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EDITORIAL

DENGUE VERSUS CHIKUNGUNYA: LESSER KNOWN FACTS

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Every year in Pakistan, a considerable number of Dengue fever cases occur. Awareness campaigns about Dengue are all over the country. Information about Dengue fever is written on the covers of our academic school books. Almost every Pakistani knows about the role of platelet count in diagnosing Dengue and that it is spread by a mosquito that is different from that causing malaria. All these results from immense awareness about dengue fever through print media and social media.[1]

As soon as the season of Dengue is here, every person feels that he or she may suffer from this sooner or later. Fever, along with severe muscular pains, has given dengue fever its classic name, "breakbone fever." Many diagnostic tests are available in labs for early detection of Dengue. Still, these tests are often negative, and only clinically a patient is considered to be suffering from Dengue.[2]

Our point of discussion for today's editorial is that some of the cases labeled as Dengue may be of chikungunya, especially when the laboratory tests for Dengue are negative. Clinically the patient who is suffering from Dengue or chikungunya usually has a similar type of fever and myalgia, but just as we have less information regarding chikungunya, we consider that every fever with myalgia may be dengue fever.[3]

Chikungunya is a virus from the family of Togaviruses. It is an RNA virus of positive polarity. It is single-stranded and enveloped.

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The other virus that is important clinically and belongs to this family of Togaviruses is Rubella, which causes german measles and is responsible for congenital malformations if a female acquires it during the first trimester of her pregnancy.

An interesting fact is that chikungunya is also spread by the same Aedes mosquito responsible for dengue transmission.

The mosquito species most frequently linked to the spread of dengue is Aedes aegypti. Dengue and Chikungunya are exclusively spread by female mosquitoes. In addition, Adedes albopictus can also cause Chikungunya.[4]

Aedes aegypti mosquito's flight range is < 100 meters. It's an aggressive daytime biter. When it is infected, the virus stays inside the mosquito for approximately 30 days. This mosquito feeds on artificial household items. This belongs to the category of freshwater mosquitoes that are domiciliary and thrive in residential areas. Water coolers, Air Conditioners, used oil containers, water-filled tanks and vessels, or canisters made up of metal, plastic, rubbery materials, cement and muddy containers, which are usually kept open and are non-functional, can get loaded with water and become suitable areas for cultivation of Aedes.[4,5]

A very interesting point about the Aedes mosquito responsible for the spread of both Dengue and chikungunya is that it is no longer just a clean water breeder. The virus has adapted itself to the filthy conditions prevailing in the cities. The presumptions that the Aedes female vector breeds only in clean water is no longer true as its larvae show its existance in dirty water, too.[4,5]

From the above discussion, it is evident that as the breeding mosquito is the same for both Dengue and chikungunya, their season of spread is also the same. When we have too many cases of dengue fever, there are chances that patients suffering from chikungunya are also there.[5,6]

Chikungunya was first described in Tanzania, Africa, in 1952. Its name is made up of the Makonde verb - Kun gunyala. In Swahili, it denotes 'becoming twisted' or, more distinctively, 'something which is out of shape.' This terminology refers to the stooped posture of the infected person because of severe muscular and bone pains resulting from chikungunya virus infection, the same as classical dengue breakbone fever.[5,6]

In chikungunya, there is severe headache, nausea, vomiting, stomach ache, arthralgia with or without edema, sacral backache, and redness on the skin. Despite all the similarities to Dengue infection, chikungunya infection does not involve the development of hemorrhagic or shock syndrome. There may exist Flu-like symptoms, shivering, High-grade temperature (40°C or 104°F), joint pains or arthritis that may last for several weeks, conjunctival effusion, mild photophobia, as well as accompanied by severe weakness.[6]

Our aim for this editorial is only to spread awareness about chikungunya along with Dengue, as it's a known fact that almost the whole of Pakistan now has information regarding Dengue. Still, almost very few will know that a similar illness in the same season is chikungunya. There should also be awareness and campaigns regarding chikungunya too.

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Original Article

ENVIRONMENTAL POLLUTION EFFECTS ON PUBLIC HEALTH

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ABSTRACT

Background: Environmental pollution impacts public health and is accountable for causing many of the current environmental challenges and issues. To face environmental challenges, environmental education is a necessary factor to look after. An effort was made to find out the major source of environmental pollution, the relationship between sources of pollution, and the public health issues due to environmental pollution.

Material and Methods: A cross-sectional survey method was used. Using a systematic random sampling technique, data was collected from 429 households in Samanabad Town (225 households from UC-86, 204 households from UC-107, one person from each household). Data were analyzed by using SPSS 21.

Results: The study indicates that burning, winter heating, and construction workers found the major sources of environmental pollution and cause of multiple health issues: eyes and pulmonary. It is creating serious issues in social life, such as dust, traffic jam, emergencies, fewer outdoor activities and social distancing. Traffic issues create sudden emergencies affecting public health negatively.

Conclusion: Public awareness through education on environmental changes and climate, tree plantation and social education for the adoption of safety measures about and health seems to be a health-conscious approach; how to live a safe life needed to be addressed: social education and health education along with the polluted free friendly environment.

Key Words: Environmental Pollution, Public health, Health education

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INTRODUCTION

Human health and well-being have always been considered important on the earth's planet. The increasing population, industrialization, urbanization/habitat destruction and energy produced diversified effects on the environment and put nature under pressure. Deterioration in the ecosystem threatens human life and other living organisms.

Today's world focuses on controlling air and water pollution because it is a significant driver causing the extinction of animals and plants no doubt necessary to maintain a balance in nature. Transformative changes (direct/indirect drivers of pollution) need to be addressed. The Global Conference on "Health and Climate Change 2021" focuses especially on "Climate Justice and the Healthy and Green Recovery from COVID-19".[1] It was in line with the WHO Manifesto: nature, food systems, sustainable infrastructure, clean energy, cities and stopping pollution.[2] In the first-ever Global Conference on "Air Pollution and Health" (2018) the Director General of the World Health Organization, Dr. Tedros Adhanom Ghebreyesus, informed that air pollution is a

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"silent public health emergency" and "the new tobacco".[3,4]

People living in hot areas of developing countries are vulnerable to environmental pollution, especially children and elderly people.[5] According to UN Climate Change News Oct 26, 2018 about the first-ever Global Conference on "Air Pollution and Health" organized by the World Health Organization (WHO) and with the participation of UN Climate Change identified the sources and solutions: invest in energy-efficient power generation; improve the domestic, industry and municipal waste management; make greener and more compact cities with energy-efficient buildings; reduce agricultural waste incineration and forest fires; build safe and affordable transport systems; and universal access to clean, affordable fuels and technologies for cooking, heating and lighting.[6] Conferences and debates on Climate Change and Environmental pollution highlighted the harmful effects on health, especially in developing countries.

Pakistan has been facing such problems for decades, especially in metropolitan areas. Air pollution in Pakistan ranked the country as the second most polluted globally with an annual PM2.5 average of 74.3µg/m. City Lahore is ranked 1 in IQ Air.[7] another city, Faisalabad, 's air pollution was found at number 3. Air pollution in Islamabad (Capital city of Pakistan) was found lower at number 239 which is quite significant. City Karachi's air pollution was at number 318, the lowest among the four cities. After IQ-AIR visuals Report about air pollution, the government of Pakistan took serious action against it. The government orders to prepare an action plan to publish daily along with hourly updates about the air Quality work. Unfortunately, efforts were declined due to unsatisfactory responses. In November 2019 some private NGOs and individuals from the public sector started to work for it.

In the first half of 2019, the United States Embassy in Islamabad and the three U.S. Consulates in Karachi, Lahore and Peshawar began monitoring air quality. They started to publish PM2.5 data online about Pakistan due to the worst air quality. Reason indicated by the media is the crops burning and the celebrations of festivals across the borderline in India. These activities raised the worst environmental pollution in Lahore and pushed it towards the top ranking of globally polluted cities.

The increase in population, expanding cities with mega projects of industries, and excessive use of automobiles are causing smog, badly affecting public health.[8,9] In winter, wood and coal combustion are also the source of smog.[10] In winter smog became heavier because of its density.[11] Household solid fuel combustion and cooking fires are other sources of pollution caused environmental health problems. Studies show that exposure to pollution from cooking fires globally affected almost 3 billion people which is 40% of the global population. Burning wood, coal, and added solid fuels for everyday cooking food are the sources that create the environmental health problems.[12-15]

Industrial development, coal plant emissions and coal combustion, uncontrolled cutting of trees, rapid infrastructure development, open burning of rice stubble and solid waste and emission of all burned substances are the causes of smog production.[16] Smoke and smog contain gases and particles not limited to those who breathe in it, but also damage climate.[15] Factories, multivehicle, winter heating and combustion and construction activities emit PM 2.5 and PM 10 particles,[17] Chemicals and Automobiles are also the major causes of smog pollution.[18,19]

The emerging issues of air pollution causing respiratory and pulmonary diseases, skin and eye infections and asthma are broadly recognized as serious by air pollution exposure (World Health Organization 2019; Castner, 2016). Young and old people are affected badly. Environmental pollution is not only affecting physical but also psychological health that negatively affects human routines which in-turn affects social and economic human health.[20] Meade, K. (2014)[21] stated about a series of research

efforts that focused on the city of Los Angeles where researcher look at the intersection of ambient air quality and school performance in California. The study finding correlates the respiratory hazards from air toxins with lower academic performance. Another study of Mohai, P., Kweon, B., Lee, S. and Ard, K., (2011)[22] indicates the highest proportions of students who failed to meet state educational examining standards in schools located in areas having the highest air pollution levels in Michigan. At community level, general issues due to dust faced by the public are: traffic problems and low visibility.[23]

Environmental pollution can cause brain drain. It increases social distance and reduce social relationships due to less outdoor activities.[24] A sudden break in speedy life is creating frustrations in social, physical and psychological life. Depression, anxiety and restlessness reflected through different modes and irritation in behavior due to unexpected and uncomfortable environment.[25]

Global agenda "clean and green environment" indicates the horrifying increase and worse situations.[26] Nature is badly affected due to pollution. There is a great need to enhance the knowledge and awareness to focus on this issue at all levels: individual and government. Adoption of measures to control pollution and prevention will be helpful for all to face environmental challenges. Awareness among masses is the need of time. Government campaigns to alert public through media during weather emergencies to safe from motor/highways road accidents; addressed visibility issues and adoption of other safety measures.[27]

The aim of this article was to find out the major sources of environmental pollution; to see the effects of sources of environmental pollution on public health and social life and to see either there is any relationship between the sources of environmental pollution, public health issues and social life.

MATERIAL AND METHODS

A cross sectional survey method was used. Probability sampling procedure was adopted. Mixed methodology (quantitative and qualitative techniques) was used to get in-depth information. A questionnaire was designed having closed ended and open-ended questions. Lahore - a metropolitan city was selected where people used to come and live for the sake of studies, employment and business. The population of Lahore in 2022 is 13,542,000, a 3.41% increase from 2021.[28] According to the "Lahore Population Report 2022", population density currently sits around 6,300 residents per square kilometer (16,000 individuals per square mile).[29] Using systematic random sampling technique, out of nine towns (Wahga, Aziz Bhatti, Gulberg, Shalimar, Nishtar, Data Gunj Buksh, Allama, Samanabd, and Ravi) Samanabad Town was selected having 31 Union Councils. Out of 31 Union Councils, two Union Councils were randomly selected (UC86-New Samanabad and UC107-Pakki Thatti). Population was 56823 and 62019 respectively.[22] Total population of both UC's (86 and 107) was 118,842. Total households were 19706 (10336+9370 respectively). Sampling interval was 46. Every 46 house was selected. Out of total households (19706), 225 households were selected from UC-86 and 204 households were selected from UC-107 (one person from each household). Questionnaire was divided into four sections: demographic information (age, gender, level of education, marital status, and occupational status); sources of pollution (automobiles; burning; construction; and winter heating); environmental factors affecting public health and disturbing social life. Last section contained open ended questions regarding feasible suggestions/solutions. The questionnaire was consisted of 45 questions (40-closes ended and 5-open ended). Five-point Likert scale was used to measure the responses (1-strongly agree to 5- strongly disagree) in the close ended questions.

Data was analyzed in SPSS-21. Descriptive (frequency and percentage) and inferential

statistics (Chi-square Test, Correlations and Multiple Regression) were applied on the data set. Frequencies (*f*) and percentages (%) were used to find out the demographic information (age, gender, marital status, level of education, and occupational status) of the respondents and to find out the major sources of pollution. Pearson's Chi-square (χ^2) was used to observe the effects of different sources of environmental pollution on public health as well as on the social life. Correlation and multiple regression was used to see either there is any relationship between various sources of environmental pollution, public health issues and in the social life.

RESULTS

For demographics, data shows that out of 429 respondents, there were 246(57%) males and 183(43%) females, 156(35%) were from the age group of 0 to 20 years, 107(25%) were from the age between 21 to 40 years, 79(6%) were from the age group of 41 to 60 years and 87(6%) were from the age group of 60 years and above, 231(51%) ever married and 198(46%) never married, 156(34%) were having fundamental education, 112(26%) have secondary education, 97(23%) have university level education and 74(17%) have other types of education, 265(62%) were working while 164(44%) were from non-working class.

Table 1: Respondents Demographics

Demographic Variables	N	%
Gender		
Male	246	57
Female	183	43
Age (Years)		
0-20	156	35
21-40	107	25
41-60	79	6
60 &above	87	18
Marital Status		
Married	231	51
Single	198	46
Education		
Fundamental	156	34
Secondary	112	26
University	97	23
Informal	74	17
Occupational Status		
Working	265	62
Non-working	164	44

About the major source of pollution, it was observed that public (57%-strongly agree) categorically mentioned that burning is the major source of environmental pollution.

Regarding public health issues, the results indicate a toxic effect of burning on eyes (χ^2 = .000, df = 2, p< 0.05). Burning is a source of pulmonary health disorder (χ^2 =.043, df=2, p<0.05) whereas winter heating detrimental effects on eyes (χ^2=.000,df=2, p<0.05), creating pulmonary disorder (χ^2=.000,df=2, p< 0.05), chest ailments (χ^2=.044,df=2, p< 0.05) and skin damaging effects (χ^2 =.000,df=2, p< 0.05).

Table 2: Environmental Pollution effects on Public Health

Sources of Pollution	Eye	Pulmonary	Chest	Skin
Motor Vehicles	.857	.761	.980	.585
Burning	.000	.043	.790	.788
Construction	.009	.012	.074	.230
Winter Heating	.000	.000	.044	.000

Pearson's χ^2 significant at ρ<0.05

Main causes are the motor vehicles and use of winter fuel that adversely affecting health such as eyes, pulmonary, chest and skin problems. Another source - construction is also a cause of eyes allergies, pulmonary disorder and chest infections and allergies whereas burning destructively damaging eyes and pulmonary issues. The most significant cause is winter heating, which badly affects all four health issues.

There are significant relationship between social distancing and burning (χ^2=.038, df=2, p<0.05); construction work with traffic (χ^2=.068, df=2, p<0.05), winter heating (χ^2=.000, df=2, p<0.05), and emergency situations (χ^2=.000, df=2, p<0.05). Burning, construction work, specifically winter heating, were the main sources of environmental pollution that slowdown the pace of social life.

Table 3: Sources of Pollution disruption in Social Life

Sources of Pollution	Traffic	Emergency Situations	Outdoor Activities	Social Distancing
Automobiles	.483	.855	.281	.131
Burning	.806	.433	.958	.038
Construction work	.068	.191	.842	.061
Winter Heating	.000	.000	.113	.061

Pearson's χ^2 significant at $\rho<0.05$.

The results indicate that using fuel for heating during winter significantly affects social life (traffic flow on roads, handling emergency situations and social distancing). Construction material and construction work block the roads along with the side paths that disturb traffic flow and pedestrians. Vehicles smoke during traffic jams not only a serious cause of environmental pollution but also wastage of time unable public to observe school and office/duty timings. Dust due to construction work and smoke due to burning create social distancing as public avoid from such places.

Burning had a negative correlation with the skin problems (r = -0.009). Winter heating had negative correlations with the skin problems (r = -0.048) and social distancing (r = -0.019).

Construction work and winter heating strongly correlated with the eye problems (r = 0.104*) and (r =0.144*) and reduction in the outdoor activities (r =0.105*). Data also shows that traffic blockage and emergency situations strongly correlated with the chest problems (r =0.264**) and (r =0.315*).

Data shows that a strong correlation exists between skin problems with "emergency situations" (r =0.253**) and with "social distancing" (r =0.135**); Traffic strongly correlated with "reduction in the outdoor activities" (0.235**) and "emergency situations" also strongly correlated with "social distancing" (r =0.179**).

Table 4: Relationship between Sources of Environmental Pollution, Health issues and Social Life

	1	2	3	4	5	6	7	8	9	10	11	12
Automobiles	1.000											
Burning	1.64*	1.000										
Construction	0.00*	1.54**	1.000									
Winter heating	0.051	0.189**	0.398**	1.000								
Eye Allergies	0.074	0.249**	0.104*	0.144**	1.000							
Pulmonary blockage	-0.012	0.060	0.040	0.017	0.377**	1.000						
Chest issues	-0.018	0.007	0.034	0.035	0.036	0.244**	1.000					
Skin Allergies	-0.039	-0.009	-0.070	-0.048	0.063	0.028	0.438**	1.000				
Traffic disorder	0.010	0.054	0.006	0.055	0.098	-0.003	0.264**	0.397**	1.000			
Emergency situations	-0.106*	0.020	0.044	0.060	0.039	0.032	0.315**	0.253**	0.338**	1.000		
Reduction in outdoor activities	-0.032	0.084	-0.003	0.105*	-0.011	-0.074	0.073	0.087	0.235**	0.394**	1.00	
Social distancing	0.021	0.068	-0.108*	-0.019	-0.011	0.054	0.033	0.135**	0.090	0.179**	0.297**	1.000

**Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

The results suggest positive and negative effects that differently related with each other. Among the sources of environmental pollution "Automobiles" mostly caused eye allergies (r =0.074) and negative relationship with the skin problems (r = -0.039); chest problems (r = -0.018) and pulmonary (r = -0.012) and emergency situations (r=-0.106). The second source of environmental pollution "Burning" mostly created eye allergies (r=0.249**). A negative correlation found in "Burning" with skin problems (r = -0.009), reduction in the outdoor activities (r=-0.084) and social distancing (r=-0.068). Construction work strongly correlated with the eye allergies (r = 0.104*). Construction work had a strong but negative correlation with social distancing (r=-0.108*). Construction had also a strong correlation with pulmonary problems (r = 0.040) and chest blockage (r =0.035). Winter heating correlated with the eye problems (r =0.144**) and with the reduction in the outdoor activities (r = 0.105*). Winter heating showed negative correlations with the social distancing (r = -0.019) and skin problems (r = - 0.048) and a positive correlation with chest problems (r = 0.035).

Burning, winter heating and construction work identified as the major sources of environmental pollution that adversely affected health (eyes allergies and pulmonary issues and also creating hurdles in the social life (flow of traffic, problems to handle the emergency situations, reduction in the outdoor activities and caused social distancing. Jam traffic creates sudden emergency situations such as anxiety, loss of self-control (use of abusive language, violence and destructive attitude), and wastage of time that sometimes resulted in heavy losses affecting health in a negative way and dismantling the social fabric.

DISCUSSION

The Global Conference on "Health and Climate Change 2021" focuses specially on "Climate Justice and the Healthy and Green Recovery from COVID-19".[30] It was in line with the WHO Manifesto: nature, food systems, sustainable infrastructure, clean energy, cities, and stopping pollution.[31] In the first-ever Global Conference on "Air Pollution and Health" (2018) the Director General of World Health Organization Dr. Tedros Adhanom Ghebreyesus informed that air pollution a "silent public health emergency" and "the new tobacco".[32,33] People who are living in hot areas of developing countries are vulnerable to the environmental pollution especially children and elderly people.[34] According to UN Climate Change News 26 October 2018 about the first-ever Global Conference on "Air Pollution and Health" organized by the World Health Organization (WHO) and with the participation of UN Climate Change identified the sources and solutions: invest in energy-efficient power generation; improve domestic, industry and municipal waste management; make greener and more compact cities with energy-efficient buildings; reduce agricultural waste incineration and forest fires; build safe and affordable transport systems; and universal access to clean, affordable fuels and technologies for cooking, heating and lighting.[35]

Conferences and debates on Climate Change and Environmental pollution highlighted the harmful effects on health specially in the developing. Suggested solutions emphasized that public awareness, boosting education, training, and public participation measures have been taken to maximize the opportunities to achieve the targets and goals regarding the critical issues of environmental pollution.[36] Due to the critical seriousness of the increasing silent danger the Government of Pakistan took "Clean and Green Pakistan" initiative. To reduce the air pollution, tree plantation campaigns had been started with the involvement of private sector at all levels. Public participation is important to control the harmful impacts environmental pollution on health.

This study indicates burning-a major source of pollution. Similar findings indicated by Su et al. (2015) study that "burning is the

main cause of smog including burning of coal, oil and natural gas and electricity accounted for over 96% of Beijing's total energy consumption".[37]

Automobiles/vehicles caused pulmonary problems whereas construction and winter heating caused social distancing.[38] Burning, construction work, specifically winter heating were found the main source of pollution affecting public health: eye irritation and respiratory problems; traffic issues (low visibility, accident ratio, high way and motor ways blockage, tourism banned)[39] and emergency situations (strikes, awful working conditions, financial crises etc).[40,41] Motor Vehicles do not found to be a significant factor/source of environmental pollution. A significant relationship was found between burning, construction work, and winter heating.

CONCLUSION

Public awareness through environmental education, social education, health education and safety measures for public awareness will be step towards a conscious approach of living a healthy and safe life. "Now and Never" strategy is needed to address the serious issues and change the Lahore city into healthy, safe, and friendly pollution free environment.

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AUTHOR'S CONTRIBUTION

BY: Conceptualization, Introduction, Methodology, Data Analysis, Writing – Original draft preparation.
NJ: Visualization, Review of literature, Data entry, discussion the manuscript and Results.
MZK: Data Collection, Critical Evaluation, Referencing, Final Editing Revising.

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Original Article

PATIENT SATISFACTION REGARDING EMERGENCY DEPARTMENT SERVICES AT COMBINED MILITARY HOSPITAL (CMH) LAHORE – A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: To measure the level of satisfaction of the patients that present to the emergency department of CMH Lahore, as feedback from the patients themselves is the most reliable source of information regarding the healthcare system's shortcomings.

Material and Methods: We conducted a cross sectional analytical study over 6 months at the accident and emergency A&E department of CMH Lahore. The investigators administered patients that presented to the A&E department self-designed questionnaires in a non-contrived setting and participants were enrolled using simple convenience sampling. Before conducting this definitive research, a pilot study was conducted where the time is taken to fill in the questionnaire and its practicality was accessed. The inclusion criteria included all patients presenting to the A&E department, over the age of 18 years, oriented in time, place and person. The patients that presented to all other departments, younger than 18 years and in a state of delirium, confusion and unconsciousness were excluded from the study.

The questionnaire assessed demographic data, physical environment, accessibility, attitude of healthcare providers towards patients and overall satisfaction.

Results: Among a total of 277 respondents, 67.9% were males and 32.1% were females. Maximum satisfaction was documented in the area of health care the professional's attitudes towards the patients where 81.6% were satisfied. There was a significant association between level of dissatisfaction and age with a p- value < 0.015 where 37.9% respondents were between 15-25 years of age. Patients who were overall satisfied with the A&E department were 88.8%.

Conclusion: Patients were predominantly satisfied with the healthcare facilities provided at the A&E department other than a few basic facilities including physical environment and information regarding prescribed medicine.

Key Words: Patient satisfaction, Gender, Emergency

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INTRODUCTION

Patient satisfaction is a multidimensional and multifactorial process. It depends on various factors, including medical, non-medical, demographic, institutional, individual and many more.

For instance, the determinants of patient satisfaction may include age, gender, race, literacy, technology, medical staff attitude, communication, catering, cleanliness, treatment costs, duration of stay at the facility, waiting hours, medical condition, expectations of the patient etc.[1] Provider attitude, technical competence and accessibility are also important attributes for patient satisfaction.[2] Medical staff services

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technology, medical staff service attitude and hospital convenience are also important factors for patient satisfaction.[3] A physician's financial incentives also affect the patients' health.[4] A popular Donabedian philosophy states the dependence of quality care on three main components; structure, process and outcome in terms of patient's experience.[5] Even though patient satisfaction might be a vaguely defined term, several studies show that it is a very significant indicator of the quality of healthcare provided by the facility or system.[6-9] Achieving and producing health and satisfaction, as defined for its members by a particular society or subculture, is the ultimate validation of the quality of care.[10] In recent times, patients have assumed more of a consumer role and are demanding a bigger claim in their healthcare and expect certain standards of services from their providers. So, it becomes even more relevant to gauge the satisfaction levels to improve healthcare organizations and delivery systems. Patient satisfaction is the extent to which the patient is happy with their health care inside and outside the doctor's office .A measure of care quality, patients satisfaction gives providers insight into various aspects of medicine including effectiveness of care and level of empathy.[11] Low patient satisfaction may also lead to poor compliance, potentially leading to waste of resources.[9]

A vast pool of literature is available on the overall satisfaction of patients in the emergency department (ED) and the various factors leading to improved experience at the ED. A study in Pittsburgh established that in patient satisfaction, patient-doctor communication was one of the most important factors.[12] In 2001 C.A Berry et. al. made a critical analysis of the study by Elliot Mishler in 1984 that confirmed the results of Mishler. Both studies ascertained that when there is psychological bond between doctor and patient, better outcome is seen and patient is more satisfied. Therefore, interpersonal communication between patient and physician is important.[13]

A study in Brazil looked at another aspect in patient satisfaction. In addition to timely care, and empathy, it reported that the environment plays a major role in patient satisfaction. Environment included three aspects; signage, comfort and cleanliness. A high majority of patients were satisfied with the signage at the hospital to facilitate getting to the necessary locations. Greater than 90% of the patients also graded the quality of cleanliness positively. However, 27.7% expressed some degree of dissatisfaction when it came to comfort.[14]

Empathy is critical to develop rapport between healthcare providers and patients. In the United States physicians with better scores for the Jefferson Scale of Empathy (JSE) resulted in patients being better satisfied at the ED and vice versa.[15]

A significant sum of literature is also available from Pakistan. Saleem S. et al. reported high levels of satisfaction among patients and their attendants in regard to positive attitude and behavior of doctors, nurses, paramedics and with the overall management with 75% patients satisfied with emergency services.[16] A similar study from a tertiary care hospital in Karachi showed average satisfaction level of the hospital to be 3.98 out of 5 (79.7%).[17] A similar study found patient experiences and their expectations with health care services to be important determinant of patient satisfaction in Pakistan. Age, gender, literacy and social class are characteristics influencing patient satisfaction. In addition lack of privacy, autonomy, involvement in decision making, poor communication and sanitation/hygiene leads to bad patient experience hence decreased satisfaction.[18] Qayyum S. et al. also supports the above literature as high overall satisfaction was reported among patients received in the Emergency department at a public sector hospital in Lahore. The major cause of satisfaction was the attitude of doctors while causes of dissatisfaction included long waiting time and disappointing attitude of other staff.[19]

One of the challenges of the modern time is how to maintain high level and accessibility of health care services at the current level. Developing a financially viable health care

system with an efficient use of human and other resources as well as achieving efficient and effective health care, from the perspectives of the healthcare field, health care providers and patients, has thus become the central goal of health care policy activities in all developed countries.[20] One of these most discussed strategies to improve patient satisfaction and outcomes is the effective utilization of staff to alleviate burden by operative and efficient management as discussed by Fong Yeong Woo et, al. The systematic review analyzed 15 studies which found that advanced practice nursing roles in the emergency and critical care settings improved patient outcomes by decreasing length of stay, reducing the waiting time which is a major cause of dissatisfaction in patients, and improving the overall patient satisfaction.[21]

In this study we aim to measure and analyze the satisfaction of patients regarding the emergency services and care provided in the emergency department of CMH (Combined Military Hospital) Lahore and to effectively map all the potential areas of improvement and provide appropriate recommendations for improvement of quality of services provided at the facility.

MATERIAL AND METHODS

We conducted this cross sectional study at the Emergency and Trauma Center of Combined Military Hospital, Lahore from February to June 2021.

The Combined Military Hospital Lahore is categorized as an A- class military hospital equivalent to a tertiary care hospital. The Emergency Department comprises of 12 beds and a daily turnout of 180 to 200

All the patients, irrespective gender who had reported to ED of said hospital, were over the age of 18 years, oriented in time, place and person were included in this study using non-probability convenience sampling technique. Patients reporting to other departments, younger than 18 years and in a state of delirium, confusion and unconsciousness were excluded. Before this definitive research, a pilot study was conducted where the time taken to fill in the questionnaire and its practicality was accessed.

The sample size for this study was 280, calculated using Rao software with a 95% confidence interval and 5% margin error.

The structured questionnaire was administered to the respondents in person in a non-contrived setting. Questionnaire was available in both English and Urdu languages; adapted from previous literature.[22] The questionnaire had three sections; the first part included the demographic profile, the second assessed accident and emergency department services dimensions which include accessibility (2 items), physical environment (3 items), basic facilities (10 items), attitude of the healthcare professionals towards the patients (8 items) and information provided to the patients by the doctor at the ER (7 items). The third part assessed their overall satisfaction level as either yes or no. A five-point Likert scale was used in the second section of the questionnaire which specifies the level of agreement of the participant with the given statement. A score of 1 was given for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree and 5 for strongly agree. Informed consent was taken from the participants before conducting the survey and the investigators constantly guided the patients throughout the filling process. It has a reliability coefficient of greater than 0.70. The participants not able to fill questionnaire themselves were assisted by the investigators.

Questionnaires were manually numbered and checked before being entered into the SPSS software (version 26; IBM). They were checked for any missing entries and disqualified if so. All data was analyzed by using the SPSS software (version 26.0). Results were presented in frequency and percentages. Mean and standard deviation was obtained for quantitative variables i.e. satisfaction score. Chi- square test was used to compare categorical variables with p-value < 0.05 as statistically significant.

Results were expressed as mean score and standard deviation for each section and

subsection. Categorical data for the demographic profile has been presented as frequencies and percentages which were also depicted in the form of graphs, tables, proportions and charts.

RESULTS

A Total of 277 patients were surveyed regarding their level of satisfaction with the A&E department of CMH Lahore during 6 months. Of these 277 individuals, 32.1% were females and 67.9% were males, and the most frequent individuals visiting the department were between 15-25 years of age (37.9%). The highest number of individuals visiting the department were college graduates (37.5%) and those with an urban background (63.5%) with a monthly income between Rs. 25000/- to 50000/- per month. The major employment group were government employees. The results reflected that 88.8% of participants were overall satisfied with the services provided by the hospital in the A&E Department while 11.2% were not satisfied. The data is graphically represented in Figure 2. There was a significant association between age and level of satisfaction among the patients with a p-value < 0.015 where most of the unsatisfied patients belonged to the group of 15- 25 years of age as shown in Table 1.

The questions related to satisfaction level of patients at the Emergency department comprised diverse areas in provision of services. The three highest ratings were given in the areas of healthcare professionals attitude. A score of 4.21, 4.17 and 4.16 out of 5 was achieved in professional attire, politeness and the behavior of doctors, nurses and paramedical staff respectively. The overall highest satisfaction was also in the health care professional attitude with a mean rating of 4.08 (out of 5). The lowest rating was in the category of information to patients with a mean rating of 3.57 (out of 5). The second lowest rating was in the aspect of physical environment. 81.9% of individuals were satisfied about a clean environment of the emergency room however, 23.4% individuals were dissatisfied with the cleanliness of the toilet facilities. This data is represented by Figure 1.

The questions related to satisfaction level of patients at the Emergency department comprised diverse areas in provision of services. The satisfaction for different areas and the mean score rating for each question is represented by Tables 2

Table 1: Association of demographic variables with overall satisfaction of participants (N=277)

Variable	Population overall satisfied (N)	Population overall unsatisfied (N)	P-value
Gender			
Male	165 (87.8)	23(12.2)	0.424
Female	81(91.0)	8(9.0)	
Age			
15-25 years	86 (81.9)	19(18.1)	0.015
26-35 years	49(96.1)	2(3.9)	
36-45 years	21(87.5)	3(12.5)	
46-55 years	40(87.0)	6(13.0)	
Above 56 years	50(98.0)	1(2.0)	
Educational status			
Illiterate	35(83.3)	7(16.7)	0.067
Primary	25(100.0)	0(0.0)	
Middle	49(98.0)	1(2.0)	
College	89(85.6)	15(14.4)	
Graduate	36(85.7)	6(14.3)	
Postgraduate	12(85.7)	2(14.3)	
Background			
Urban	154(87.5)	22(12.5)	0.362
Rural	92(91.1)	9(8.9)	
Monthly income			
Below Rs. 25,000/-	73(90.1)	8(9.9)	0.519
Rs. 25,000/- to Rs. 50,000/-	95(90.5)	10(9.5)	
More than Rs. 50,000/-	78(85.7)	13(14.3)	
Occupation			
Government job	128(91.4)	12(8.6)	0.323
Semi-government	25(83.3)	5(16.7)	
Private	93(86.9)	14(13.1)	

The above table shows association between different demographic factors and overall satisfaction using the chi-square test. There is a strong association between overall satisfaction and age, while there is a weak association with gender, educational status,

background, monthly income and occupation.

The above table represents the mean rating in diversified satisfaction items with the highest satisfaction in health care professional attitudes.

Table 2: Patient satisfaction ratings on different variables in A&E department (N=277)

Variables	Strongly disagree (Score: 1) N (%)	Disagree (Score: 2) N (%)	Neutral (Score: 3) N (%)	Agree (Score: 4) N (%)	Strongly agree (Score: 5) N (%)	Mean (Out of 5)
ACCESSIBILITY						
Is your access to A&E department easy?	13(4.7)	14(5.1)	24(8.7)	136(49.1)	90(32.5)	**4.00**
A&E department entrance from all parts is appropriate and reachable?	5(1.8)	25(9.0)	36(13.0)	141(50.9)	70(25.3)	**3.89**
ARRIVAL AT THE A&E DEPARTMENT						
The hospital car parking was a convenient place to park.	7(2.5)	27(9.7)	68(24.5)	116(41.9)	59(21.3)	**3.67**
Receptionist at hospital reception was very much courteous.	4(1.4)	30(10.8)	57(20.6)	111(40.1)	75(27.1)	**3.81**
PHYSICAL ENVIRONMENT						
The hospital has clean and neat environment inside the department and waiting area.	2(0.7)	13(4.7)	35(12.6)	138(49.8)	89(32.1)	**4.08**
The waiting area is well maintained and have facilities for patients and attendants	3(1.1)	35(12.6)	45(16.2)	123(44.4)	71(25.6)	**3.81**
Suitable temperature is maintained.	2(0.7)	30(10.8)	30(10.8)	136(49.1)	79(28.5)	**3.94**
Lab and pharmacy facilities within the hospital A&E	4(1.4)	23(8.3)	37(13.4)	137(49.5)	76(27.4)	**3.93**
Welfare facilities in waiting's area are provided.	3(1.1)	32(11.6)	69(24.9)	119(43.0)	54(19.5)	**3.69**
Are you satisfied with toilet's cleanliness of A & E department?	22(7.9)	43(15.5)	80(28.9)	88(31.8)	44(15.9)	**3.32**
Are you satisfied with health promotion activities of A&E department	4(1.4)	28(10.1)	77(27.8)	118(42.6)	50(18.1)	**3.66**
Were you ever bothered by noise in A&E department?	9(3.2)	46(16.6)	54(19.5)	104(37.5)	64(23.1)	**3.60**
Did you feel bothered or threatened by other patients in A&E department?	19(6.9)	41(14.8)	58(20.9)	95(34.3)	64(23.1)	**3.52**
Were you able to get cafeteria near or in A&E department?	8(2.9)	22(7.9)	57(20.6)	129(46.6)	61(22.0)	**3.77**
HEALTHCARE PROFESSIONALS ATTITUDE						
Treats the patient politely	3(1.1)	10(3.6)	26(9.4)	137(49.5)	**101(36.5)**	**4.17**
Behavior of doctors, nurses, and support staff towards patients?	3(1.1)	8(2.9)	27(9.7)	142(51.3)	**97(35.0)**	**4.16**
Dignity, truthfulness and respect in dealing with the patient.	1(0.4)	15(5.4)	34(12.3)	136(49.1)	91(32.9)	**4.09**
Provide good description of the recommended treatment plan to the patient.	4(1.4)	25(9.0)	44(15.9)	129(46.6)	75(27.1)	**3.89**
Have an understanding of the patient's problems	3(1.1)	16(5.8)	32(11.6)	141(50.9)	85(30.7)	**4.03**
Complete and careful attention to the patient's words	1(0.4)	19(6.9)	37(13.4)	135(48.7)	85(30.7)	**4.03**
Neatly dressed and adornment	3(1.1)	9(3.2)	22(7.9)	137(49.5)	106(38.3)	**4.21**
A careful and complete examination of the patient is conducted	3(1.1)	16(5.8)	34(12.3)	132(47.7)	92(33.2)	**4.06**
INFORMATION TO PATIENT						
The doctor explains the examinations and treatment plan to the patient	4(1.4)	39(14.1)	48(17.3)	134(48.4)	52(18.8)	**3.69**
The doctor explains the drug's side effects.	26(9.4)	72(26.0)	70(25.3)	78(28.2)	31(11.2)	**3.06**
The doctor explains the treatment decision and reasons why they have been chosen.	8(2.9)	37(13.4)	64(23.1)	127(45.8)	41(14.8)	**3.56**
The doctor answers the patient's questions.	5(1.8)	16(5.8)	57(20.6)	106(38.3)	56(20.2)	**3.29**

This table shows the stratification of the five main variables and the mean scores for each

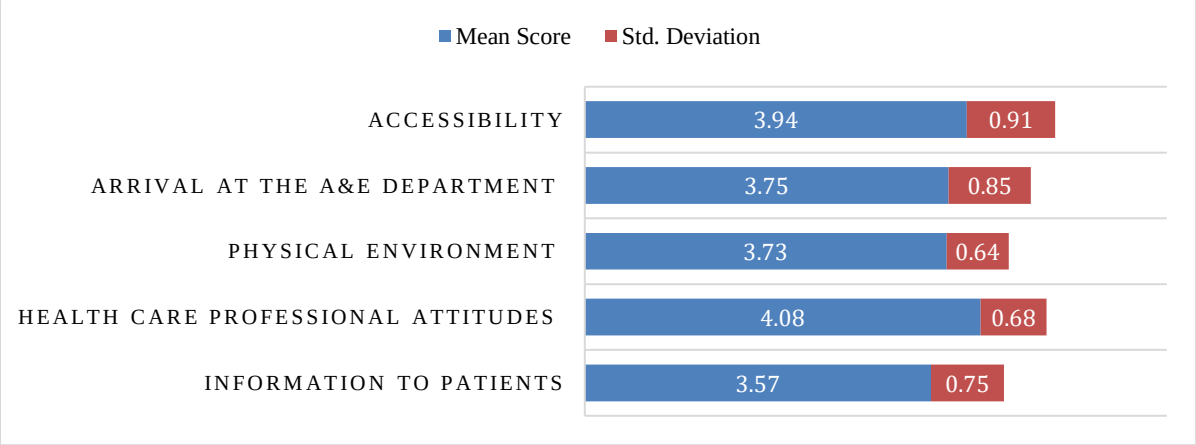

Figure-1: Scores for satisfaction items

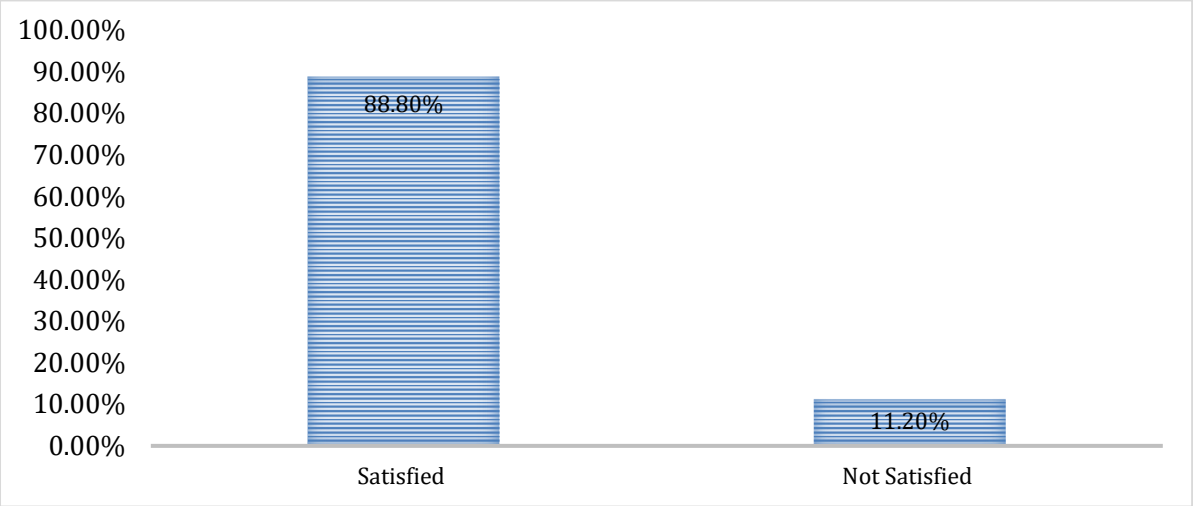

Figure-2: Overall satisfaction of patients at CMH Lahore Emergency department.

The above figure shows that 88.8% patients were satisfied by the services provided at the A&E department, whit 11.2% were not satisfied.

DISCUSSION

ED is often the first impression patients have of a hospital because that is where many patients present and if satisfied, revisit that particular hospital for follow ups. Patient "satisfaction" is not easy to define. Methods of quantifying and qualifying satisfaction are still emerging in emergency medicine, and thirdly, emergency physicians care for the largest and most diverse patient population.[23] Getting an adequate number of responses is difficult as we need to fill the questionnaires on the spot in the ER and many patients cannot respond. Most of the time it is the attendants responding whose judgment can be affected by various factors, including waiting times, facilities, communication, and access to the patient.[24] This is similar to literature defining a linear relation between understanding and patient satisfaction.[25] In another study in Iran similar results were seen where there was an association with satisfaction level; those who waited longer were less satisfied.[26] It is a fact that critical patients are treated immediately and less critical patients have to wait which can change their perspectives about the ER services. Our study includes a tertiary care hospital of Lahore. As it is a military hospital majority of the cases that present in the ER are of trauma which include more men (67.9%) than women (32.1%) which is in contrast to a previous study which surveyed

government run hospital where more than half of the respondents are female (58.0%) as compared to males (42.0%).[16] However, our male to female ratio (M:F) of patients is similar to a study conducted at CMH Malir which had a M:F ratio of 68:32 presenting in all departments including the ED.[17] The percentage of literate participants was 84.8 and 63.5% lived in urban areas which made it easier for them to access the hospitals All of them were employed. The age group that presented the most was 15-25 years which is 37.9%. This could be because young soldiers in training who get injured make up a major chunk of the daily patient influx in the ER. Our study focused on the patient satisfaction regarding services and care provided in the ER and not on wait times as it was conducted during the pandemic, unnecessary admissions were not done to avoid overcrowding. Most patients (81.6%) had easy access to the ER and 76.2% said ER was approachable from all sides. In our study, the attitude, behavior of doctors, nurses and support and their patient dealing with respect and dignity were satisfactory in the opinion of 86%, 86.3% and 82% respondents respectively. It is similar to a study conducted at a tertiary care government hospital of Lahore in 2017.[19] The patients who were satisfied with their recommended treatment plans were 73.7% but only 67.2% patients were explained about their treatment plan in detail. This decrease could be due to variations in patient dealings from doctor to doctor and on busy days serious patients are paid more attention than mild cases. Participants that said the doctors listened and understood their problems carefully were 81.6%. Patients who were satisfied with their examinations were 80.9%. Another factor contributing to patient satisfaction is the time a doctor spends with the patient in answering the patient's questions and explaining their management in detail.[17] In our study 58.5% patients agreed that doctors answered all their questions. They briefed them about any changes in their future management and 63.6% patients agreed doctors gave them information about their follow ups. These are also similar to other national study results in Faisalabad.[16] Only 39.4% of patients agreed that the doctors told them about drug side effects, which is a low percentage. Considering the misuse of antibiotics, emerging drug resistance and the easy availability of many drugs over the counter, it is very important to make our public aware about the side effects of drugs. Patients were also satisfied with the cafeteria approach, waiting room facilities and the cleanliness though it could be improved as female patients did complain about dirty toilets. Limitation of this study is that it is a cross sectional carried over a 6 months. A study carried out over a longer period will give more accurate results. The sample size was small, a larger sample size can assess the patient satisfaction more accurately. Due to the pandemic, the patient influx was not as great as it was before the pandemic. Mild cases were refused or sent to OPDs to maintain SOPs, limiting our sample size. Many trauma patients present to CMH Lahore as it is a military hospital and those are served on the priority basis which might cause less critical patients to wait. As mentioned in the discussion this could change the patient's perception about the services and care.

CONCLUSION

Overall, the patients were satisfied with the ER services and care. Surveys should be conducted every 3 weeks and regular feedback should be taken from the patients about the changes made. Cost Analysis should also be done since government, military and private hospitals have separate charging rates. As health care is already neglected in Pakistan and the region being a center of many epidemics, more focus should be given to the ER services and care as it is where most patients present for the first time in any hospital

Acknowledgments

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Conflict of Interest

The authors declare that there is no conflict of interest.

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AUTHOR'S CONTRIBUTION

SKK: Literature search, data analysis, data interpretation and drafting

UB: Literature search, data analysis, data interpretation and drafting

SAK: Literature search, data collection and drafting

US: Literature search, data collection and drafting

RZH: Literature search, data collection and drafting

ZO: Overall supervision, study design, concept, questionnaire design, revision and final approval

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Original Article

SPECTRUM OF ORGANISMS CAUSING URINARY TRACT INFECTION (UTI) IN CHILDREN IN TERTIARY CARE HOSPITAL

Huma Anwar [1], Asadullah Yousaf [2], Hareem Khalid[3], Saadia Chaudhary[4], Afsheen Batool Raza[5], Madiha Tahir [6]

ABSTRACT

Background: Urinary tract infection (UTI) is among the top causes of bacterial infections in children of younger age groups. There is a variety of microorganisms causing UTIs; among them, the more common causative organisms are from intestinal flora 80-90% of cases.

Material and Methods: Study was conducted using urine samples of 205 children of both gender who presented for the first time with UTI in children hospital Lahore from Dec 1, 2020 to 30th may 2021. Urine samples were tested for causative microorganisms with the use of CLED agar.

Result: The mean age of children in this study sample was 2.4 years from 0 to 5 years.

Out of 205 samples 64.9% Escherichia coli, 14.6% Klebsiella spp,12.2% Gram positive urine pathogens, 6.8% Gram negative uropathogens were observed.

Conclusions: In children age <5years, Escherichia coli tops the list of UTI causing organisms followed by klebsiella spp, gram positive and gram negative uropathogens.

Key Words: Urinary tract infection, urinalysis, Escherichia coli

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INTRODUCTION

Urinary tract infection (UTI) is among the top causes of bacterial infections in children of younger age groups.

Children of less than 1 year old are affected in larger proportion 26%.[1] Females were more predisposed to UTIs in older age groups (73% females compared to 27% males) as compared to first year of life during which there is male preponderance.Fecal and perineal colonization, urinary tract anomalies can cause UTI. [2,3]

Throughout infancy symptoms and indications lack specificity. The most typical UTI symptom in first 2 years of life is unexplained fever.

Complications ensue after 2nd year of life. When UTI is suspected, urinalysis and urine culture should be done. The most appropriate and least invasive tests should be preferred in children. Based on clinical findings and a positive urinalysis, early antibiotic therapy is advised while waiting for results of the cultures to improve clinical outcomes.[4-6]

MATERIAL AND METHODS

After approval from Institutional Review Board study was conducted using urine samples of 205 children of both gender who presented for the first time with UTI in children hospital Lahore from Dec 1, 2020 to 30th may 2021. Urine samples were tested for causative microorganisms with the use of Cystine-Lactose-Electrolyte-Deficient-Agar CLED agar.

RESULTS

Mean age of children in the study was 2.424 with a deviation of 1.14 years as given in table I.

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70.7% subjects were female and 29.3% were males.

Table-1: Mean ± SD of patients according to age. n=205

Demographics	Mean ± SD
Age(years)	2.424±1.14

Table-2: Frequency and %age of patients according to gender. n=205

Gender	Frequency	%age
Female	145	70.7%
Male	60	29.3%
Total	205	100%

Out of the 205 samples, more than half cultured E.coli (n=133, 64.9%), followed by Klebsiella (n=30, 14.6%).

Table-3: Frequency and %age of patients according to E-coli. n=205

E-coli	Frequency	%age
Yes	133	64.9%
No	72	35.1%
Total	205	100%

Table-4: Frequency and %age of patients according to Klebsiella spp. n=205

Klebsiella spp	Frequency	%age
Yes	30	14.6%
No	175	85.4%
Total	205	100%

Gram positive uropathogens were causative agents in n=25 subjects, 12.2%, as shown in table V.

Table-5: Frequency and %age of patients according to Gram Positive uropathogens. n=205

Gram Positive uropathogens	Frequency	%age
Yes	25	12.2%
No	180	87.8%
Total	205	100%

Table-6: Frequency and %age of patients according to Gram Negative uropathogens. n=205

Gram Negative uropathogens	Frequency	%age
Yes	14	6.8%
No	191	93.2%
Total	205	100%

DISCUSSION

In urinary tract infections, the urethra, bladder and kidneys may get infected leading to inflammatory states and secondary complications. UTI typically arises in children due to ascending infections due to poor hygiene or weak immune system. Hematogenous spread may occur although rare. It is one of the most frequently encountered infections in young children.it is challenging to diagnose. Hence, we correlate the clinical picture with the laboratory findings.[7,8] For quick recovery and to prevent problems appropriate antimicrobial therapy must be administered. Inadequate and delayed therapy may lead to complications or recurrence.

Pyelonephritis symptoms, fever, chills, rigidity, flank discomfort and costovertebral angle tenderness indicate development of complications which could either be self resolving or lead to disseminated infection that could escape the body's ability to fight illness. To prevent this, empirical therapy must be initiated to treat the infection. The severity of infection can be assessed by suprapubic pain, dysuria, urinary frequency, urgency, cloudy urine, malodorous urine and tenderness. The spectrum of causative organisms must be obtained to initiate treatment.[9-11]

In the present study, the results were in line with previous research indicating gram negative organisms as leading cause of UTI with E.coli topping the list with 64.9% positive cultures followed by Klebsiella 14.6% and other gram negative organisms making up only 6.8% of the cultures.[12-14]

An article published in 2019 complied the data on UTI in children in the past and stated

the gram negative organisms as the major bacterial group at the forefront of the disease and contributing to 90% of the disease burden.[15,16] So a second or third generation cephalosporin and amoxicillin-clavulanate are drugs of choice to eradicate the ailment.[17,18]

On the other hand gram positive organisms made up only 12.2% of the bulk of the burden which is according to the trend of the disease.[19] The study's results add to the previously gathered data to improve disease outcomes according to epidemiology of uropathogens in children.

CONCLUSION

In the study, the spectrum of uropathogens obtained on culture was in trend with the previous studies, with E.coli being the cause in most cases, followed by Klebsiella and gram positive uropathogens.

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Conflict of interest: None

AUTHOR CONTRIBUTIONS:

HA: Manuscript writing and data collection
AY: Manuscript writing
HK: Manuscript writing
SC: Manuscript writing
AB: Manuscript drafting
MT: Manuscript drafting

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Original article

THE IMPACT OF HYDROXYPROGESTERONE CAPROATE ON ADRENAL CORTEX THICKNESS IN DEVELOPING RATS

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ABSTRACT

Background: Hydroxyprogesterone caproate, a drug used commonly in Gynaecology and Obstetrics, has been shown to increase the weight of developing rat adrenal glands. This research was undertaken to observe changes in the various zones of the adrenal cortex with an increase in the thickness of the adrenal cortex.

Material and Methods: Hydroxyprogesterone caproate was administered to two experimental groups at doses of 10mg and 25mg per kg body weight intraperitoneally, while the third group was the control group and didn't receive any hydroxyprogesterone caproate. On seventh day following delivery, the offspring were sacrificed. The adrenal glands were dissected and after proper fixation and staining, the thicknesses of various zones of the adrenal cortex were noted.

Results: It was observed that the mean thickness of the adrenal cortex was increased in experimental groups as compared to the control group.

Conclusion: The research revealed that hydroxyprogesterone caproate impacted rat pups' adrenal cortex by increasing its thickness and accelerating its maturity when used in a critical phase of the development of the adrenal gland.

Key Words: Adrenal cortex, Rats, Corpus luteum

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INTRODUCTION

Hydroxyprogesterone caproate, a drug most commonly used in Gynaecology and obstetrical practice, has been well-researched on the reproductive organs in both males and females.[1] Its vast therapeutic applications include the prevention of premature labor, both threatened and habitual abortions, and cases of infertility related to corpus luteum insufficiency[1,2] necessitate that its harmful effects if any should be well documented.

As the second week of development is the most sensitive period in formation of the adrenal gland in rats, this period was chosen in the current study to examine its impact on the adrenal gland.[3]

The previous studies have shown that this drug increases the weight of the adrenal gland[4], so it is expected to further link this effect to the overall thickness of the adrenal cortex of the gland.

MATERIAL AND METHODS

From March to July 2010, this experimental investigation was carried out at the Department of Anatomy, Shaikh Zayed PGMI, Lahore, in partnership with the Department of Zoology, University of the Punjab (Quaid-e-Azam Campus).

In this experiment, Wistar strain adult rats weighing a mean of 250–300 grams for each of the twelve females and 350–450 grams for each of the three males were employed. The rats were weighed two weeks after the acclimatization phase and weight gain of 25 gm/rat was recorded. Male rats with aggressive behaviour and the testes freely

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hanging in the scrotum were used to assess their sexual development.

Afterward, the female rats were separated into Group A (Control), Group B (Experimental) & Group C (Experimental) based on a random selection with 4 rats each, based on a random selection.

In addition to vaginal smear, the smear method was utilized to determine estrous. To confirm estrus, behavioral changes were also taken into consideration.

All the female rats were allowed to procreate after being placed in a cage containing three estrous females and one male for one night. Vaginal plug appearance was regarded as a sign of pregnancy. The female rats that had been found to have been mated were separated. That was the first day of gestation.

After correctly weighing and marking, the female rats were divided and placed in their corresponding cages.

The study had three groups. Group A was controlled group with four pregnant rats were permitted to finish their pregnancies without being exposed to hydroxyprogesterone caproate.

Group B was experimental group which had four pregnant rats. On days 14 and 15 of their gestation, they received an intraperitoneal injection of hydroxyprogesterone caproate at a dose of 10 mg/kg of body weight.

Group C was experimental group which had on day 14 and 15, four pregnant rats from this group received intraperitoneal injections of 25 mg/kg body weight of hydroxyprogesterone caproate.

Twenty offspring from each group were randomly chosen for further procedure after delivery of the pups.. The male offspring were divided into groups A1, B1, and C1, while the female offspring were divided into groups A2, B2, and C2. They were put in distinct cages with the appropriate labels. On the seventh day all the rats were euthanized with 200 mg/kg of pentobarbital intraperitoneally.[5, 6]

The adrenal glands were fixed in 10% formalin. The specimens were preserved and embedded in paraffin wax. With the help of a rotary microtome, 5µm sections were cut and stained with haematoxylin and eosin (H&E) stain.

The adrenal glands were observed histologically for overall thickness of the adrenal cortex(µm) in addition to the thicknesses of its zones.

These measurements were taken with a correctly calibrated ocular micrometer.

At the end of the research experiment, quantitative data were analyzed by Analysis of Variance (ANOVA), using the statistical package of social sciences (SPSS) version 15.0. The obtained results were tabulated and compared with national and international published studies and finally, the conclusion was reached. A P-value less than 0.05 was deemed statistically significant for analysis.

RESULTS

The results of the experiment showed that the mean thickness of the adrenal cortex in the rat pups in A1 was 179.5µm (±12.9) and 182µm in A2 (±6.2). Similarly, the overall thickness of the adrenal cortex in group B1was 250.3 µm (±8.4) and 243.0 µm (± 16.2) in B2. In C1 it was calculated to be 334.3µm (± 12.4) and 332.0 µm (±7.5) in C2 (Table-1). This difference was calculated to be statistically significant ($P < 0.001$) while comparing A1, A2 with B1, B2 and C1, C2. Comparing the thickness of the adrenal cortex also revealed marked increase in C1, C2 compared to B1, B2 ($P < 0.001$, Table-1). No significant difference was noted as regards the two genders (Table-2).

This increase in cortical thickness was associated with an increase in the thickness of the individual zones of the adrenal cortex namely the zona glomerulus, zona fasciculate and the zona reticularis. However, the zona fasciculate displayed the most noticeable rise in thickness compared to other zones.

The zona glomerulosa showed a mean thickness of 13 to 13.5 (A1 and A2) with 23.8 and 21.3 in B1, B2 and 30 in C1 and C2 respectively. The zona fasciculate showed a mean thickness of 154 to 156 in A1, A2 and 204 to 205 in B1B2. The mean thickness of 278.5 and 276.5 was observed in C1 and C2. The results for zona reticularis were 12.5 and

12 in A1, A2 whereas in B1, B2 it was 23.8 and 21.8 while in C1, C2 the values were 25.8 and 25.5 (Fig1, 2)

Table-1. Thickness of the adrenal cortex of albino rat pupps in control & experimental groups (µM)

Group	Mean	S.D.	Min	Max
Male (A1)	179.5	±12.9	150.0	197.5
Females (A2)	182.0	±6.2	175.0	190.0
Male (B1)	250.3	±8.4	235.0	267.5
Females (B2)	243.0	±16.2	200.0	255.0
Male (C1)	334.3	±12.4	310.0	350.0
Females (C2)	332.0	±7.5	320.0	345.0

Table-2. Comparisons of the thickness of adrenal cortex in albino rat pupps (experimental and control groups)

Group	Group	Mean difference	SE	p-value
Group A1A2	Group B1B2	-65.87	3.525	< 0.001*
Group A1A2	Group C1C2	-152.38	3.525	< 0.001*
Group B1B2	Group C1C2	-86.50	3.525	< 0.001*

SE Std. Error
*Significant difference (P <0.001)

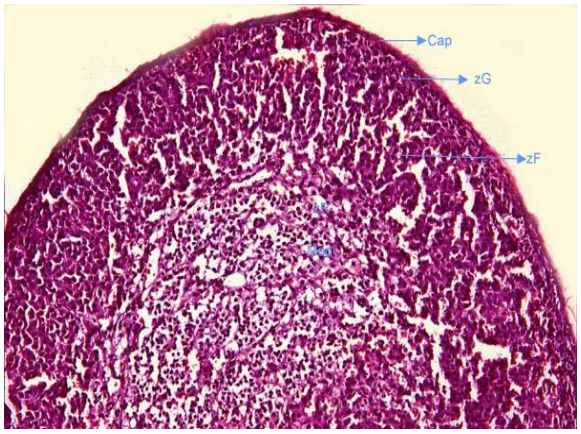

Figure-1: Photomicrograph showing adrenal cortex of rat pup of control groups A (H&E,5)

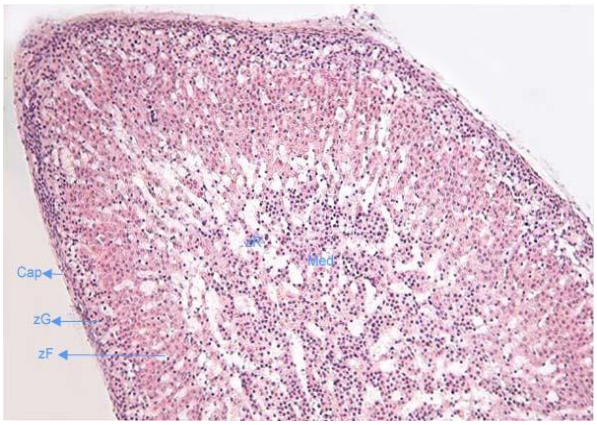

Figure-2: Photomicrograph showing adrenal gland with increased thickness in adrenal cortex of rat pup of experimental group B (H&E,5)

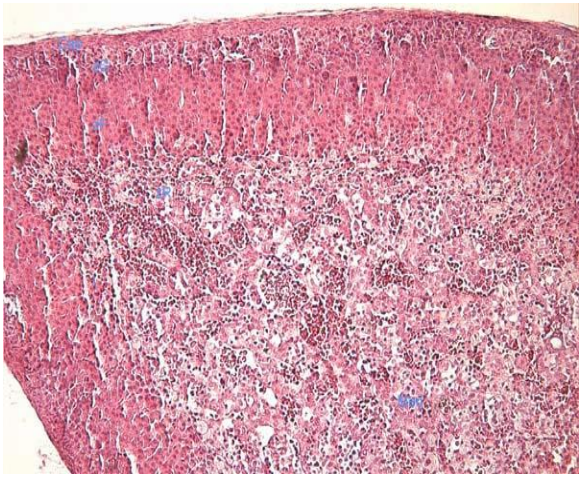

Figure-3: Photomicrograph showing adrenal gland with increased thickness in adrenal cortex of rat pup of experimental groups C (H&E,5)

DISCUSSION

The current study was meant to investigate its impact on the shape of the adrenal gland, particularly during its critical development time. The adrenal cortex and all three of its zones showed hypertrophy, which was evident by an increase in the thickness of each zone.[7] The zona glomerulosa showed an increased thickness and hypertrophy in experimental groups B1, B2 and C1C2 compared to control groups A1 and A2 (P<0.001). Further, the cells of this zone also showed an increase in mean size in experimental groups. There was no

difference in the thickness of zone and cell size regarding the genders in any of the groups (P>0.05). The zone also showed changes in its appearance as more organized patterns of cluster formation were evident in both experimental groups while this was only sporadic in the control groups.

The zona fasciculata, like the pattern of zona glomerulosa, also showed increased thickness and hypertrophy in pups exposed to hydroxyprogesterone caproate than in the control groups (P<0.001). The mean cell size of this zone also increased significantly in experimental groups (P<0.001). However, this zone showed more profound changes in the groups C1 and C2, who received the maximum dose of HPC compared to experimental groups B1 and B2 (P<0.001). Again, the zone appeared more organized in experimental groups, with cells showing increased vacuole formation.

The innermost zone of the adrenal cortex, i.e., the zona reticularis also responded to the exogenous hydroxyprogesterone caproate by an increase in thickness and the mean cell size (P<0.001). Additionally, it revealed that experimental pups had significantly more hypertrophy than pups from control groups (P<0.001). The zone which showed diffuse arrangement in the control groups showed better cord-like arrangement in the experimental groups.

Hydroxyprogesterone, a steroid, was supposed to produce atrophy of the gland using the HPA axis. Still, this effect of hypertrophy has been collaborated by Lolier showed that a steroid like betamethasone given to the rat fetuses produced hypertrophic effects to adrenal gland by crossing the placental barrier.[7,8] The same result as betamethasone was also produced by HPC as it crossed the placental barrier. This and the fact that HPC is a modest activator of the HPA axis failed to produce atrophy of the gland.[9] All the individual zones showed hypertrophy (increase in the width of their respective zones), but the difference was more marked in the zona fasciculate.[10] This was showed in a research work on stress and steroid-producing glands that showed an increase in thickness all three zones but the zona fasciculate which showed the most pronounced effect due to an increase in ACTH level.[11,12]

CONCLUSION

This study found that giving hydroxyprogesterone caproate to a rat pup during a critical stage of development of the adrenal gland may allow the gland to mature faster. This fact may be considered while giving hydroxyprogesterone caproate to prevent pre-term labor.

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AUTHOR'S CONTRIBUTION

JI: Manuscript writing and data collection
AS: Manuscript writing
HMD: Manuscript writing

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Original Article

TO COMPARE THE EFFICACY OF HYBRID THERAPY VERSUS CONVENTIONAL TRIPLE REGIMEN IN HELICOBACTER PYLORI INDUCED GASTRITIS

Attique Abou Bakr[1], Naeem Aslam[2], Mamoona Ghias[3], Imran Mehfooz[4]

ABSTRACT

Background: To compare the efficacy of Hybrid therapy versus conventional triple regimen in H.pylori induced gastritis

Material and methods: It was a Randomized control trial 170 patients fulfilling the selection criteria were enrolled in the study from OPD of Hijaz hospital Lahore and the Department of Gastroenterology, Jinnah Hospital Lahore. 85 cases were given Hybrid therapy (Group-A) and 85 were given conventional triple regimen (Group-B). Informed consent was obtained.

Results: Demographic information (name, age, and sex) were taken. The mean age was 40.43 ± 17.01 years in the Hybrid therapy group and 42.99 ± 12.98 years in the conventional triple regimen group. In group A, 62% of cases had ages less than 45 years, and 37.6% had ages 45 years or above. In group B, 68.2% cases had an age less than 45 years and 31.8% of cases had an age of 45 years and above. In group A, 50.6% of cases were male and 49.4% were female. In group B, 72.9% of cases were male and 27.1% were female. In group A, 58.8%, 22.4%, and 18.8% of cases had low, middle and high socioeconomic status respectively. In group B, 57.6%, 29.4 and 13% of cases had low, middle and high socioeconomic status respectively.

In the Hybrid therapy group, eradication was achieved in 91.8%. In conventional triple regimen, eradication was achieved in 62.4% cases (p-value=0.00).

Conclusions: Eradication achievement was significantly more common with Hybrid therapy than the conventional triple regimen. Hybrid therapy was significantly more effective than the conventional triple regimen in all ages, genders, and socioeconomic groups.

Key Words: Helicobacter pylori, Infection, Peptic ulcer

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INTRODUCTION

Helicobacter pylori infection affects more than half of the world's population. There is a definite correlation between this chronic infection and peptic ulcer disease as it causes atrophic and metaplastic changes in the stomach mucosa.[1] The usual route of infection is fecal-to-oral.[2]

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It can also cause other gastric disorders, including chronic active gastritis, stomach cancer, and mucosa-associated lymphoid tissue (MALT) lymphoma. H pylori infection produces numerous biochemicals that stimulate the gastric parietal cells (resulting in HCL production) and ECL cells (which secrete gastrin and somatostatin). H. pylori repress D cells while G cells are stimulated. H Pylori infection is more prevalent in underdeveloped countries. The clinical picture varies, although most patients develop superficial gastritis, a minority develop nodules and ulcers.[2] This infection is one of the most common causes of dyspepsia. On diagnosis, Standard triple therapy is

suggested for 14 days, followed by acid-suppressive treatment (H2-receptor antagonists, or PPIs) for 6 weeks. The test of choice to document eradication is urea breath test (UBT) or stool antigen test. The patient must discontinue acid suppressive drugs for 2-4 weeks before having these tests.

Triple therapy consists of double antibiotics, such as amoxicillin-metronidazole or amoxicillin-clarithromycin plus a PPI (proton pump inhibitor) for 14 days. Antibiotic resistance is becoming more common, notably with clarithromycin. The eradication rate of triple therapy in real practice is 10% lower than in research trials. Following the failure of first-line therapy, several rescue therapies have been suggested, although they still have a failure rate ≥ 20%.

With a typical length of 14 days (7 days + 7 days), hybrid therapy is divided into two phases: dual therapy (PPI and amoxicillin) and quadruple /concomitant therapy (PPI, amoxicillin, clarithromycin and metronidazole/tinidazole). The drug dose was PPI, amoxicillin 1 g, clarithromycin 500 mg, and metronidazole/tinidazole 500 mg, all administered twice daily.[3-6]

The sequential administration of hybrid treatment may account for its remarkable efficacy. Pretreatment with amoxicillin is related to a decreased bacterial load. As a result, the organisms' sensitivity is changed, and they respond better to clarithromycin and tinidazole later.[7-9] To prove this notion, further data is necessary.

As indicated, H. pylori-induced gastritis is now exceedingly common. This study aims to find out the role of hybrid therapy in treating H. pylori infection compared with conventional triple therapy in the Pakistani population. Due to variations in demographic profile, differences in antibiotic resistance patterns, and variations in disease presentations, the study is of paramount importance in defining the best treatment. We may introduce it as a first-line treatment in place of a conventional regimen if sufficient results are obtained in favor of this therapy in managing H. pylori gastritis.

MATERIAL AND METHODS

A Randomized Control Trial was conducted in the OPD of the Hijaz Hospital Lahore and the Medical Unit II/Gastroenterology Department of the Jinnah Hospital Lahore. The study lasted for a year (08-June-2021 to 09-Jun-2022). The study's sample size was 170 patients (with a 2% margin of error and a 95% confidence level). Non-probability, purposive sampling was the technique adopted. Patients diagnosed with H. Pylori-Induced Gastritis (based on the histology of a stomach biopsy or the findings of H. Pylori stool antigen test/Urea breath test) were included in the study. Males and females between the ages of 18 and 70 were included. Patients with a history of stomach surgery, an allergy to study medications, a history of using antibiotics within the preceding two weeks, a history of receiving H pylori eradication therapy within the previous five years, a history of using probiotic products within the previous month, a history of taking bismuth, an H2 receptor antagonist, PPIs, or antifungal medications during the previous two weeks, as well as those who did not sign an informed consent form, were all excluded from the study

Total number of 170 individuals with H. pylori gastritis were enlisted following ethical committee permission and patient informed consent. A total of 85 patients in the two groups—Group A or Group B—were randomly assigned to them. Randomization was carried out using sealed envelopes numbered and labelled with the names of the groups. The diagnosis was made using the H. Pylori stool antigen. Group A underwent hybrid therapy, while group B received a conventional triple regimen. A stool test for H. Pylori antigen was also carried out to determine eradication, 4 weeks following the end of therapy (a "Negative" result was interpreted as a sign of treatment success). The pertinent data was entered into a specifically created proforma.

SPSS 25 was used to analyse all of the gathered data. The mean and standard deviation, like age, were determined for quantitative/numerical data. For qualitative

data like gender and eradication rate, frequency and percentage were calculated. The chi-square test was used to compare the eradication rate of H. Pylori between the two groups as the primary outcome measure. To account for the effect modifiers, data were stratified by age, gender, and socioeconomic status. A p-value of 0.05 or less was regarded as significant.

RESULTS

The mean age was 40.43 ± 17.01 years in group A and 42.99 ± 12.98 years in group B. In group A, 62% of cases had age < 45 years and 37.6% had age ≥45 years. In group B, 68.2% cases had age < 45 years and 31.8% cases had age≥ 45 years. In group A, 50.6% of cases were male and 49.4% were female. In group B, 72.9% of cases were male and 27.1% of cases were female. In group A, 58.8%, 22.4%, and 18.8% of cases had low, middle, and high socioeconomic status respectively. In group B, 57.6%, 29.4 and 13% of cases had low, middle, and high socioeconomic status respectively. In group A, eradication was achieved in 91.8%. In group B, eradication was achieved in 62.4% cases (p-value=0.00). Stratification of eradication rate was done with regards to age group, gender and socioeconomic status and p-values were depicted in respective tables (Table # 1, 2).

Table-1: Distributions of variable with frequency and percentage

Variable		Study Group		p-value
		Group A	Group B	
Age group	Less than 45 years	53(62.4%)	58(68.2%)	0.42
	Equal or more than 45 years	32(37.6%)	27(31.8%)	
Gender	Male	43(50.6)	62(72.94%)	0.003
	Female	42(49.4%)	23(27.06%)	
Socioeconomic Status	Low	50(58.8%)	49(57.6%)	0.42
	Middle	19(22.4%)	25(29.4%)	
	High	16(18.8%)	11(13%)	
H pylori Eradication	Yes	78(91.8%)	53(62.4%)	0.00
	No	7(8.2%)	32(37.6%)	

Table-2: Age group, Gender, Socioeconomic status wise stratification of Eradication rate

Variable		Study Group	Eradication		p-value
			Yes	No	
Age group	Less than 45years	Group A	47	6	0.02
		Group B	41	17	
	Equal or more than 45years	Group A	31	01	0.00
		Group B	12	15	
Gender	Male	Group A	41	02	0.00
		Group B	39	23	
	Female	Group A	37	05	0.01
		Group B	14	09	
Socioeconomic status	Low	Group A	46	04	0.2
		Group B	41	08	
	Middle	Group A	17	02	0.00
		Group B	06	19	
	High	Group A	15	01	0.01
		Group B	06	05	

DISCUSSION

Treatment regimens for H. pylori are becoming less successful due to rising antibiotic resistance, particularly to clarithromycin.[10-15] According to certain studies, triple therapy's clinical success rate is lower than in research trials by 10%.[13-15] Therapies that are effective, safe, and easy to follow are therefore crucial. Hsu et al. presented the hybrid therapy in 2011 have generated considerable interest. This regimen is highly successful (cure rates exceeding 90%) in several Italian studies; several guidelines have recommended this treatment.[16-18] After the first line of treatment didn't work, several rescue therapies have been developed. The eradication rate in our study was 91.8% for the hybrid therapy group and 62.4% for the conventional therapy group (p-value = 0.00). Hybrid therapy cure rates differ greatly between regions and populations while maintaining excellent compliance and safety. There are still several challenges that require more research. The limited data shows that the main factor influencing the effectiveness of hybrid therapy is the combined resistance to clarithromycin and metronidazole. It was also unclear how long hybrid therapy should last and how much PPI dosage should be used. Only a few studies have examined the variables affecting the efficacy of concomitant therapy, and the effects of some of these variables, such as P450 isoenzyme 2C19 gene polymorphism, are still unknown.[19-21] It is necessary to assess how much a hybrid therapy will cost. Analysis is made more difficult due to variations in patient recruitment, H. pylori detection techniques, dosages, duration, frequency, the relationship to dietary intake, and background antibiotic resistance. Like sequential and concomitant therapies, hybrid therapy is equally effective, compliant, and safe.

CONCLUSIONS

Hybrid therapy is a highly effective treatment choice for management of Helicobacter pylori infection. Future research on a larger sample size ought to concentrate on eradication's efficiency, safety and cost-effectiveness in regions with high levels of antibiotic resistance.

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AUTHOR'S CONTRIBUTION

AAB: Conceived idea, main researcher and supervisor as well
NA: Data collection and critical review
MG: Proofreading
IM: Review critically

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Review Article

MYASTHENIA GRAVIS

Naila Hamid

ABSTRACT

Myasthenia gravis is a neuromuscular junction disease characterized by severe muscle weakness. It commonly involves muscles of the eye, face and swallowing. In severe cases, respiratory muscles may be affected. It is an autoimmune disease in which antibodies against acetylcholine nicotinic receptors are formed, which destroy these receptors. Thymus is enlarged in many of these patients. These patients are managed by acetylcholine esterase inhibitors (neostigmine), immunosuppression by cortisol and plasmapheresis. Thymectomy is effective in some cases.

Key Words: Neuromuscular junction, Autoimmune disease, Thymus

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INTRODUCTION

Myasthenia gravis is a neuromuscular junction disease manifested by severe weakness of skeletal muscles. Muscles of the eyes, face and swallowing are commonly involved.[1] The name is derived from the Greek term mys meaning muscle, asthenia meaning weakness and the Latin term gravis meaning serious.[2] This disease affects 50-200 per million people.[3,4] Myasthenia gravis is more common in females upto the age of 40 and in males above the age of 60 years.[1] It is an autoimmune disease in which antibodies are formed against acetylcholine receptors at the neuromuscular junction. Decreased number of these receptors results into low voltage of end plate potential (EPP) leading to failure of neuromuscular transmission and muscle contraction.[5,6] Most of the patients have IgG1 and IgG3 antibodies in their plasma.[7]

Babies of myasthenic mothers manifest symptoms of the disease for a few months after birth. The disease has sudden onset. Many patients have an enlarged thymus.[1]

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Incidence of other autoimmune diseases is higher in near relatives of myasthenic patients.[8] Due to weakness of extraocular muscles, patients present with double vision (diplopia).[9] Drooping of eye lids (ptosis)occurs due to weakness of levator palpebrae superioris.[10] Patients have difficulty in swallowing, talking and walking.[1] Ocular symptoms get aggravated when the patient watches television, reads a book or drives car, especially in bright light.[11]

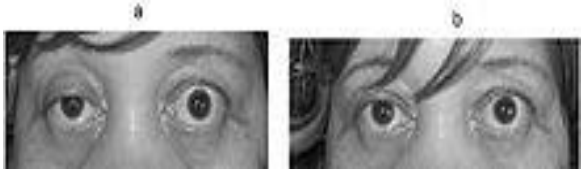

Figure-1. Left photograph shows right partial ptosis in a patient and his left eye compensatory lid retraction. Right photograph is showing improvement in ptosis after edrophonium injection (Figure-1)[12]

Due to dysphagia, food is not completely swallowed; some of it may remain in the mouth after swallowing or regurgitate into the nose. Due to weakness of facial muscles, patients cannot hold the mouth closed. Because of drooping eyelids and facial weakness, the patient may appear sleepy or

sad.[12] In severe cases, respiratory muscles are paralyzed and assisted ventilation is required to sustain life.[13]

Diagnosis of myasthenia gravis is based upon:

Detection of antibodies against the acetylcholine receptors.[12]

A chest CT-scan showing a thymoma.[14] (Figure-2)

Edrophonium test: Intravenous injection of edrophonium or neostigmine (acetylcholine esterase inhibitors) results in improvement.[15]

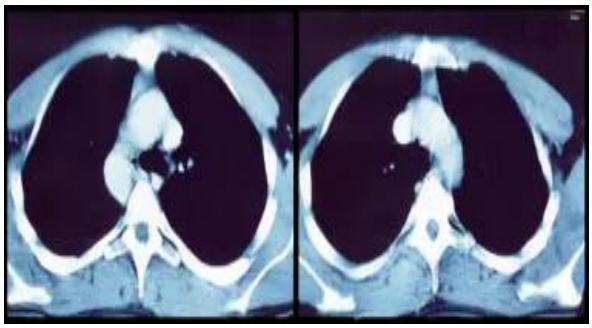

Figure-2: Chest CT scan showing a thymoma

Management

Treatment of myasthenia gravis patients includes medication and surgery.[16] Acetylcholine estrase inhibitors (neostigmine) cause improvement.[17]

Immunosuppressant drugs like prednisolone may be given to obtain a better result.[18] A new Afgartigimod has been approved in Dec 2021, that does not damage the immune system unlike previously used immunosuppressive drugs (Rituxan), hence proved safe when co-administered with COVID-19 vaccine.[19]

Surgical removal of the thymus gland may be beneficial in some patients.[20,21]

To remove antibodies from circulation, plasmapheresis can be used.[22] Patients with myasthenia gravis should be educated about the muscular weakness and exercise. They should be encouraged to perform exercise.[23] With good management patients of myasthenia gravis can live a normal life.

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AUTHOR'S CONTRIBUTION

NH: Manuscript writing and critical appraisal

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CASE REPORT

ROLE OF MULTIDISCIPLINARY TEAM MANAGEMENT IN WOMEN WITH PLACENTAL CHORIOANGIOMA AND VALVULAR HEART DISEASE

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ABSTRACT

Chorioangioma, a non-trophoblastic benign tumor without any malignant tendency, originates from the placenta and can affect fetal outcome. The diagnosis is usually made in the second trimester of pregnancy. The tumor is usually on the fetal side in close connection to the umbilical cord site and protrudes into the amniotic cavity. These can either be small (less than five centimeters) or large (more than five centimeters) tumors with favorable and unfavorable fetal outcomes, respectively. The larger tumor can cause preterm labour, placenta previa, pre-eclampsia, polyhydramnios, hemorrhage in mothers. At the same time, fetus complications can include growth restriction, thrombocytopenia, cardiomegaly, anemia, fetal hydrops, etc. The diagnosis can be made earlier by using color Doppler and earlier intervention can be done through multidisciplinary team management to reduce maternal and fetal complications. Here, presenting a case report of a pregnant patient with Rheumatic heart disease having Chorioangioma of size 5.0x3.0 cm diagnosed at nineteen weeks at the time of anomaly scan. She was kept for regular follow-up until 33 weeks when the umbilical artery Doppler scan revealed absent end diastolic flow and emergency LSCS was performed under steroid cover. A female baby was born with a birth weight of 1.8 kg (low birth weight) and admitted to the neonatal unit. At the same time, mother was taken to CCU and remained there for fifteen days under extensive treatment by the multidisciplinary team including cardiologist, intensivist and internal medicine specialist. The multidisciplinary team management increased the maternal as well as fetal outcome.

Key Words: Pregnancy, Placenta, Heart disease

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INTRODUCTION

The most common tumor of benign nature among pregnant women is Chorioangioma and could be one of the reasons for poor fetal outcome. The non-trophoblastic cancer presents in approx. 0.6-1% pregnancies.[1,2] The usual diagnosis period is within the second trimester and found among women with either multiple pregnancies or having female fetuses. The location is usually on fetal side of placenta.[3]

The size of these benign tumors may be small or large with favorable and unfavorable outcomes.[4] Large tumors impart more threat to the fetus and in some cases to the mother if female is also suffering from other diseases like Valvular heart disease or other chronic disease of severe nature. The result could be complications in both mother as well as fetuses.[5]

Valvular heart disease is also common among women of reproductive age in developing countries. This life-threatening condition might also induce complications such as arrhythmias, cardiac failure and thromboembolic complications among 65 to 70 percent women and in 3 to 5 percent cases mortality may occur during

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pregnancy.[6,7] There might be risk of admission in cardiac care unit. Sometimes medical and surgical intervention is needed in such women if symptoms persist despite their proper clinical management to improve fetal and maternal outcomes.[8]

We will present a rare case of a large chorioangioma and underlying Valvular heart disease that was monitored throughout her pregnancy after her presentation till outcome by involving a multidisciplinary team of better maternal and fetal outcomes.

Case Report

A female patient aged 28 years with a body mass index of 27 Kg/m^2. The obstetric history showed a previous history of perinatal loss and premature birth and operative delivery at 34 weeks due to intrauterine growth retardation (IUGR). While her medical history showed that she was a known case of moderate to severe mitral regurgitation, moderate aortic regurgitation and mild to moderate pulmonary hypertension with no comorbidities like diabetes, hypertension, and arrhythmias. The pregnancy was unplanned and she developed mild anemia in her second trimester but was later booked to the maternity hospital at 19-20th week of gestation. An anomaly scan was done in the 19th week and the radiologist noted a hypoechoic mass in the placenta measuring 5.0x3.0 cm (Figure 1).

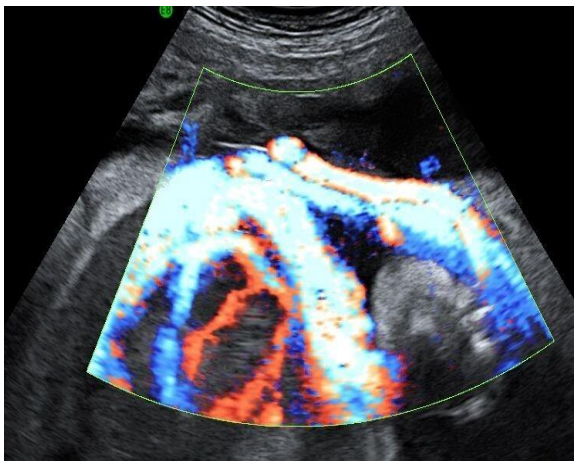

Figure 1: Color Doppler (Placental Chorioangioma)

The patient was planned to have monthly antenatal visits till 28th week and then fortnightly visits till delivery of the baby. The follow up scan showed the mass increased in size to 8.0cm and developed IUGR. The estimated amount of liquor was dropped with severe Oligohydramnios (noted at 32 weeks) (Figure 2).

Figure 2: Macroscopic view (Placental Chorioangioma)

During her pregnancy, she was looked after by a senior cardiologist and was given Aspirin, beta blockers and diuretics were added later. Twice she was admitted in cardiac emergency because of shortness of breathing and palpitations. Using an umbilical artery Doppler scan at 33 weeks, consultant radiologist found that end diastolic flow was absent . After steroid cover, emergency LSCS was done at 33 weeks. As a result, an alive female baby weighing 1.8 kilogram with grade two meconium was delivered and admitted to neonatal intensive care unit (NICU). At the same time, mother developed pulmonary edema, severe shortness of breath (SOB) and was shifted to CCU for further management. In CCU, close monitoring was done, cardiologists and intensivists were engaged and they provided extensive treatment for pulmonary edema. Patient remained under observation for fifteen days and then discharged with continuous advice of follow-up.

DISCUSSION

Chorioangioma arises from the chorionic tissue having vascularization through proliferation of vessels in the second week of fertilization that continues to grow and is usually detected in the second trimester. The usual place of presence is umbilical cord of fetal side protruding into the amniotic cavity.[9] Macroscopically, these tumors are purplish red, well circumscribed with soft and dark cut surfaces of red to tan color. When seen microscopically, it is divided into three major types, cellular, degenerative and angiomatous. The last type is the most common one i.e. angiomatous. It comprises mostly increased blood vessels and capillaries with endothelial tissue areas surrounded by the placental stroma.[10]

The World Health Organization (WHO) modified the classification of pregnancy risk diseases and designated Valvular heart disease as class IV risk for pregnancies. For such cases the surgical intervention during pregnancy in the developing world is regularly practiced among symptomatic patients in those hospitals where facilities for cardiac surgeries are found only. [11]

The maternal and fetal outcomes are severely disturbed by the occurrence of such tumors like chorioangiomas and if certain chronic conditions are already present among the women like Valvular heart disease. In such cases the only condition that can help change unfavorable outcomes to favorable ones is continuously looking after the mother and fetus throughout that period by engaging a multidisciplinary team with expertise from various disciplines so that management of cases could be optimized accordingly. In absence of such teams the management becomes very difficult that might result in the loss of mother and fetus. The time and mode of delivery also becomes challenging and the new born babies might have certain conditions that need their admission to the NICU for management. Moreover, mothers may also need intensive care treatment to manage arising situations in case of severe impact due to large size tumors and the underlying disease. In our case report, the multidisciplinary team managed the woman well in time against the arising conditions from delivery till safe hospital discharge as well as female born in the NICU. So, it is always necessary to engage the multidisciplinary team to manage complicated cases to have favorable outcomes.

CONCLUSION

There are serious adverse effects related to chorioangiomas that alter the pregnancy outcomes. The larger the tumor, higher the risk of poor outcomes. Close monitoring and time management through engaging multidisciplinary teams significantly reduces the chance of poor outcomes and converts them into favorable outcomes at maternal and fetal levels.

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AUTHOR'S CONTRIBUTION

SN: Manuscript writing, patient monitoring and outcome
S: Manuscript writing and results compiling
AR: Final review

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