations. The study aimed to find out the association between premature rupture of membrane (PROM) and bacterial vaginosis in pregnant women presenting in a tertiary care hospital.

Material and Methods: This was a six-month case control study performed in the Department of Obstetrics and Gynecology, Sheikh Zayed Hospital, Lahore. Sample size was 200 females; 100 females in each case and control group. Females were assessed for presence of signs of Bacterial vaginosis (BV). SPSS version 20 was used to perform statistical analysis on the obtained data.

Results: The mean age of females in this study was 27.40 ± 4.90 years with minimum and maximum age of 20 and 35 years respectively. In cases and controls the bacterial vaginosis was seen in 24(24%) and 5(5%) of the females respectively. Significant association was observed between bacterial vaginosis in study groups (p-value < 0.001). There were 6 times more chances of PROPM in presence of bacterial vaginosis.

Conclusion: Through the findings of this study, we found significant association between bacterial vaginosis and premature rupture of membrane in pregnant women. Bacterial vaginosis is preventable and curable condition. Therefore by early intervention and proper management we can minimize the risk of PROM.

Key Words: Gynecology, Pregnancy, Infection

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INTRODUCTION

In low and middle- income countries maternal mortality is said to be caused by pregnancy related infections.[1] Three percent of all the pregnancies end in premature rupture of the membranes (PROM) which result in one third of every pre-mature births.[2] Eighty five percent of neonatal morbidity and mortality is associated with prematurity.[3] PROM complicates up to 20% of all deliveries and is associated with 18% to 20% of peri-natal deaths.[4]

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Unrecognized intra-amniotic infections may play a role.[5] According to research, infectious agents have an influence on either starting preterm labor, inducing early membrane rupture, or avoiding tocolysis.[4,6] Direct placental, fetal, or neonatal infection or vaginal, cervical, intrauterine, or even non-pelvic infections may lead to adverse pregnancy outcomes. Long-term neurologic damage seems to be associated with preterm birth which in turn is result of the infections mentioned above.[7] Infections is not associated with late preterm deliveries but is seen in case where birth occurs in less than 30 weeks.[8] There is an aberration of the usual vaginal flora in bacterial vaginosis (BV), with an excess of anaerobic bacteria and an absence of the typical lacto-bacillary flora. The presence of BV during labor has been linked to a poor pregnancy outcomes,

particularly premature delivery.[9] Bharathi et al, has confirmed that the frequency of BV was 15% with PROM while 5% in females without PROM ($p<0.05$).[10] Karat et al., also found that the frequency of BV was 16% with PROM while 3% in females without PROM ($p<0.05$).[11] However, Ziaei et al. observed no meaningful correlation amongst BV and PROM ($p>0.05$). Although BV is a frequent vaginitis in full pregnancy, they unable to uncover any evidence of a link among both BV and PROM.[12]

Rational of our research study is to measure the association between premature rupture of membrane (PROM) and bacterial vaginosis in pregnant women. Pakistan is a poor country. It has high maternal mortality and morbidity. Pregnant women need special attention between the start of prenatal care and the start of labor. To decrease mortality from pregnancy-related infections, prompt diagnosis and treatment, as well as better descriptive and microbiologic data, are essential. Literature has reported that BV is significantly associated with PROM but due to controversial evidences present in literature, we are unable to find this in literature. This study will confirm that whether BV is a cause of PROM. Moreover, this study will enable to implement the results that in turn will prevent females from developing PROM due to BV by initiation of early intervention in cased of BV.

MATERIAL AND METHODS

This study conducted at the Department of Obstetrics & Gynecology, Sheikh Zayed Hospital, Lahore was a case control study. The study duration was six month from Feb 3, 2017 till August 3, 2017. The sample size was 200 females; 100 females in each group. The sampling used in our research work was non-probability, consecutive sampling. The criteria for inclusion in our study was females of age 20-35 years of parity <5 presenting at gestational age 28-40 weeks (on LMP). The cases were **f**emales with PROM (as per operational definition) while control were females without PROM (no leakage). The criteria for exclusion in our study was women in active labor (cervical length>3cm on clinical examination), mal-presentations, multiple gestation, polyhydramnios, congenital fetus (on scan), history of cervical circlage, ante-partum hemorrhage (on clinical examination), eclampsia, gestational diabetes (BSR> 186mg/dl) PIH, preeclampsia, and females who already received antibiotics for PROM. After approval from 200 females who fulfilled the selection criteria were included in the study. Consent in written form was obtained from all the participants. Demographic information (name, age, parity, gestational age) were noted. Females were assessed for presence of signs of BV. Information was documented on predesigned proforma. SPSS version 20 was used to do statistical analysis on the obtained data. Quantitative data such as age and gestational age were given as a mean and standard deviation. The frequency and proportion of qualitative factors such as BV were reported. The Chi-square test was used. The relationship between BV and PROM was measured using the odds ratio. OR>1 and probability value of less than 0.05 was considered significant. For parity, the frequency and percent were determined. To account for effect modifiers, data was stratified by age, gestational age, and parity.

RESULTS

Females in this study had a mean age of 27.40± 4.90 years, with a min and max age of 20 and 35 years, correspondingly. While in cases and controls the mean age was 26.57±4.54 years and 28.24 ± 5.12 years respectively**.** (Table-1) Overall 93(46.5%) cases were 20-26 years old and 107(53.50%) were 27-35 years of age. (Fig-1) A total of 130(65%) cases had < 37 weeks of gestation and 70(35%) cases had ≥ 37 weeks of gestation. (Fig-2) The mean gestational age in this study was 34.26 ± 3.92 weeks while in cases and controls the mean gestational age was 34.56 ± 4.29 weeks and 33.97 ± 3.51 weeks respectively. (Table-2) 100(50%) females had 1-2 and while 100(50%) had 3-4 parity. (Fig-3) The mean parity was 2.54 ± 1.08 with minimum and maximum as 1 and

4. (Table-3) The overall frequency of bacterial vaginosis was seen in 29(14.50%) females. (Fig-4) In cases and controls the bacterial vaginosis was seen in 24(24%) and 5(5%) of the females respectively. On applying Chi-square test significant association was found between bacterial vaginosis and study groups (p-value < 0.001). There were 6 times more chances of PROPM in presence of bacterial vaginosis. (Table-4) When data was stratified for age, gestational age and parity we found significant association between PROM and bacterial vaginosis (p-value < 0.05) and there were higher chances of PROM in presence of bacterial vaginosis (OR > 1). (Table-5,6,7)

Table -1: Descriptive statistics of age (years)

	Study groups	Mean	S.D	Minimum	Maximum
Age (years)	Case (n=100)	26.57	4.54	20.00	35.00
	Control (n=100)	28.24	5.12	20.00	35.00
	Total (n=200)	27.40	4.90	20.00	35.00

Table -2: Descriptive statistics of gestational age (weeks)

	Study groups	Mean	S.D	Minimum	Maximum
Gestational Age (weeks)	Case (n=100)	34.56	4.29	28.00	40.00
	Control (n=100)	33.97	3.51	28.00	40.00
	Total (n=200)	34.26	3.92	28.00	40.00

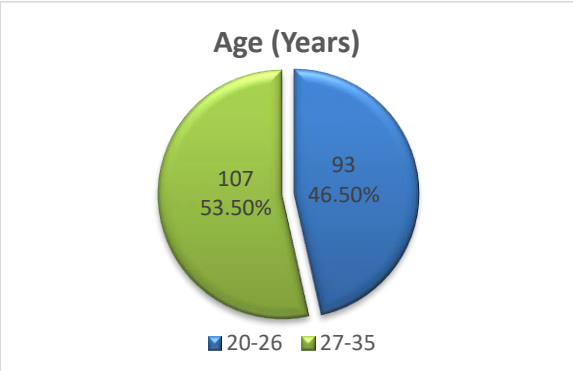

Fig-1: Age distribution of females

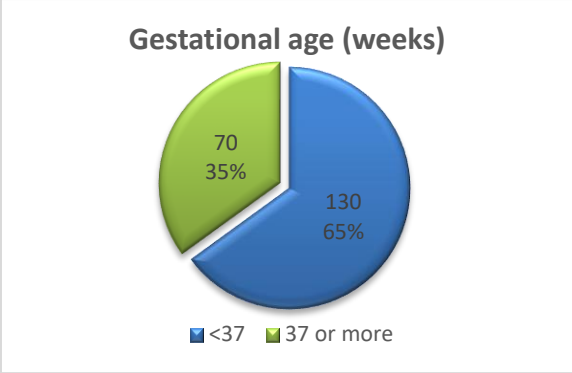

Fig-2: Distribution of gestational age (weeks)

Fig-3: Distribution of Parity

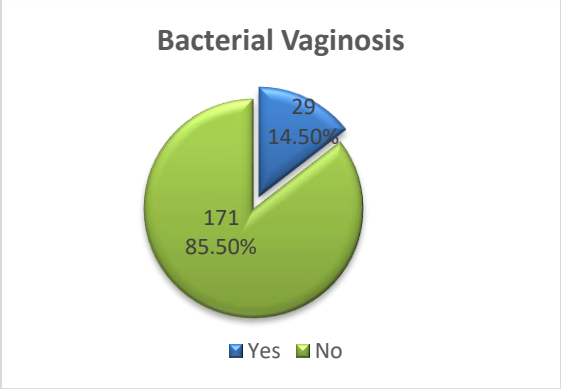

Fig-4: Frequency of bacterial vaginosis

Table -3: Descriptive statistics of Parity

	Study groups	Mean	S.D	Minimum	Maximum
Parity	Case (n=100)	2.49	1.09	1.00	4.00
	Control (n=100)	2.60	1.07	1.00	4.00
	Total (n=200)	2.54	1.08	1.00	4.00

Table -4: Comparison of bacterial vaginosis in cases and controls

		Study groups		Total	Chi-square (p-value)	Odds ratio
		Case	Control			
Bacterial vaginosis	Yes	24	5	29	14.56 (<0.001)	6.00
		24.0%	5.0%	14.5%		
	No	76	95	171		
		76.0%	95.0%	85.5%		
Total		100	100	200		
		100.0 %	100.0 %	100.0 %		

p-value<0.05 significant

Table -5: Comparison of BV in cases and controls with respect to age groups (years)

Age (years)	Bacterial vaginosis	Study groups		Chi-square (p-value)	Odds ratio
		Case	Control		
20-26	Yes	10	1	5.86 (0.014)	9.07
		18.9%	2.5%		
	No	43	39		
		81.1%	97.5%		
27-35	Yes	14	4	10.07 (0.003)	5.94
		29.8%	6.7%		
	No	33	56		
		70.2%	93.3%		

Table -6: Comparison of BVin cases and controls with respect to gestational age (weeks)

Gesta-tional age	Bacterial vaginosis	Study groups		Chi-square (p-value)	Odds ratio
		Case	Control		
<37 (weeks)	Yes	16	4	11.43 (0.001)	6.23
		27.1%	5.6%		
	No	43	67		
		72.9%	94.4%		
37 or more (weeks)	Yes	8	1	3.92 (0.048)	6.79
		19.5%	3.4%		
	No	33	28		
		80.5%	96.6%		

Table -7: Comparison of bacterial vaginosis in cases and controls with respect to parity

Parity	Bacterial vaginosis	Study groups		Chi-square (p-value)	Odds ratio
		Case	Control		
1-2	Yes	10	1	7.82 (0.005)	11.71
		19.6%	2.0%		
	No	41	48		
		80.4%	98.0%		
3-4	Yes	14	4	7.27 (0.007)	4.7
		28.6%	7.8%		
	No	35	47		
		71.4%	92.2%		

DISCUSSION

Preterm PROM is linked to a number of risk factors. When compared to white patients, black individuals had a higher incidence of preterm PROM.[13] Patients with a lower socioeconomic level, who smoke, who have a history of sexually transmitted diseases, who have had a prior preterm birth, who have vaginal hemorrhage, or who have uterine distension are also at greater risk.[14]

Bacterial vaginosis in pregnant women is a significant factor in the development of PROM due to intrauterine infections at any point in pregnancy. Intrauterine infection frequency exists to estimate pregnancies of 1 to 10 percent. Clinical chorioamnionitis complicates 1-5% of term pregnancies, but over 25% of premature births, and thereby increasing neonatal illness and death and is also a cause of maternal morbidity. A state of identification, intrauterine infection determination is the risk of infection and development of newborn clinical signs.[15]

In current study we found that in cases and controls the bacterial vaginosis was seen in 24(24%) and 5(5%) of the females. On applying Chi-square test we found significant association between bacterial vaginosis and study groups, p-value < 0.001. There were 6 times more chances of PROPM in presence of bacterial vaginosis.

A previous study found a strong association between BV and PROM.[16] Bharathi et al, has confirmed that the frequency of BV was 15% with PROM while 5% in females without PROM (p<0.05).[10] Significant association of PROM and BV was observed in our study. Karat et al., also found that the frequency of

BV was 16% with PROM while 3% in females without PROM ($p<0.05$).[11]
Another research observed the association between BV and premature birth.They observed substantial associations amongst premature births and BV diagnosed, but not amongst preterm birth and BV.[17] PROM / preterm birth rates were nearly doubled in women who had BV in early pregnancy (20.5 percent) compared to those who had BV exclusively in late pregnancy (11.5%). (10.7 percent). Bacterial vaginosis is one of the most common illnesses in women who are pregnant, with 50% of women presenting with no symptoms. The fact that infection is associated with "abortion, preterm births, prematurity, premature rupture of membranes, amniotic fluid infection, and postpartum sepsis" amplifies its clinical significance.[18] Premature rupture of membranes was shown in a previous study to be more common in pregnant women with BV.[19] The prevalence of BV was 30.5 percent in this group. There was no evidence of a link between BV and premature membrane rupture.[12] A link between bacterial vaginosis and PROM was observed in one research. Bacterial vaginosis was found in 29% of individuals with PROM and 11% of patients without PROM.[20]
Although BV is a frequent vaginitis in full pregnancy, we were unable to uncover any correlation between BV and PROM.[12] But Ziaei et al., found no considerable relationship between BV and PROM ($p>0.05$). These findings are not consistent with our study.

CONCLUSION

Through the findings of this study we found significant association between bacterial vaginosis and premature rupture of membrane in pregnant women. Bacterial vaginosis is preventable and curable condition so by early intervention and proper management we can minimize the risk of PROM. By preventing PROM we can reduce burden of poor feto-maternal related morbidities.

AUTHOR'S CONTRIBUTION

LA: Conception of idea
AA: Article writing
SA: Data collection
SA: Critically review
SN: Data analysis
ASAN: Editing

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Original Article

THE PERSPECTIVE OF MEDICAL STUDENTS OF A PRIVATE MEDICAL COLLEGE IN LAHORE ABOUT THE ONLINE TEACHING

Sidrah Riaz[1], Sabrina Tariq[2], Muhammad Tariq Khan[3], Zubair Iqbal Bhutta[4]

ABSTRACT

Background: To know the general opinion of medical students of a private medical college of Lahore about online teaching.

Material and Methods: A descriptive cross-sectional qualitative survey was conducted in Akhtar Saeed Medical and Dental College, Lahore. The duration of the study was one month, from 1st March 2021 to 30th March 2021. A survey questionnaire was formed and sent to all MBBS students of 3rd year and 4th year of Akhter Saeed Medical and Dental college. It consisted of 15 questions. Online survey methodology was used and an online google survey was generated and sent to all students of two classes. Non-probability conventional sampling method was used. All students, who have been promoted to 3rd and 4th year after 2nd and 3rd professional examinations respectively, were included in the study. The students who did not respond within a month and those who detained were excluded from the study. The online survey was sent to two hundred and seventy-six (276) students, the response was collected for 232 (79%) students and analyzed by SPSS 20.

Results: The results were presented in form of pie charts. The most favorite online teaching mode was zoom (87.5%) and WhatsApp (76.3%). Among total, 79.3% students had difficulty in understanding study material online, 76% of students were not satisfied with their online teaching and 84% believed that they had not been competent diction with online teaching.

Conclusion: Online teaching has evolved as a new mode of teaching during the corona pandemic. Although it has helped us a lot in restoring the continuity of medical education but still majority of students are not satisfied with this method. There is no comparison with actual physical teaching, but it is a need for the time to evolve more interactive and iterative techniques for online classes to achieve learning objectives.

Key Words: Pandemic, Medical Education, Medical Students

doi: https://doi.org/10.51127/JAMDCV3I2OA03

INTRODUCTION

Some of the major epidemics of world in history were Plague[1] in (165AD) & (1346-1353), Cholera pandemic (1852-1860) & (1910-1911), Flu epidemic[2,3] (1889-1890), (1956-1958) & then in 1918 and small pox[4] in 1972. After world war I (1914-1918), discovery of Antibiotics penicillin in 1928 was revolutionary and no major pandemic outbreak with massive destruction was observed.

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Afterward, the world has been in its usual course of "progress'' when a sudden halt is observed in the health sector with HIV in 1980.[5,6] Research in antiviral drugs is one of the progressive and flourishing fields still. Then came the month of December 2019, when in Wuhan city of Hubei province of China,[7-9] a fatal respiratory distress syndrome was identified and got the attention of the whole world. The practical meaning of the term "lockdown" was obvious in the whole world without discrimination of developed and developing countries. There were restrictions on the land and in the air. This has shifted the world from real to virtual, from offices to work from home, and from physical to online.

Unlike other progressive study fields like agriculture, architecture and design, business,

law, engineering and technology, medical education is unique because it deals with the human body. Anatomy is a very basic subject of medical education which deals with the study of the human body. The real cadaver and specimens are used physically to teach medical students about human bodies since the 3rd century B.C when two Greeks performed the first dissections of human cadavers. But now a days due to restrictions imposed by Govt. of Pakistan, we had to shift to online classes. Everyone is putting his or her effort into making a better teaching schedule, but student satisfaction is still not achieved.

MATERIAL AND METHODS

A questionnaire was developed keeping in view different aspects of online teaching methods. It consisted of fifteen (15) questions that were sent to MBBS students, of 3rd year and 4th year. These were because they have experienced both physical as well as virtual classes. Online survey methodology and online google survey were generated and sent to all students of two classes. Non-probability convenience sampling method was used. All students who have been promoted to the next class after the 2nd and 3rd professional examinations were included in the study. The detained students were excluded from the study. The questionnaire was sent to 276 students of 3rd year and 4th year MBBS and got a response from 232 (84%) students. The interview-based data collection technique was also formulated for those who had some problems filling the form online. The data collected was entered in SPSS version 20. The frequency tables were generated and qualitative variables were presented in form of graphs and pie charts.

RESULTS

The most favorite mode for online teaching was zoom 87.5%, what's app 76.3%, and google meet 34.5%. out of 232, 79.3% had difficulty in understanding study material online as compared to physical classes. The most common hindrances were poor internet signal strength, faced by 69%, 10% had issues of unavailability of internet and 7.1% had problems of a power failure and load shedding. The most significant drawbacks of online classes pointed out by students were the lesser level of learning compared with physical class (38.8%), less interactive (22.4%), promoting laziness and idleness (20.7%) and less degree of competency (8.2%) (Fig 1). The most important advantages from the student perspective were no need, of traveling & dress up (34.1%), no restriction of place (32.8%), easy copying in the online exam (13.4%), lame excuses were easy to make (8%) and easy cheating in the exam (4%) (Fig 2).

According to 91% of students, routine physical classes were their preferred choice and 9 % chose online classes (Fig 3). Out of total, 78% of students had the opinion that online examination is not a fair exam. Out of 232, 76% were not satisfied with their online teaching whereas 24 % were fine with it and 79.7% thought that their interaction and communication with their class fellows were compromised but 20.3% had a different opinion. (While answering the question about their competency as knowledgeable doctors 84.1% believed that they will not be competent doctors if online teaching continued but 15.9% were satisfied (Fig 5). Parent satisfaction level with online classes was seen in 24.1% but 75.9% were not fine with it (Fig 4).)

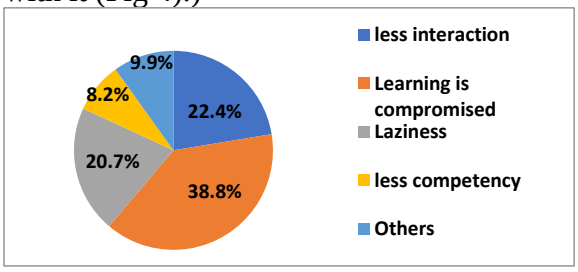

Fig-1: Drawbacks of online teaching

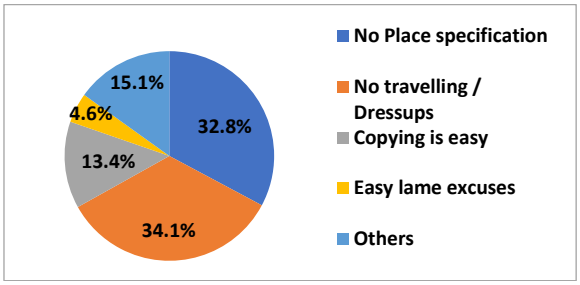

Fig-2: Advantages of online teaching

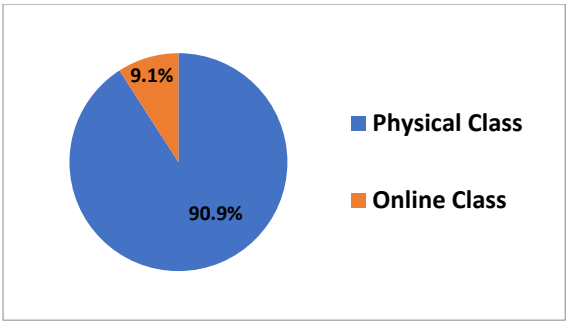

Fig-3: Preferred Choice of teaching

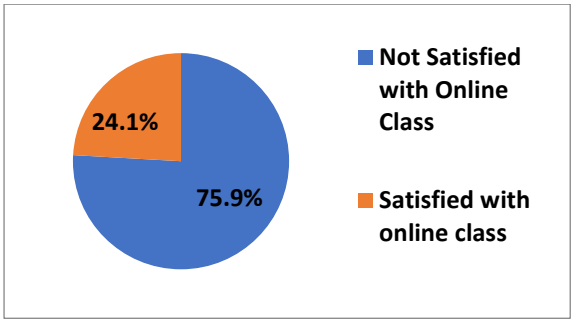

Fig-4: Parents Satisfaction with online classes

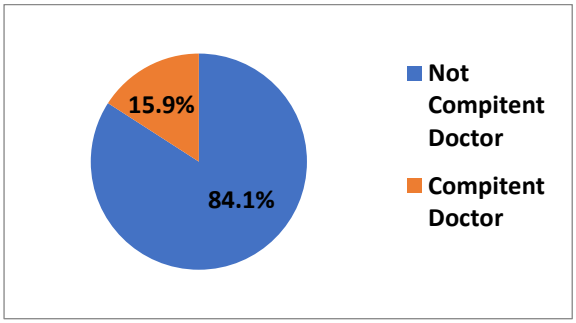

Fig-5: Competency as Doctor having online teaching

DISCUSSION

In Pakistan, till 17th April 2021, there are 750,158 confirmed cases[10] of corona positive, out of which 264,010 cases are from Punjab. The number of reported deaths is 16,094 including health-providing professionals like doctors and paramedic staff. The 3rd wave of the pandemic has forced Government to impose smart lockdowns, rescheduling market timings, closing of schools, colleges, universities & marriage halls, restricting public transport, and banning gatherings of any type. Our medical colleges and their associated hospitals are overburdened. The teaching faculty of medical colleges are compelled to continue online classes as physical classes are not possible due to the grave health situation at present in Pakistan.

Learning is a complex process. There is a number of theories[11] describing the factors affecting learning. The acquiring of knowledge is one aspect and its application and manifestation in attitudes and skills is an entirely different reality. For a medical student, gaining knowledge and then its practical application for betterment and treatment of the human body, both are mandatory, while adopting virtual classes is particularly significant.

There are different methods adopted by different college administrations for online teaching[12-15] including Zoom, Google meets, WhatsApp, youtube, etc. The three widely accepted methods for online classes are WhatsApp, zoom, and Youtube. The What's app is a famous application created by Brian Anton and Jan Koom in America. Initially used for instant messaging through smartphones, this application allows images, videos, live calls, and audio recording using an internet connection. Acquired by Google for 1 billion dollars in April 2013, what's app claims 400 million active users worldwide. It holds a well-anchored position among messaging applications as it is a free application, easy to use, and allows group formation. The information and knowledge are easily shared through this medium[16-24] inside and outside the country. The shared material can also be saved to review and revise later even when offline. On the other hand, zoom provides face recognition, face to face communication. The zoom[16-17] application works well in the initial 40 minutes if the unpaid version is used which needs reconnection later, while this is not the issue with the paid version. Youtube has wide information almost on every topic. It's a good medium to share information but it works only with a good internet facility.

The advantages of these media are that these are user-friendly, convenient, and don't need any specific skills as most youngsters are

already using what's app. The recorded lectures can also be added on WhatsApp and youtube. The students can also use these media on their mobile phones adding to its suitability.

The advantages of these digital media are many, but these are not superior to a physical class. Although these are great adjunctive, these don't replace "REAL" on-ground classes. Lectures are no longer considered as the main media to transfer knowledge, but small group discussions[25] are the most effective source of knowledge sharing where a tutor or supervisor channelizes the discussion to focus on certain points. There are different disadvantages of these media like these promote laziness, it's easy for surfers to focus on unnecessary information and lose the main subject and there is increased screen timing with no physical movement having undesirable physical and visual side effects.

As the students of a private medical college need good economic resources, mostly beared by their parents but online teaching is not a satisfactory source of teaching according to their parents due to various reasons.

It's better to have strategies to adapt according to circumstances for better survival and stability but it should be emphasized that we need to evolve better techniques for online classes with minimal drawbacks, meeting the requirements of students, their parents, and teachers.

CONCLUSION

Online teaching has evolved as a new mode of teaching during the corona pandemic. It was not acquired as an option, but it was necessary to pursue tutoring and tuition. Although it has helped us a lot in restoring the continuity of medical education but still majority of students are not satisfied with this method. There is no comparison with actual physical teaching, but it is a need for time to evolve more interactive and iterative techniques for online classes to achieve learning objectives.

AUTHOR'S CONTRIBUTION

SR: Writing article and data collection
ST: Literature review
MTK: Concept of study and Review
ZIB: Review and Proof reading

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Original Article

DETECTION OF SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 SPECIFIC IgG ANTIBODY IN STAFF OF KING EDWARD MEDICAL UNIVERSITY LAHORE

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ABSTRACT

Background: A new pandemic by Severe Acute Respiratory Syndrome Coronavirus 2 is severely affecting daily life. It has caused more than million deaths and billions of dollars of economic loss. Cases are still on the rise and fear of uncertainty is still prevailing among the masses and especially among healthcare workers (HCW). Healthcare workers are at greater risk of contracting the disease as they are continually being exposed to patients. This study was designed to know the seroprevalence of SARS CoV-2 IgG antibody in the healthcare staff of King Edward Medical University, Lahore.

Material and Methods: This prospective cross-sectional study was carried out from August 2020 to September 2020 at the Department of Pathology, King Edward Medical University Lahore. A total of 86 staff members were enrolled. Indirect ELISA was carried out to detect the SARS CoV-2 IgG antibody in serum samples of study participants. An interpretation was made according to manufacturer instruction as positive if the binding index was >1.1 and negative if it had a value of <0.9.

Result: Mean age of study participants was 41.1 ± 12.5 years. Doctors constituted 52 (61%) of total participants, 34 (39%) were non-doctors. A total of 28 (33%) participants were from clinical departments while 58 (67%) were from basic medical sciences departments. SRAS CoV-2 IgG antibodies were detected in 39 (45%) of total study participants. Only a small number of seropositive participants 12 (31%) developed symptoms related to COVID-19 and 7 (58%) symptomatic individuals were above 40 years of age.

Conclusion: The present study concludes that a higher number of healthcare staff was exposed to SARS CoV-2 but luckily the majority of them remain asymptomatic.

Key Words: Seroprevalence, Coronavirus, Healthcare workers

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INTRODUCTION

The coronavirus outbreak started in December 2019 as an unknown cause of pneumonia. The virus has been named SARS CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) and has a phylogenetic similarity to the SARS CoV-1 causative agent of the 2002 SARS pandemic.[1] This form of respiratory disease has achieved pandemic spread and is characterized by rapid transmission from human to human. The resulting disease was named coronavirus disease-19 (COVID-19).[2]

The World Health Organization (WHO) announced the outbreak of COVID-19 to be the sixth public health emergency of international concern on January 30, 2020. And declared COVID-19 as a pandemic on March 11, 2020.[3] According to the WHO COVID-19 worldwide dashboard there were 46,430,652 confirmed cases of COVID-19, including 1,198,569 fatalities until November 2, 2020. The highest numbers of confirmed cases are from the American region with 20,616,596 cases, followed by the European and South-East Asian region.[4] The first case of COVID-19 in Pakistan was recorded from Karachi on February 26, 2020.[3] In Pakistan, the number of confirmed cases has reached 335,093 by 2nd November 2020, with 6835 fatalities and 315,016 recoveries. Just 707 of the active cases were

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in critical condition and needed hospitalization.[5]

SARS-CoV-2 spreads primarily through respiratory droplets. Asymptomatic, pre-symptomatic, and symptomatic subjects may spread the infection. The mean time from exposure to onset of symptoms is 5 days, and within 11.5 days, 97.5 percent of individuals experience symptoms.[6] Fever, dry cough, and shortness of breath are the most prevalent symptoms. Asymptomatic carriers and fulminant diseases characterized by sepsis and acute respiratory failure are also the manifestations of COVID-19.[7] Around 5% of COVID-19 patients, and 20% of those hospitalized, experience extreme symptoms that require intensive care. Overall, COVID-19 hospital mortality is approximately 15% to 20% and up to 40% among patients admitted in ICU.[8] However, mortality rates vary across countries, indicating variations in case detection and hospitalization thresholds. Hospital mortality varies from less than 5% in patients younger than 40 years to 35% in patients 70 to 79 years of age and more than 60% in patients 80 to 89 years of age.[9]

COVID-19 is a potentially preventable disease. Epidemiological data is evidence showing the relationship between the strength of public health intervention and the control of the transmission. However, since multiple infection control measures have been adopted by most countries, it is difficult to assess the relative benefits of each of the measures to control infections.[10,11] There is currently no human vaccine available for SARS CoV-2, but there are approximately 120 potential vaccines under development.[12] The challenges to the development of an effective vaccine include technological obstacles, availability of large-scale manufacturing, legislation regarding protection and efficacy, and legal barriers related to technology transfer and licensing agreements.[8]

The presence of immunity in the population in pandemics and outbreaks is a key and significant factor in reducing the spread of the disease. In the case of COVID-19, this is also relevant as it still has no standard treatment or vaccine.[13] Coronavirus infection gear Immune response consisting of IgM and IgG antibodies. Neutralizing activity has been associated with antibodies against the receptor-binding domain of the spike protein. Approximately 6 days after the onset of symptoms, neutralizing antibodies to these domains can be identified and increase steeply over the next 2 weeks, which is an optimal time for detection.[14] Antibody tests can be used to assess the true nature of an outbreak, map its geographical spread, and classify especially at-risk hotspots and populations. In turn, this information can be used to advise interventions and control strategies for public health.[15] Staff (Faculty and health care workers) of King Edward Medical University and are consistently being involved in taking care of patients with COVID-19 disease. So they are continuously being exposed to potential carriers of SARS CoV-2 coming to its affiliated hospital. Some of them also contracted the disease. The present study was carried out at the Department of Pathology King Edward Medical University (KEMU) Lahore, to detect the presence of SARS CoV-2 specific IgG antibodies in the staff of KEMU.

MATERIAL AND METHODS

This prospective cross-sectional study was carried out from August 2020 to September 2020 at the Department of Pathology, King Edward Medical University Lahore after approval from Institutional Review Board (IRB). Both male and female staff of KEMU of 18-60 years of age were included in this study. Any staff member with active COVID-19 disease or confirmed PCR positivity in the last 10 days was excluded. The sample size of 83 patients was estimated by using 95% confidence, 9.95% margin of error with expected percentage as 31% with the following formula: $N = Z^2 + p\,(1-p)/\in^2$ Where

N= Sample size
Z= Confidence level 95%= 1.96%
p = Prevalence level 31%
$\in$= Margin of error

Specimen collection and processing for ELISA testing

After informed consent, 2-3 ml of blood sample of each of the willing staff, working at KEMU faculty was collected in serum separation tube. The serum was separated stored at -20C for later testing. Indirect ELISA test kit supplied by Generic Assay Germany (Catalog #3920). This test was used to detect the SARS CoV-2 IgG antibody against spike glycoprotein. The test was performed in batches according to manufacturer instructions. For quality control purposes, known internal and external controls were run alongside assay. Cut-off value was calculated by adding a factor provided by the manufacturing company into the mean optical density of three negative controls. The binding index was calculated by dividing the optical density of the test by the cut-off value. An interpretation was made according to manufacturer instructions as positive if the binding index was >1.1 and negative if it has a value of <0.9.

Statistical analysis

Data was divided into continuous and categorical variables. Frequencies and percentages were calculated for demographic data by using SPSS version 27. The student t-test was applied to see the significance of difference.

RESULTS

Gender wise number of participants is shown in table 1. Table 2 shows the number of doctors and non-doctors in the participants. SARS CoV-2 IgG antibodies were detected in 39 (45%) of the total participants. Among 39 positive cases, 18 (46%) were doctors while 21 (54%) were non-doctors. Among positive cases, 19 (49%) were above 40 years of age. Male participants who developed IgG antibodies were higher in number 29 (74%) and the difference is statistically significant (*p-value* < 0.001) (Table 3). Participants from basic medical sciences departments were seropositive in 28 (72%) cases, while clinical departments constituted only 11 (28%) of total positive cases (Table 4). Only a small number of seropositive participants 12 (31%) developed symptoms related to COVID-19 and 7 (58%) symptomatic individuals were above 40 years of age.

Table-1: Gender of participants

Male	56	65%
Female	30	35%
Total	86	100%

Table-2: Doctors & Non-doctors Participants

Doctors	52	61%
Non-doctors	34	39%
Total	86	100%

Table-3: Development of IG antibody gender wise

Male	Female	p-value
29	10	0.001

Table-4: SARS CoV-2 IgG antibodies in participants from clinical and basic medical science departments

No of Clinical department subjects	No of Basic Medical Sciences department subjects	p-value
11	28	0.001

DISCUSSION

Seroprevalence data against SARS CoV-2 can be an important indicator to devise policies by healthcare authorities. Estimating SARS CoV-2 IgG antibodies can assess the immune response in individuals that have been exposed to COVID-19 patients. SARS CoV-2 IgG antibodies remain positive for at least 4 weeks after exposure and seroconversion are attained after 14 days of symptoms onset. However, in maximum patients, seroconversion for IgG antibody was attained at 3-6 weeks post-infection. So, these antibodies can be detected to know the previous exposure of individuals to SARS CoV-2. Health care staff is continually being exposed to potential carriers of SARS CoV-2. This study was designed to determine the SARS CoV-2 IgG antibody in the health care staff of Kind Edward Medical University Lahore.

The overall seroprevalence was found to be 39% among staff. A similar study conducted in a tertiary care hospital of Peshawar also showed such high seropositivity (31%) among HCWs.[16] Another study conducted in the National Institute of Blood Diseases Karachi, Pakistan showed 13% seroprevalence among HCWs.[17] A study conducted in different districts of Karachi showed a maximum of 15% seropositivity among the general population.[17] Chughtai Institute of Pathology Lahore reported 15% seropositivity among young special police squads performing duties in high-risk areas related to coronavirus. From these studies, it could be inferred that higher seropositivity is being reported among HCW by different setups in comparison to the community population and our findings supports also this narrative.

In our study, the male gender showed statistically significant higher seropositivity (74%). A survey conducted in Karachi Pakistan did not identify any difference in seroprevalence among males and females.[17] Another study in China also did not find any significant difference in seroprevalence among genders.[18] Another study conducted in Peshawar also second the later argument which is in contrast to our study.[16] This difference may be due to the participation bias as our study includes more male participants. In this study majority of the seropositive staff members (54%) were non-doctors (health care staff). Surprisingly staff of basic medical sciences departments who are not in direct contact with patients was seropositive in higher numbers (72%) in comparison to clinical departments. A study conducted in Peshawar also demonstrated that higher seroprevalence was detected in laboratory technicians followed by other paramedical staff.[16] Despite not bearing direct contact with patients these HCWs were having more exposure to potential carriers. This may be due to the difference in education or training or implementation of less stringent protocols by them.

Age-associated seroprevalence or symptomatic/asymptomatic status was not statistically significant among different groups of this study (*p-value* > 0.05). Differences in mortality and morbidity symptomatic or asymptomatic status among different ages distribution varies among regions. Some studies show a profound effect of age on morbidity and mortality while and others negate its significance.[19-24]

Our study showed that a larger number of staff (69%) remained asymptomatic while harboring the virus. A meta-analysis conducted in China demonstrated only 15% of asymptomatic individuals with confirmed PCR positivity.[24] The asymptomatic cases vary among different geographical distributions ranging from 18% to 81% however, the majority of studies reported <50% asymptomatic cases.[25] Asymptomatic HCW frequently interact with a vulnerable population and they may transmit the infection to others unknowingly. So HCW should be screened frequently and be quarantined urgently to halt the spread of disease.

CONCLUSION

The present study concludes that a higher number of staff was exposed to SARS CoV-2 but luckily the majority of them remain asymptomatic. However, such a high number of asymptomatic carriers may pose a risk to unexposed ones. So it is suggested that preventive measures should continue to hamper its spread.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR'S CONTRIBUTION

MA: Data Analysis and interpretation
RS: Collection and assembly of data
SA: Conception and design

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Original Article

AWARENESS OF PRE-HOSPITAL FIRST AID AMONG MULTI-DISCIPLINARY UNIVERSITY STUDENTS: AN ANALYSIS

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ABSTRACT

Background: World Health Organization claimed that more than 1.25 million people are killed annually by road traffic accidents. Likewise, in Pakistan, many people are also killed by road accidents or other emergencies due to the unavailability of first aid at the place of the incident. Medical students are little taught to provide pre-hospital first aid but non-medical students are not. Therefore, many victims lose their lives or become disabled. The objective of the study was to analyze the awareness level of first aid among multidisciplinary students of the university in relation to their previous training status

Material and methods: A cross-sectional survey was conducted among 1315 multi-disciplinary students by using a self-administered questionnaire consisting of three-level Likert scale questions regarding first aid awareness. The χ^2 and t-test were used with the help of SPSS.

Results: The results showed that only 12.2% of students had a good level of awareness. T-test showed that previously trained students had more awareness of first aid than untrained students, likewise and χ^2 test showed that the opinion of previously traned students "that first aid training should be mandatory for university students" significantly differed from previously untrained students.

Conclusion: The study concluded that the level of awareness among multi-disciplinary university students was very low and immense action must be taken to improve it.

Key Words: First aid, Awareness, Emergency, Injuries

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INTRODUCTION

First aid is a support that is provided to the victim of emergency on-site without any recognized medical facilities before the professional medical help arrives or victim gets shifted to the health facilities, to minimize the adverse consequences of injuries rather than its treatment. Anyone can be a first aider either a bystander or even a victim who is able to assess and provide first aid accordingly.[1]

Untoward incidents, accidents, and injuries have become routine of our daily life. Every person who is performing any kind of job in daily routine has a chance to meet with accidents and injuries either on-road, at the workplace or even at home. So we cannot avoid accidents but we can minimize the severity of injuries and the impact on our life just by adopting certain prevention measures, education, and awareness. But there is a that an untrained first aider present on the scene can cause severe results on physical, mental, social, and economic health.[2] Therefore, in an emergency situation, it is quite important to implement proper first aid measures which will not only improve the overall outcome of the process but also help to reduce the damages caused by injury. Medical students are taught to deal with trauma patients in a well-equipped hospital setup but unfortunately not on site of accident. On other hand, students of other disciplines are not taught to deal with victims of emergencies at the place of emergency where

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occurred.[3] Basic purpose of this study is to adopt certain measures which shall help to minimize the number of road traffic crashes and provide the best support and care at the site of the incident. If the members of our community including university students are trained in basic first aid knowledge and skills, they can help and save numerous lives during emergencies.[4]

The facts and figures of fatalities and injuries caused by various kinds of emergencies show, according to previous emergencies, that the earning members of families aged between 15 to 19 years are mainly the victims of road traffic accidents. 90% of fatalities caused by road traffic accidents in the world occur in those countries having low to middle per capita income. On other hand, these developing countries have only 54% vehicles as compared to the developed world. Approximately 1.25 million people have died annually in road traffic accidents over the world. To prevent and control the injuries caused by road traffic accidents, sports, fall from height, building collapses, and other hazardous pursuits, multi-sectional measures are required.[5] In Pakistan, the number of casualties caused by various emergencies is increasing due to insufficient awareness of first aid among bystanders including students at the place of the accident. During the period from 1956 to 1996, 14 times road traffic accidents increased, and 16 times fatalities increased due to road traffic accidents. And the first aid provided by bystanders to victims was not a skillful intervention for saving their lives.[6] Likewise, the status of first aid awareness among students and teachers in the light of previous studies, three quarters of public university students and teachers had no training of first aid in the USA but 87% of teachers and students were agreed that the training on first aid should be mandatory to reduce the consequences of emergencies and to save lives.[7] In Edinburgh, just 13% of people knew the appropriate pre-hospital first aid skills which were sufficient to handle pediatric incidents.[8] According to a study, the drivers who received first aid by bystanders in case of road traffic accidents were very few in numbers.[9] The research study arranged in Greece demonstrated that the average of correct answers regarding pre-hospital first aid awareness was higher in university students trained in pre-hospital first aid than students who had no training in pre-hospital first aid.[10] In Kenya, just 45% of coaches for sectors teams in university were able to provide proper pre-hospital first aid to their injured players.[11] The study was aimed to analyze the awareness level of first aid among multidisciplinary students of the university in relation to their previous training status.

Significance of study

In the study of pre-hospital first aid awareness, multi-disciplinary students at university are an under-researched group. There are a few studies among medical and allied-health students but there has been no research study among multidisciplinary students in Pakistan. Therefore, there is a scarcity of studies that take a more comprehensive approach to describe the awareness level of pre-hospital first aid among multi-disciplinary university students. This study not only focused on the level of awareness of pre-hospital first aid among multi-disciplinary students but also measured the opinion of the students whether should be mandatory. Furthermore, this study also found out the relationship between the level of awareness of pre-hospital first aid among untrained students. Thus, because of all these reasons, this study is significant.

Research Hypothesis

H1: There are more mean scores of awareness of pre-hospital first aid among previously trained students as compared to untrained students.

H2: Opinion of multi-disciplinary students "first aid training should be mandatory for students" is differed by their previous training status of pre-hospital first aid.

MATERIAL AND METHODS

According to the nature and objectives of the study, a cross-sectional survey for this study

and a survey was conducted from December 2020 to February 2021. The target population for this study was the students of multi-disciplines at Bahauddin Zakariya University Multan. The stratified sampling was used to include the students from all departments of the university with a sample size of 1315. The same issue, according to available literature, was often measured with less than 500 respondents among medical or allied-medical students while the students as respondents of current study had characteristics-diversity in relation to their multiple-disciplines, so the high sample size was rationalized seeing that. It is generally not feasible to arrange such pieces of training twice in the same semester among the students. The study excluded the students of the first semester because the study aimed to know the students' previous status of training. Apart from those, all other students were respondents to the study. The data were collected by a self-administered questionnaire consisting of nine specific items which were constructed with the help of previously available relevant studies to operationalize the "awareness of pre-hospital first aid" and six general items. The data were analyzed by using SPSS version-24 for frequency distribution, percentages, and mean scores, and the aforementioned hypotheses were tested by t-test and chi-square tests to check out the association between dependent and independent variables. A pilot study was carried out to confirm the reliability and the wordings of items used in the questionnaire. The value of Cronbach's Alpha was 0.86, which made it acceptable to use this instrument for the study. Informed consent was taken from respondents before completing the questionnaires. The respondents were given 30 minutes to complete the instrument, which was returned to the researchers immediately after completion.

The students were considered as having "good awareness" of first aid whose scores were more than 70%, "moderate awareness" whose scores were from 50% to 70%, and "poor awareness" if they had scored less than 50%.

RESULTS

Table 1: Frequency and percentage distribution of students' demographic information

Variables	F	%
Gender		
Male	748	56.9
Female	567	43.1
Program		
Graduate	446	33.9
Master	493	37.5
MPhil	279	21.2
PhD	97	7.4
Faculty		
Pure Science	493	37.5
Others	822	62.5
Area of Residence		
Urban	760	57.8
Rural	555	42.2
Previously Trained Students		
Trained	195	14.8
Untrained	1120	85.2

Table.1 showed that 56.9% male and 43.1% female participated in this study whereas more students had been studying in the master program with 37.5% and only 7.4% were the students of the Ph.D. program. 62.5% of students were from others faculties rather than pure sciences. Interestingly, only 14.8% of students trained previously in first aid but untrained students were about five times more with 85.2%.

Table-2 demonstrated that 58.6% of students knew the ultimate aim of first aid only 24.5%, 24.6%, and 25.5% students had the awareness of first aid about the closed wound, bleeding wound and airway chocking with great extent respectively. 23.5%, 23.1%, and 22.5% of students had knowledge of first aid about heatstroke, snakebite, and thermal burn respectively. Bleeding wounds and hypovolemic shock are usually life-threatening but 49.1% and 35.2% of students had no awareness of first aid about them. 55.4% of students strongly agreed that first aid training for students should be mandatory and only 12.5% of students did not agree. 12.2% of university students were on high awareness level of general first aid whereas 27.5% students were on low or no awareness level.

Table 2: Frequency and percentage distribution of students' awareness of first aid

Awareness of First Aid about	To great extent (Score per item=2)		To some extent (Score per item=1)		Not at all (Score per item=0)	
	F	%	F	%	F	%
Ultimate Aim	770	58.6	347	26.4	198	15.1
Closed Wound	322	24.5	347	26.4	646	49.1
Bleeding Wound	323	24.6	395	30.0	597	45.4
Airway Chocking	334	25.4	393	29.9	588	44.7
Heat Stroke	309	23.5	411	31.3	595	45.2
Hypovolemic Shock	513	39.0	339	25.8	463	35.2
Electric Shock	449	34.1	368	28.0	498	37.9
Snake Bite	304	23.1	399	30.3	612	46.5
Thermal Burn	296	22.5	401	30.5	618	47.0
Training should be mandatory for university students	**Strongly agree**		**Agree**		**Not agree**	
	F	**%**	**F**	**%**	**F**	**%**
	729	55.4	421	32.0	165	12.5
Overall awareness level of first aid	**Good awareness**		**Moderate awareness**		**Poor awareness**	
	F	**%**	**F**	**%**	**F**	**%**
	160	12.2	794	60.4	361	27.5

Table 3: Mean scores of first aid in relation to the socio-demographic status of students

Variable & Responses	Mean scores of First Aid Awareness		
	Mean	*N*	*SD*
Gender			
Male	42.9	748	21.5
Female	42.1	567	21.2
Faculty			
Pure sciences	41.6	493	21.2
Others	43.1	822	21.5
Program			
Graduate	43.0	446	21.5
Master	41.1	493	21.3
MPhil	43.9	279	20.6
PhD	43.7	97	23.1
Residence Area			
Urban	42.2	760	21.0
Rural	43.0	555	21.9
Got training previously			
No	40.9	1120	20.5
Yes	51.8	195	24.1

Table.3 showed that there was almost no difference between male and female mean scores of first aid awareness among university students with 42.9 and 42.1, and there was a lit bit difference between pure sciences faculties and other faculties' students mean score with 41.6 and 43.1 but this difference is not significant statistically. The scores of Graduate, Master, MPhil, and Ph.D. students were 43.0, 41.1, 43.9, and 43.7 respectively but this difference among them is not significant also in light of statistics, and the residential area of students did not show any significant difference in mean scores of first aid awareness as well. There was only a significant difference between mean scores of previously trained and untrained students regarding first aid with 40.9 and 58.8 respectively.

The results of hypothesis "Previously trained students having more awareness of First Aid than untrained students" showed that previously trained students in first aid had more awareness of first aid (M = 51.75, SD = 24.08) than previously not trained (M = 40.90, SD = 20.50). According to the t-test, the null hypothesis was rejected because there was enough evidence to suggest significant differences between trained and untrained students, $t(1315) = 6.64$, $p < .001$.

The hypothesis "Opinion of students "first aid training should be mandatory for students" is differed by their previous training status of pre-hospital first aid" was also proved by supporting the results of qui-square: χ^2 (2, N = 1315) = 73.5, p < .001.

DISCUSSION

The current study showed that very few students (12.2%) had a high level of awareness of first aid and 60.4% of students had poor awareness of first aid. A similar percentage was found in the Peruvian study conducted among medical students, result showed 60.4% of medical students had poor knowledge of first aid.[14] Another Dutch study showed junior doctors were having poor awareness of first aid with 81% which was higher than current study.[15] The previously trained students were also very rare with 14.8% but not in first aid practice and did not take any refresher training which was in accordance with an Indian study showed that very few students who had previous training.[12]

The awareness of first aid for the management of bleeding wounds caused by road traffic accidents or other emergencies was good in about 44% of medical students[11,16] and 82.7% in another study[17], which was much better than current results (24.6%) because those studies were conducted among medical students but current study was conducted among university students. This study also showed that 22.5 university students of multi-disciplines had awareness of first aid for thermal burn and similarly Irish study demonstrated that only 23.2% of medical students had well knowledge of first aid of burn but the majority of students did not know how to manage thermal burn on the spot out of hospital setting.[18] A study had been conducted in Singapore, where 85.5% of students were agreed that first aid training for students should be mandatory and it will be useful for them, and their community members as well.[19] Similar results were explained by this study that 87.4% of students agreed that first aid training should be mandatory for students because first aid skills would be beneficial not only for them but also for the community.

Previous studies demonstrate the significant association among various socio-demographic factors and level of first aid awareness among students of the university. This study also measured a comparison among mean scores of first aid awareness in relation to socio-demographic factors of the University students. A previous study showed a significant association between gender and level of first aid awareness among students. According to the aforesaid study, the female students had more awareness of first aid than male students.[10] Similarly, this showed that there is no significant difference between mean scores of first aid awareness among students of pure sciences faculties and other faculties but some previous studies showed that students of sciences faculties had more first aid knowledge than students of other faculties.[14] The results of hypothesis "Previously trained students having more awareness of First Aid than untrained students" and mean scores of this study demonstrated that the level of first aid awareness among previously trained students was high than untrained students. Similar results explained by a previous study that had previous experience of first aid training among students had more awareness of first aid than the students with no previous experience of training.[13] So, the results of the current study and previous studies explicitly demonstrate that the awareness level of first aid among university students as well as medical students is insufficiently emphasizing the need for first aid training and its refresher training among students of the universities.

CONCLUSION

This study analyzed the awareness regarding pre-hospital first aid among multi-disciplinary university students rather than medical students. Although traumatic injuries and other emergencies are common problems among university students and people around them rare number of students have

experience of pre-hospital first aid training, and a very low percentage of students have a high level of its awareness. So, it is suggested that this problem must be mitigated with rigorous of the plan because it is a life-saving matter. The awareness level of first aid among university students must be improved through conducting training on pre-hospital first aid. The universities can play a vital role for students, teachers and staff. Moreover, there is a rigorous need for the introduction of first aid in the syllabus by the university to enhance awareness of basic first aid skills and to promote the culture of a safer community.

AUTHOR'S CONTRIBUTION

ZH: Framed Idea & Compiled the whole paper
GY: Analyzed Data
MIA: Literature Searched & Reviewed
MD: Collected data
MI: All over supervision & Critical Review
MMA: Collected Data

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Review Article

PARKINSON'S DISEASE

Hamid Javaid Qureshi[1], Naila Hamid[2]

ABSTRACT
Basal ganglia (nuclei) are masses of gray matter present in the white matter of the cerebral hemisphere. These function in close association with the motor cortex and cortisospinal system. Their functions include control of corplex motor activity, cognitive control of motor activity and change of timing and extent of motor activity. Degeneration of neurons pars compacta of substantic nigra leads to Parkinson's disease. There is deficiency of dopamine in coudate and putamen. There is imbalance between the neurotransmitter acetyl cholum & dopamine which leads to featares of the disease.

Key Words: Basal ganglia, Dopamine, Putamen

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INTRODUCTION

Basal ganglia (nuclei)

Basal ganglia (nuclei) are composed of gray matter and are present in the white matter of each cerebral hemisphere. These include the caudate nucleus, putamen, globus pallidus, substantia nigra, and subthalamus.[1,2]

Basal nuclei do not function independently but perform their function with the help of the motor cortex and corticospinal tracts. Their functions include control of the complex pattern of motor activity, cognitive control of motor activity, and change of the timing and extent of movements. In the connections of the basal ganglia, caudate nucleus and putamen circuits are important. (Figure-1)[3-5,6]

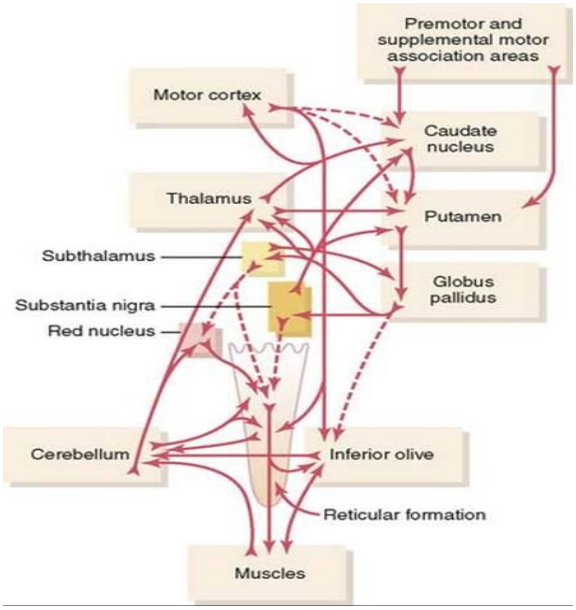

Figure-1: Connections of the basal ganglia[3]

Neurotransmitters in basal ganglia: Corticostriate fibers secrete acetyl-choline at their endings. Nigrostriatal fibers release dopamine at their nerve endings. Fibers that pass from caudate and putamen to globus pallidus and substantia nigra secrete gamma-aminobutyric acid (GABA). (Figure-2)[3,7]

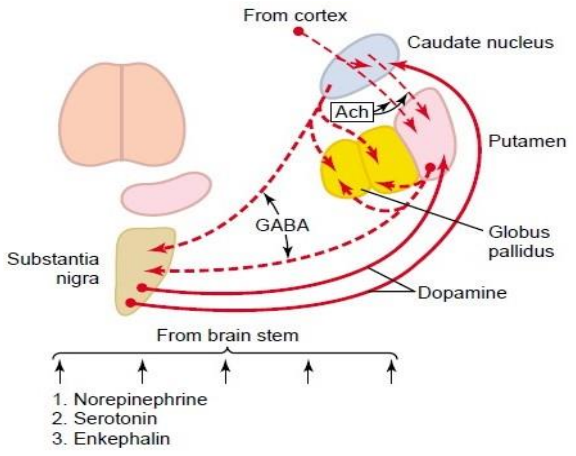

Figure-2: Neurotransmitters in the basal ganglia[3]

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PATHOPHYSIOLOGY OF PARKINSON DISEASE

This disease is named after the British physician James Parkinson who published an essay on shaking palsy in 1817. World Parkinson's Day is celebrated on 11th April every year (birthday of James Parkinson). The red tulip is used as a symbol of the disease.[8,9]

World Wide 7-10 million people have been diagnosed to be suffering from Parkinson's disease. Men are 1.5 times more common than women to suffer from this disease.[10]

Parkinson's disease is also called paralysis agitans. It is one of the most common neurodegenerative diseases of the middle age and elderly people. It is due to the destruction of the pars compacta of the substantia nigra that sends dopamine secreting nerve fibers to the caudate nucleus and putamen.[3,11] The amount of dopamine released into these basal nuclei is reduced and the balance between facilitatory and inhibitory circuits is disturbed.[12] Caudate nucleus and putamen show overactivity and send the output of excitatory signals to the corticospinal motor system.[3] In this disease, alpha-synuclein is misfolded and clumped together with other alpha-synuclein, dopamine cells cannot remove these clumps, which become cytotoxic damaging these cells.[13-15]

Causes

1. Trauma as in boxers[16,17]
2. With aging, dopamine neurons and receptors are gradually lost in the caudate and putamen.[18]
3. As a side effect of intake of phenothiazines derivatives in patients of schizophrenia, which results in deficiency of dopamine.[19]
4. Carbon monoxide and manganese poisoning
5. Postenephalitis Parkinson disease after the outbreak of viral encephalitis in 1916-17.[20]
6. A family history of Parkinson's disease increases the risk of getting disease.[21-23]

Diagnosis

Diagnosis of the disease is mainly based on the clinical features, MRI or Dat scan.[23,24]

Clinical features

Clinical features include disorders of movement and disorders of posture

Disorders of movement are akinesia or bradykinesia which is difficult to initiate movements and static tremors involving fingers and hands (pill-rolling movements) tongue or lips.[1,11] There is the alternate contraction of agonists and antagonists.[20,25]

Disorders of posture are various forms of rigidity like cogwheel rigidity (intermittent resistance, on passive movement of a joint) and lead pipe rigidity (constant resistance, when a joint is passively moved). The face is expressionless, voice is slurred. The unconscious swinging of arms in walking is lost. Arms are flexed and gait is short stepped and shuffling.[26-28]

There is no loss of muscle power and sensations. Superficial abdominal reflexes and tendon reflexes are normal. There is no Babinski sign.[20] Patients may have disorders of cognition, mood, behavior, and thoughts.[29] Sleep disorders such as daytime drowsiness, disturbances in REM sleep, or insomnia can be manifested in these patients.[30] In these patients, the risk of dementia is 2 to 6 times greater compared to the general population. Loss of memory increases with increasing age and duration of the disease.[30-31]

Treatment

Administration of L-dopa (Levodopa) reduces many symptoms especially akinesia and rigidity. L-dopa can cross the blood-brain barrier and is converted into dopamine in the brain, which restores the normal balance between excitation and inhibition. Administration of dopamine has no effect as it cannot cross the blood-brain barrier.[3] Catechol-o-methyl transferase (COMT)

inhibitors when used with L-dopa, prevents degradation of L-dopa.[32]

L-deprenyl, a monoamne oxidase inhibitor. It prevents the breakdown of dopamine and that persists in the basal ganglia for a longer time. L-deprenyl also prevents the slow destruction of dopaminergic neurons in the substantia nigra.[33]

Dopamine agonists such as bromocriptine are also effective in some cases in the management of the disease.[34] Surgical treatment is given in patients who are non-responsive to drug therapy.

Lesions in globus pallidus (Pallidotomy) or subthalamic nucleus (thalamotomy) have been performed to restore the output balance of basal ganglia.[35]

Implantation of dopamine secreting cells from aborted fetuses in or near the basal ganglia is another option. Its results are encouraging.[36-37]

Prevention

Exercise in middle age may decrease the risk of getting this disease. Tobacco smoking, intake of tea and coffee decrease the risk to develop Parkinsonism.[38,39] Antioxidants such as vitamin C and E have a protective role.[40]

AUTHOR'S CONTRIBUTION

HJQ: Drafting of the article
NH: Review and Editing

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Case Report

HETEROTOPIC PREGNANCY AND LAPAROSCOPIC MANAGEMENT

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ABSTRACT

Heterotopic pregnancy is an infrequent condition in which both extra and intrauterine pregnancies occur concurrently. Its incidence is very low in spontaneously conceived pregnancies. However, the incidence of heterotopic pregnancy is very high in assisted reproductive techniques reaching up to 0.2 – 1 % after ovulation induction by clomiphene citrate. In our case report, we are going to discuss a patient with heterotopic pregnancy who conceived after ovulation induction by Letrozole, an anti-estrogen drug. In our case, extrauterine pregnancy in the fallopian tube presented in form of chronic tubo ovarian (TO) mass along with the complaint of pain in the lower abdomen and intermittent bleeding from the vagina which was managed laparoscopically. Here we concluded that heterotopic pregnancy should be highly suspected in all patients with pain in the lower abdomen even after confirmation of intact intrauterine pregnancy.

Key Words: Ovulation, Heterotopic pregnancy, Letrozole

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INTRODUCTION

The coexistence of extra uterine and intrauterine pregnancy is described as heterotopic pregnancy.[1-4] It is a rare form of pregnancy with an incidence of 1/10,000-1/50,000 in a patient who conceives naturally.[5-9] Assisted reproduction techniques[9-11] such as ovulation induction with clomiphene citrate, are associated with a frequently high risk of heterotopic pregnancies ranging from 0.2% to 1%. Other risk factors for heterotopic pregnancy may include the previous history of fallopian tube surgery, previous ectopic pregnancy, history of intrauterine device placement, congenital uterine anomalies, endometriosis, and pelvic inflammatory diseases. Transvaginal ultrasound by some experienced hands is the mainstay to confirm heterotopic pregnancy.[12] However it has low sensitivity and diagnosis can be missed as in our case.[13-14] Surgical approach is the favorable option for the management of heterotopic pregnancy.[15]

A standard surgical approach is laparoscopic salpingectomy which is the least invasive procedure and always preferred for the management of heterotopic pregnancy.

Other options for management include ultrasound-guided injection of methotrexate, hyperosmolar glucose, and potassium chloride into extrauterine gestation sac.[16]

CASE REPORT

Here we have a case of a female who is 32 years old, married for 1 year. She conceived after the third cycle of ovulation induction due to anovulation and hyperprolactinemia treatment. She presented to us with gestational amenorrhea of 7+ weeks. On ultrasound, she had a single gestational sac of seven weeks without any fetal pole (missed miscarriage) and no adnexal mass (Figure 1a). She was given medical termination on an outdoor basis after that her pelvic ultrasound was carried out which showed no retained products of conception and adnexal mass (Figure 1b). One month later she presented with a complaint of continuous vaginal spotting and mild lower abdominal pain. She was vitally stable and her serum beta HCG was 537.96 mIU/ml. Her pelvic ultrasound was carried out which showed a right-sided TO mass of 62mm x 48mm x 52mm. and no free fluid. (Figure 1c).

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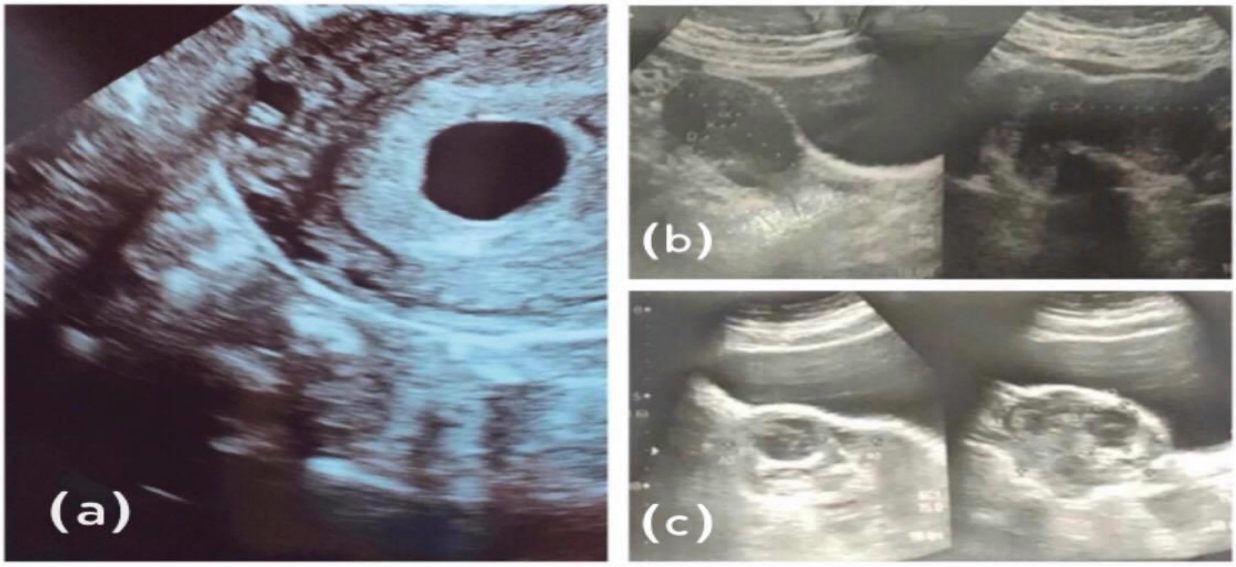

Figure 1: (a)blighted ovum, (b)empty uterus with clear adnexa, (c)right sided TO mass.

She was treated conservatively because of suspicion of inflammatory TO mass. Fifteen days later she presented with the same complaints. At that time her pelvic ultrasound showed the same findings and serum beta HCG 3.2mIU/ml. She was vitally stable. Her operative laparoscopy was carried out which showed a right-sided tubal mass of 4cm x 6cm and a healthy-looking right ovary. Mass was adherent to gut loops and surrounding tissues (Figure 2).

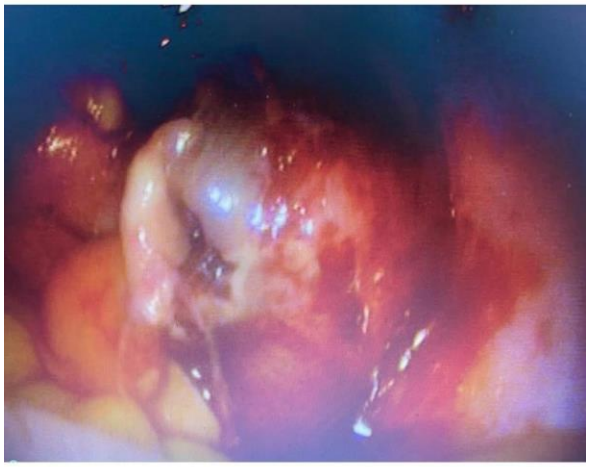

Figure 2: Laparoscopic view of a right-sided dilated tube with adherent surrounding structures.

An incision was given with monopolar diathermy on the right tubal mass and ectopic tissue was sucked out. The tube was thickened with multiple adhesions partial salpingectomy was done. The left tube was patent after the dye test. The specimen was sent for histopathology. The report followed which showed ectopic pregnancy.

DISCUSSION

Duverney was the first one to describe heterotopic pregnancy in 1708. Assisted reproductive techniques such as ovulation induction can cause a remarkable increase in the incidence of heterotopic pregnancy as in our case.[9-11] Ovulation hyperstimulation came out to be a chief risk factor as seen by Joe et el, in his study including 48 patients of heterotopic pregnancy.

The majority of heterotopic pregnancies are diagnosed late as in our case. Diagnosis of heterotopic pregnancy is mostly missed when intrauterine gestation has already been confirmed by ultrasound.[17] Pain is the most common presenting symptom in patients with heterotopic pregnancies almost in 80% of cases. Location of extrauterine pregnancy mainly defines the site of pain. Other symptoms may include unusual bleeding, shoulder tip pain, bowel and bladder problems. Heterotopic pregnancy may result in rupture of extrauterine tubal pregnancy leading to massive intraperitoneal bleeding. If not managed timely it can result in hypovolemic shock, DIC, and ultimately death of the patient may occur.

According to Majunder[18], for the confirmation of heterotopic pregnancy, both serum beta HCG and transvaginal ultrasound with a detailed view of both adnexa are necessary for early gestation. In our case serum beta, HCG became normal but adnexal mass kept increasing in size. The reason for abdominal pain in our case was intra-abdominal bleed but our patient remained vitally stable.

Laparoscopic removal of extrauterine pregnancy is the safest and feasible surgical approach for the management of heterotopic pregnancy as it is a minimally invasive procedure. It exposes the patient to minimize blood loss, less post-operative pain, and fewer surgical wounds. Also, it comes up with a better view to localize extrauterine gestational sac which was not previously detected by ultrasound in our case.[19,20]

CONCLUSION

Differential diagnosis of heterotopic pregnancy must be considered among all the patients who have intact intrauterine gestational sac along with lower abdominal pain and adnexal mass. Ultrasonography and MRI if needed are the essential investigations to rule out heterotopic pregnancy. For better out come early diagnosis and timely management by laparoscopy or laparotomy is needed.

AUTHOR'S CONTRIBUTION

FF: Conception of data and critical review
SS: Case data collection and interpatation
SA: Drafting

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