Editorial

NON – CLASSICAL ACTIONS OF VITAMIN D, EVIDENCE IS GROWING

Agha Shabbir Ali

Vitamin D is known for its classical role as a key factor in calcium and phosphorus homeostasis ultimately leading to good bone health. Recently ‘‘non-classical’’ role of Vitamin D is gaining importance in infections and allergic disorders in children as well as in older patients. This function of Vitamin-D in the immune system is achieved through its Vitamin D receptor (VDR). VDR is a ligand-regulated transcription factor that gets activated by the active form of Vitamin-D, 1, 25-dihydroxy chole calciferol (1, 25(OH)2 D3).[1]

Despite the generous supply of Vitamin-D by nature in diet, and conversion of precursor Vitamin-D by ultraviolet sunlight most people are deficient in Vitamin-D.[1,2] Major reasons for Vitamin-D deficiency are an indoor unhealthy style of living and improper dietary habits. Increasing demands during pregnancy, infancy, and toddlers aggravate Vitamin D deficiency. Depleted stores of Vitamin D in mothers and poor concentration in breast milk are other contributory factors in developing countries.[3] At the time of this writing, the whole world is in the grip of the COVID-19 pandemic. Medical science is looking for ways and means to prevent coronavirus infection as well as its progress to severe-critical phase if at all infection does occur. The presence of VDR, throughout the immune system and expression of interleukin 1beta (IL-Ibeta) interleukin 8/CXCL8 by 1,25(OH)2 D3 in macrophages has drawn the focus of researchers to determine the role of Vitamin D supplementation in infections and immunity.[4] The anti-viral role of Vitamin-D against Rhino virus and Adeno virus in bronchial epithelial cells through cAMP/LL33 antimicrobial peptides has already been proved.[5,6]

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Pakistan is blessed with ample sunshine throughout the year. High-class agriculture and dairy products are other great gifts of nature to our country. Published data from different sources report Vitamin-D deficiency to be as high as 90% in ambulatory persons.[7,8] One can call it very rightly a pandemic of Vitamin-D deficiency. Although most of the persons with Vitamin-D deficiency are asymptomatic but short stature, bowing of legs, convulsions, kypho scoliosis, and chest deformities are common manifestations. Recurrent infections and slow response in viral as well as bacterial infections have also been seen in patients with Vitamin-D deficiency.[9]

Epidemiologists and infectious disease experts are foreseeing more and more difficult to treat infections in the future. There is a pressing need of undertaking all possible measures to overcome this pandemic of Vitamin D deficiency. Some cheap and practical preventive measures are increasing exposure time to direct sunshine of the body with minimal clothes. Clinicians can also encourage the general public to intake of Vitamin D-rich diet like fish, banana, egg, and oils, etc. But these diets in ample amount are generally not within the reach of the common man. More practical and affordable is the fortification of common food items e.g. Milk, Rice, flour, ready to eat (RTE) cereals for breakfast.[10] Here comes the role of health and food authorities of government. This program should be taken as a national challenge. The authorities should enforce the manufacturers of such products for fortification at the time of manufacture. Last but not the least, all such measures of fortification should be in line with WHO guidelines for fortification. It will help to get the optimum amount of Vitamin-D as well as avoid its overdose.

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Original Article

EFFECT OF SEASONAL VARIATION ON NUMBER OF CATARACT SURGERIES PERFORMED IN A TRUST HOSPITAL OF LAHORE

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ABSTRACT

Background: There are different factors which control patient access to surgery for cataract. These include locality, gender, literacy rate, monthly income, season, availability of ophthalmologists and operative facilities.

Material and Methods: The place of study is the Ophthalmology department of Akhter Saeed trust hospital, EME Society, Lahore. A Cross-sectional survey was conducted and sample was taken through non-probability conventional sampling method. The results were analyzed by SPSS 20. The frequencies were presented in form of a bar chart and graph.The data of cataract surgeries performed over the last five years from January 2016 to December 2020 was collected.A retrospective data regarding the number of cataract surgeries performed over the last five years was collected. There were 675 patients included in the study who presented in the outpatient department (OPD) and admitted to the eye ward for cataract surgery. After taking written consent these patients were screened for hepatitis B and C and scheduled for cataract surgery. The monthly data of several cataract surgeries performed in the hospital was noted, and patients were followed as per routine.

Results: The data of 675 patients were collected, operated for cataracts over the last five years, from January 2016 to December 2020 in a trust hospital where most patients were operated free. According to data the top three months with a maximum number of surgeries were November, March, and October. The number of patients operated in these three months was 87(12.88%), 86 (12.74%), and 80 (11.85%) respectively. The months which showed the lowest number of patients were August, July, and June 34 (5.04%), 32 (4.74%), and 24 (3.55%) respectively.

Conclusion: Most patients presenting with cataract for surgery chose some specific months (March and November) over others for their cataract operations, depending upon personal believes, preferences, and economical resources.

Key Words: Cataract, Seasonal, Surgery

INTRODUCTION

The opacification of the crystalline lens is called a cataract and mostly it is an age-related process.[1] It is a major cause of reversible blindness and a simple operation can restore eyesight.[2,3]

According to statistics of the Global Burden of Diseases 2017 report, 1.34 billion people are suffering from blindness and vision impairment.[4] The poor vision of a patient adversely affects the quality of life and it is a major health problem. In addition to the government and private sector, a major contribution in cataract surgical management is done by camps organized by charitable organizations. The trust hospitals also facilitate non-affording cataract patients by providing surgical treatment free or at minimal charges.[5]

There are different factors which control patient access to surgery for cataract. These

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include locality, gender, literacy rate, monthly income, availability of ophthalmologists, and operative facilities.[6] Out of these different factors, major factor hindering cataract surgery is the financial resource so that even if the patient has access to the doctor, he/she is unable to afford surgical expenses. The charity hospitals are providing great services to these poor patients in developing countries like Pakistan.

Pakistan is the 6th most populous country in the world. According to World Bank income classification, it's included in the category of "low-middle'' income country so a lot of people are dependent on trust hospitals to get either free treatment or at subsidized rates.[7,8]

MATERIAL AND METHODS

Retrospective data regarding several cataract surgeries performed over the last five years from January 2016 to December 2020 was collected. There were 675 patients included in the study, who presented in the outpatient department (OPD) and admitted for cataract surgery. Out of these 56% (378) were males and 44% (297) were females. After taking written consent these patients were screened for hepatitis B and C and scheduled for cataract surgery. Monthly data was recorded for several cataract surgeries and patients were followed as per routine. In this trust hospital most of the patients belong to low socioeconomic status and cataract surgery was either free or on minimal charges (3000 PKR).

RESULTS

The data of 675 patients was collected, who were operated for cataracts over the last five years, from January 2016 to December 2020 in a trust hospital where most patients were operated free. According to data, the top three months with a maximum number of surgeries were November, March, and October. The number of patients operated in these three months was 87(12.88%), 86 (12.74%), and 80 (11.85%) respectively. On average, it makes 18, 17 and 16 patients per month respectively. Three months that showed the lowest number of patients are August, July and June showing 34 (5.04%), 32 (4.74%) and 24 (3.55%) patients. On average these months showed 7, 6 and 5 patients per month who had their cataract surgery done. The bar charts in Figure 1 show the total number of patients operated over one year from 2016 to 2020. The line graph in Figure 2 shows the average numbers of patients for the last five years.

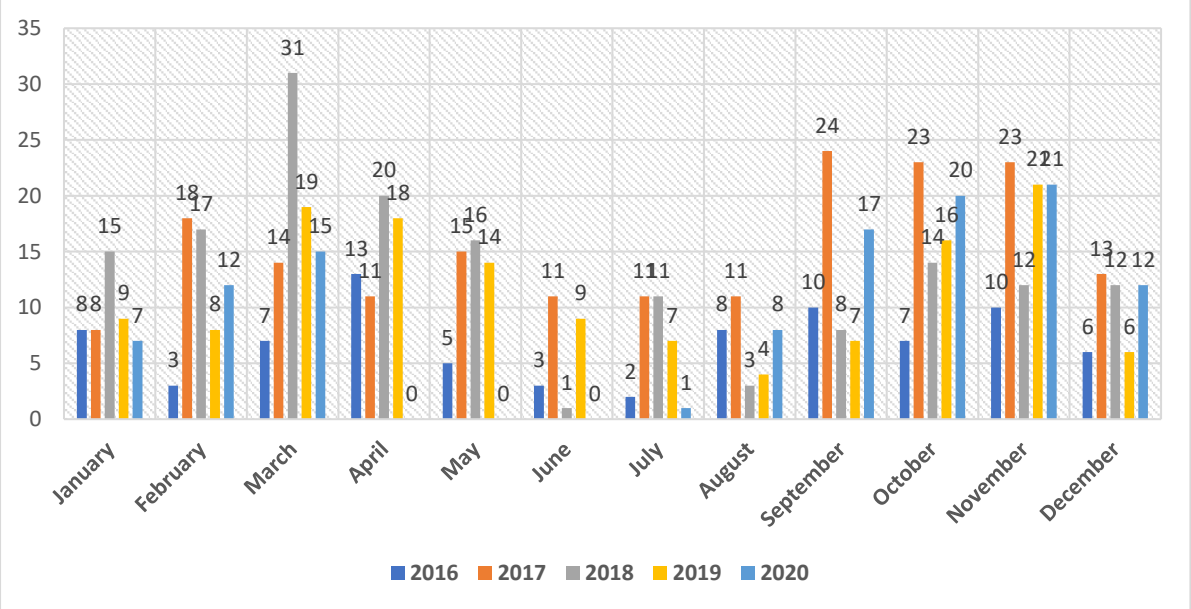

Figure-1: Total number of patients over the 12 months

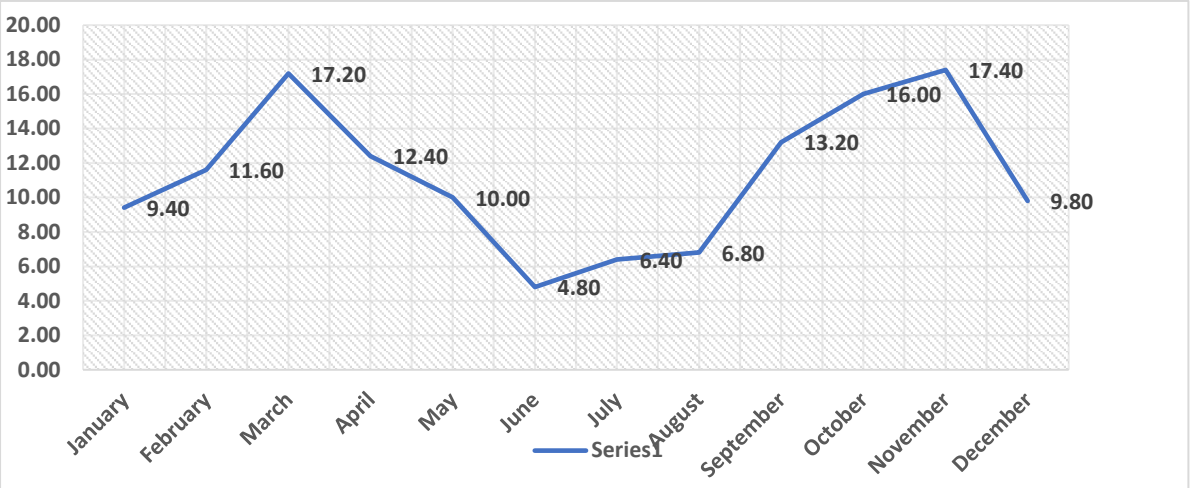

Figure-2: Average number of patients in 5 years

DISCUSSION

More than 90% of cases of preventable blindness burden is contributed by cataract in developing countries.[9,10] It is observed that most patients preferred certain months of the year for elective ocular surgery. There are four different seasons in our country, summer, winter, autumn, and spring.[11,12] The climate changes have strong economic, social, and environmental impacts as the majority of people in Pakistan are related to agriculture, directly and indirectly. More than 70% population in rural areas is dependent on agriculture for their livelihood.[13,14] The province of Punjab is vastly populated and the biggest food provider as it contains agricultural land. There are two crops seasons in a year, one is Rabi (winter crops, grown November to April, including crops like wheat, barley, peas, mustard, and gram) and Kharif (summer crops, harvested from May to October, include crops like rice, maize, cotton, soya bean and sugarcane).[15-18]

The increased number of elective ocular surgeries like cataract operation may be associated with the harvesting season which is months of March/April for Rabi crops and October/November for Kharif. An economic boom is observed in the agriculture sector at end of the harvesting season and people acquire a better economic condition to plan for elective surgeries like cataracts. This may be a contributing factor to an increased number of surgeries observed in March, November, and October.

Extreme high or low weather conditions like June or December showed a lower number of cataract surgeries when the graph of cataract surgeries touches to minimal. The range of higher temperatures in the summer season is 34 C^{o} to 48 C^{o}. Similarly, the temperature range in winters is 3 C^{o} to 15C^{o}.[19] People chose either March, April where the temperature was moderate or October, November when the weather is pleasant.

A decline in the number of surgical procedures is also observed in the Holy month of Ramadhan (month of fasting for Muslims) and on two major religious occasions, Eid ul Fitr and Eid ul Adha. The patients in our region avoided elective surgeries like cataract during monsoon months which starts in July and ends in August in Pakistan with a temperature range of 23^{o}C to 36^{o}C believing that wound healing gets impaired in the rainy season. This presumption was also supported by studies from Southeast Asian countries which showed more cases of postoperative endophthalmitis in the humid and rainy season.[20]

Moreover, most of the patients presenting in eye OPD believed that winters was safer for cataract surgery than summer season as more sweating could be harmful to lid hygiene.[6]

The limitations of the study were a small number of patient's data only from one

hospital. There is no financial interest of authors.

CONCLUSION

Most patients presenting with cataracts for surgery chose some specific months for their operations, over the year, depending upon their believes, preferences, and economical resources.

AUTHOR'S CONTRIBUTION

SR: Writing, Literature review, data organization
MTK: Concept of study
MS: Data collection, Proof reading
AMM: Editing
MA: Editing

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Original Article

PATTERN OF RESPIRATORY SYMPTOMS IN MOTORCYCLISTS IN LAHORE

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ABSTRACT

Background: Road-traffic emissions induce adverse health effects, mainly respiratory health problems. Due to long-term exposure to these air pollutants, motorcyclists are at high risk of developing respiratory illnesses or worsening pre-existent diseases. This study aimed to determine the pattern of respiratory symptoms in motorcyclists in Lahore.

Material and Methods: This descriptive cross-sectional study was conducted from Jan 2019-July 2019 among motorcyclists in Lahore. Using convenience sampling technique, a sample of 209 motorcyclists was selected. A self-constructed pre-tested questionnaire was used. Data were analyzed using SPSS version 23.

Results: The mean age of participants was 34.8±11.4 years. The mean duration of using a motorcycle was 14.9±8.8 years. The majority of motorcyclists traveled 1-3 hours per day. About 38.3% participants reported of having frequent respiratory illnesses. The cough was the main symptom reported by 63.6% of participants. Other reported symptoms were wheezing (20.1%), shortness of breath (37.8%), chest tightness (33.5%), nasal congestion (17.7%), sneezing (39.7%) irritation of the throat (47.4%), and asthma (22.5%). Only 29% of motorcyclists used masks while riding the bikes. Twenty-two percent of respondents gave a history of hospitalization due to respiratory illnesses.

Conclusion: The prevalence of respiratory symptoms among motorcyclists was high in Lahore. The cough was the main symptom, reported by 63.6% of participants. Other symptoms included productive cough, wheezing, shortness of breath, symptoms of rhinitis, irritation of throat and asthma. A very low percentage of motorcyclists used face masks.

Key Words: Air pollutants, Cough, Asthma,

INTRODUCTION

Motorcycles provide an accessible and fuel-efficient means of transport in the developing world. They now compete with other available transport modes as people require greater mobility to access jobs and services.[1] Studies show that people who commute by motorcycle are generally more exposed to air pollutants as compared to people using other modes of transport.[2] Motorcyclists inhale harmful chemicals like dust, smoke, and volatile organic compounds especially when passing through highly air-polluted areas and situations such as traffic jams, highly populated localities, and industrialized areas of the city.[3]

Emissions from vehicles have been the major source of air pollution. High index of air pollution in the city is a complex mixture of pollutants generated from many sources mainly from automobiles. Emissions from motorcycles induce adverse health effects, mainly respiratory health problems, due to the deposition of pollutants in the respiratory tract.[4]

Motorcyclists face the problem of chronic exposure to pollutants. The issue is a major public health concern, especially in metropolitan cities. Researches have shown the presence of nitrogen oxide, carbon monoxide, sulfur dioxide, volatile organic compounds, and particulate matter in ambient air, which may affect lung function.[5]

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The spectrum and severity of respiratory illnesses due to inhalation of harmful pollutants may range from subclinical disease to premature death. The resulting respiratory health issues include diseases of the upper and lower airways. Empirical evidence has shown that these inhaled substances produce a strong pulmonary and systemic inflammatory response and can cause inflammation and allergy in the respiratory tract especially after long exposure.[6]

The most recent WHO assessment shows that nine out of ten people breathe unsafe polluted air; resulting in approximately 7 million deaths annually.[7] Increased concentrations of particulate matter with an aerodynamic diameter of less than 10µg/m^3 (PM10) is associated with an increase hospital admissions, respiratory symptoms and high mortality rate.[8] Long-term exposure to air pollution results in several harmful effects and worsening of pre-existent respiratory problems among motorcyclists.[9]

In a study conducted in Tanzania, respiratory symptoms were more commonly observed in motorcycle drivers as compared to office attendants. The symptom included morning cough, a cough lasting for three months, phlegm lasting for three months, wheezing, and shortness of breath.[10]

South Asia has the worst air quality index in the world. According to the air quality index, Lahore ranked 12th in the list of most polluted cities.[11] Air pollution in Lahore especially on roads is caused by vehicle emissions. There are as many as 4.2 million motorcycles in Lahore.[12] Motorcyclists are exposed to adverse effects of the inhaled pollutants more as compared to the general population. There is a paucity of available data on this topic in our country. At present, little is known about the respiratory health issues of motorcyclists of metropolitan cities of Pakistan. This study was conducted to determine the prevalence and pattern of respiratory symptoms among motorcyclists in Lahore.

MATERIAL AND METHODS

This descriptive cross-sectional study involving 209 current motorcycle drivers of Lahore was conducted from Jan 2019-July 2019. Approval from ethical review board of Akhtar Saeed Medical & Dental College was taken (IRB certificate no M-18/028/-CM). Keeping margin of error at 5%, confidence level at 95%, and prevalence at 15.4%, sample size of 199 was calculated.[4] Sample size was increased by 5% to cover missing data. After adding a 5% increase, a total sample size of 209 was calculated finally. The convenience sampling technique was used for data collection.

A self-constructed pre-tested questionnaire was used which included the socio-demographic variables. Based upon the objectives of the study, research questionnaire was designed after extensive literature review. All participants completed the questionnaire regarding respiratory symptoms (cough, dyspnea, expectorations, chest wheezing) smoking history, socio-demographic characteristics (age, income per month, education level, marital status, smoking history), years of using motorcycle for transportation, duration of traveling per day and co-morbidities (asthma, allergies, TB). Motorcyclists who used motorcycles in their daily routine were included in the study. Those who denied giving consent were excluded.

Data were analyzed using SPSS Version 23. Qualitative data was presented by frequencies and percentages. Mean and standard deviation was calculated for quantitative data.

RESULTS

The mean age of participants was 34.8±11.37 years. All participants were male. The mean duration of using motorcycle was 14.91±8.81 years. Fifty-four (25.8%) participants were unmarried while other were married. Most participants had monthly income ranging from 10000 to 20000/- per month. The mean duration of traveling hours per day 2.65±2.03. (Figure-1)

The majority of participants were between 18-35 years of age, however a small percentage (2.9%) of below 18 years also participated in the study. Among total

participants 118(56.5%) were smokers. Details are mentioned in table 1.

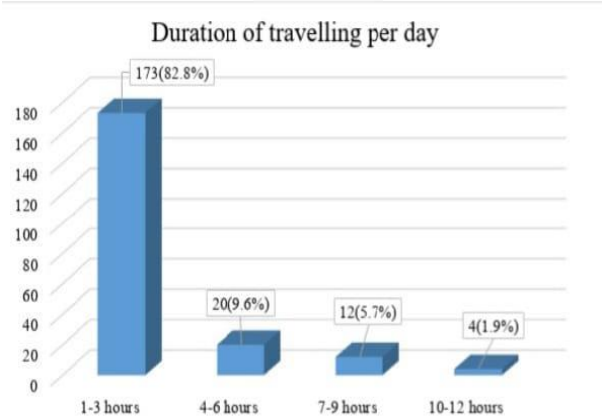

Figure-1: Duration of traveling per day

Table-1: Socio-economic details

Socio-economic details of participants		Frequency	Percentage
Age	Below 18 years	6	2.9
	18-35 years	102	48.8
	36-55 years	91	43.5
	More than 55 years	10	4.8
Monthly income per month	10000-20000	97	46.4
	20000-40000	56	26.8
	More than 40000	27	12.9
	No income	29	13.9
Educational status	Illiterate	55	26.3
	Matric	54	25.8
	Intermediate and bachelor	79	37.8
	Masters and above	21	10
Marital status	Married	155	74.2
	Unmarried	54	25.8
Smoking history	Smokers	118	56.5
	Non smokers	91	43.5
Years of using bikes	Less than 5 years	35	16.7
	5-10 years	43	20.6
	11-20 years	88	42.1
	More than 20 years	43	20.6

Eighty participants (38.3%) reported having frequent respiratory illnesses. The cough was the main symptom reported by 133 (63.6%) participants. Among total of 133, most of the participants (34.9%) had dry cough. Other reported symptoms were wheezing, shortness of breath, chest tightness, sneezing, nasal congestion, running nose, irritation of throat and asthma. Among 209 participants, 46(22%) gave history of hospitalization due to respiratory illnesses. Details of respiratory symptoms are mentioned in table no 2.

Table-2: Self-reported respiratory symptoms experienced by motorcyclists

Respiratory Health issues	Yes (%)	No (%)
Frequent Respiratory illness	80(38.3)	129(61.7)
Cough	133 (63.6)	76 (36.3)
Productive cough	60 (28.7)	149 (71.3)
Dry Cough	73 (34.9)	136 (65.1)
Wheeze	42 (20.1)	167 (79.9)
Shortness of breath	79 (37.8)	130 (62.2)
Chest tightness	70 (33.5)	139 (66.5)
Sneezing	83 (39.7)	126 (60.3)
Nasal congestion	37 (17.7)	172 (82.3)
Running nose	29 (13.9)	180 (86.1)
Irritation of throat	99 (47.4)	110 (52.6)
Asthma	47 (22.5)	162 (77.5)
Hospitalization due to respiratory illness	46 (22)	163 (78)

Use of face masks while riding the motorcycle was reported by only 60(28.7%) of participants.

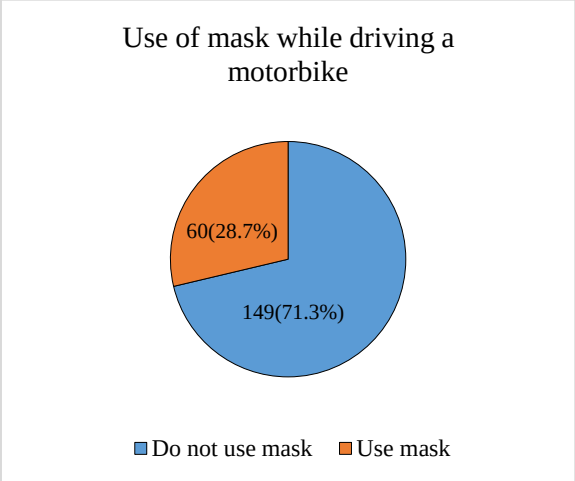

Figure-2: Use of face mask

DISCUSSION

The findings of this study revealed high prevalence of respiratory symptoms among

motorcyclists in Lahore. This study was following the findings of previous studies where urban city motorcyclists were found to have health issues related to respiratory system.

Traffic related air pollution affects respiratory systems of motorcyclists. About 38% respondents reported of having frequent respiratory illnesses. The cough was the main symptom reported by 64% of participants. The findings of this study were also comparable to study in Tanzania, which showed that the prevalence of respiratory symptoms was higher among motorcycle taxi drivers compared to office attendants for all symptoms cough 55.5%, phlegm 53.2%, wheezing 29% and shortness of breath 47.7%. All these associations were statistically significant.[10] Both studies show high prevalence of respiratory symptoms.

Another study conducted in Nigeria, showed cough was present in 71% of commercial motorcyclists.[13] The higher percentage may be attributed to more exposure to air pollutants on roads.

Study conducted by Ekpenyong et al. in Nigeria described that higher adjusted odd's ratio was found regarding symptoms like cough with phlegm, wheezing, breathlessness, chest pain, rhinorrhea and irritation of throat in motorcyclists.[14]

In this study shortness of breath was reported by 37.8% of participants. Another research carried out in Benin using self- reported data collection tool distributed to commercial motorcycle drivers, showed 23% of the drivers had difficulty in breathing.[15]

Exposure to air pollution from road traffic is often associated with nasal symptoms like rhinitis and sneezing. In this study, nasal symptoms running nose, sneezing and nasal congestion were main symptoms reported by motorcyclists. This was following the study conducted by Brant T et al.[16] Similar findings were described by researchers in Nigeria. In their study, most commonly reported symptoms were cough (46.0%), dust allergies (40.7%) sneezing (34.0%) and catarrh among tricyclists in Nigeria.[17]

Use of masks while riding the motorcycle was reported by only 29% of participants. Different results were found in a study in Vietnam. Most of the motorcycle commuters in Vietnam, use face masks, especially during rush hours.[18] The difference may be due to different levels of awareness and literacy in both countries.

CONCLUSION

The prevalence of respiratory symptoms among motorcyclists was high in Lahore. Commonly reported symptoms were cough, wheezing, shortness of breath, sneezing, irritation of throat and asthma. More than one third of respondents reported having frequent respiratory illnesses.

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AUTHORS CONTRIBUTION

AMJ: Conceived the topic, designed methodology and prepared final manuscript

IM: Verified analytical methods, supervised the project and gave final approval of manuscript

SM: Carried out literature search and analyzed data

TW: Carried out literature search and collected data

UA: Carried out literature search and collected data

MM: Carried out literature search and collected data

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Original Article

PREVALENCE OF INTESTINAL PARASITIC INFESTATIONS IN RELATION TO WASTING; AMONG PRE-SCHOOL CHILDREN IN SKARDU, PAKISTAN

Muhammad Faisal Afridi[1], Kulsoom Farhat[2], Shabana Ali[3], Mehwish Qaisrani[4], Hajira Ahmed[5], Zaheer Ahmed[6]

ABSTRACT

Background: Parasitic infestations are one of the prominent public health problems. Children are affected the most and result in Malnutrition (Undernutrition), Iron deficiency anemia, learning problems and Gastro-intestinal disturbances. Malnutrition (undernutrition) may manifest in four broad forms: undernutrition, wasting, stunting, and micronutrient deficiencies. WHO defines 'wasting' as low weight-for-height. It often indicates recent and severe weight loss, although it can also persist for a long time. Wasting in children is associated with a higher risk of death if not treated properly. This community based, cross sectional study was aimed at determining the prevalence of intestinal parasitic infestations and their impact on the nutritional status, among pre-school children in Skardu, Pakistan.

Material and Methods: A sample of 300 pre-school children was selected through convenience sampling. The demographic data was collected from the parents of children. The intestinal parasites were identified in the stool samples. The pediatric weight scale was used to measure the recumbent weight and the adult weight machine was used to measure the standing weight. The cut off limit for wasting was set at < -2SD of weight-for-age z score.

Results: The prevalence of *A.Lumbricoides, Cryptosporidium, H.Nana and Giardia* was noted to be 22.33%, 14%, 9.3% and 8.0% respectively. Out of 300 preschool children, 47(15.7%) were found to be wasted. Out of wasted children, majority (35 children) were infested with some kind of intestinal parasite. This difference was statistically significant (p-value 0.001845).

Conclusion: In this study, we found significant prevalence of intestinal parasitic infestation in pre-school children of Skardu vis vis and its impact on the nutritional status. It is suggested that health promotion strategies should be developed, not only to control the intestinal parasitic infestations but also to improve the nutritional status of pre-school children.

Key Words: Hymenolepis Nana, Ascaris lumbricoides, Cryptosporidium, Giardia

INTRODUCTION

A large population of the world gets infected with parasitic infections.[1,2] These include the Ascaris lumbricoides, Giardiasis, Hymenolepis nana and Cryptosporidiosis. The children are targeted the most where it becomes manifest as iron deficiency anemia, malnutrition, learning problems and Gastrointestinal (GIT) disturbances.[3] Growth is an important gauge that predicts the well-being of a child. WHO defines 'wasting' as below normal 'weight-for-height. It often refers to recent and severe weight loss, although it can also persist for a long time. It usually occurs when a person has not had food of adequate quality and quantity; and/or

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they have had frequent or prolonged illnesses. In children, wasting is associated with a higher risk of death if not properly treated. Growth gets affected drastically by the living conditions and the presence of diseases.[4] Most of the under developed countries present a high prevalence of these infections with impaired growth patterns.[5-7] Intestinal parasitic infections are amongst the most ignored diseases of the tropical region and constitute a major problem in respect to public health in such areas.[8] These infections are most common among the children of such areas where there are poor environmental conditions and defective disposal of human feces. The commonest intestinal parasite is Ascaris lumbricoides that infects about 1 billion people worldwide followed by Hymenolepis nana and Giardia lamblia.[9-11] It has been observed that the most commonly affected age group are the children, because of their unhealthy habits; including their frequent handling and playing with infested soils. Moreover, they are less careful while they ingest food with dirty hands, more often consume contaminated food and above all the unhygienic bathroom practices. The same factors may have resulted in the malnourishment of the children. Northern areas of Pakistan being in the remotest and tough mountainous terrain remained isolated from mainstream studies. Not much work has been done to identify and quantify the health related issues of children of these areas. Whatever work was done, it was carried out focusing only the prevalence of parasitic infections in the specific localities, however less work has been conducted to find its association with the nutritional status. Therefore, this study was conducted to find the prevalence of parasitic infections and to determine its association with wasting in the pre-school children in remotest northern area of Pakistan i.e. Skardu.

MATERIAL AND METHODS

This cross-sectional study was conducted from 15 August 2016 to 30 January 2017 in a secondary care hospital, as well as in the community of district Skardu, located at an altitude of 2500 meters. We selected 300 children less than 5 years of age, for our study. The sample size was calculated using the online 'Rosoft calculator'; at a 95% confidence level and 5% margin of error. The non-probability convenience sampling technique was used to collect required sample. All those were included with less than upper cut off point of age of 5 years. Those children whose parents gave history of comorbidities like congenital malformations, genetic disorders or chronic illness were excluded from the study. Similarly, all those were not included whose parents/caretakers did not give consent. Informed consent was taken from parents/guardians and approval of ethical committee was obtained before start of the study.

For collection of stool samples, mothers were provided with labeled and sterilized containers. Stool samples were processed in the laboratory within 8 hours of sample collection. The ova and cyst were examined with direct fecal examination and protozoa were detected with iodine staining. Social and demographic data were collected using a structured questionnaire which was filled by parents of the children. The anthropometric measurements were performed by trained staff. The pediatric weight scale was used to measure the recumbent weight and the adult weight machine was used to measure the standing weight. Lower cutoff limits of z-scores were observed which helped to determine the status of wasting. The cut off limits for wasting were set at < -2SD of weight-for-age z score.

SPSS version 20 was used to analyze the data. Z scores for the weight for age indices were calculated using WHO Anthro-plus version 1.0.4 software.

RESULTS:

The gender distribution of 300 children was 56% males and 44% females. The socioeconomic (SE) distribution of the sample is shown in Figure 1. The majority (85%) of sample belongs to the low or low middle socioeconomic group i.e. 165(55%) and 90 (30%) respectively (p-value <0.0001).

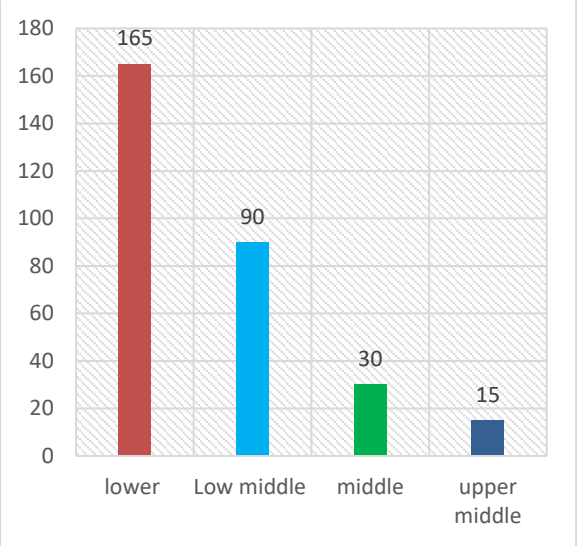

Figure-1: Socioeconomic distribution

Among the sample of 300 preschool children, 161 (53.67%) had parasitic infestation and 139 (46.33%) had no parasites in their stools. However, this difference was statistically nonsignificant (p-value > 0.5). (Figure-2)

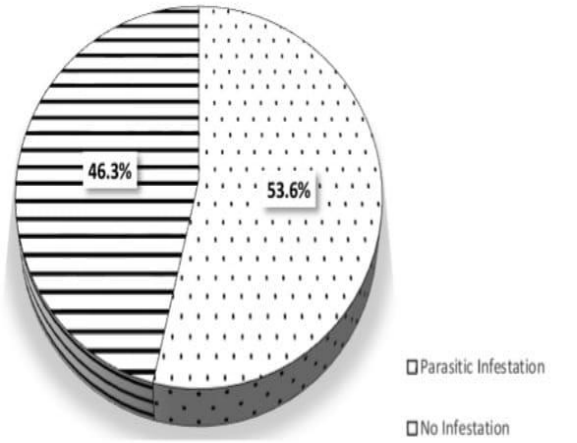

Figure-2: Prevalence of Parasitic infestation

Among the male preschool children, the percentage of parasitc infestation of any kind, was found to be 31%; while among all the female preschool children 22.7% had parasitic infestation. Similarly, out of 161 children who had parasitic infestation 93 were male and 68 were female. (Table-1). However, gender difference among those with parasitic infestation was statistically non-significant (p-value = 0.590).

Table-1: Gender-wise Parasites Infestation in the study sample (n=300)

Presence of Parasite	Male		Female	
	N	%	N	%
Yes	93	31.0%	68	22.7%
No	76	25.3%	63	21.0%
Total	**169**	**56.3%**	**131**	**43.7%**

p-value = 0.590

Looking at different types of intestinal parasites, it was found that 22.33% of children were infested with Ascaris Lumbricoides, while 14.0% of children with Cryptosporidium; 9.3% and 8.0% with Hymenolepis Nana and Giardia respectively (p-value < 0.00001).

Table-2 shows the distribution of wasting in children about different parasite types. Total of 253 (84.3%) was well-nourished; out of these 126 were infested with intestinal parasites while 127 were parasite-free. Similarly, 47 (15.7%) children were found to be wasted; out of these 35 children were infested with some kind of intestinal parasites. This difference is significant statistically, with Chi square statistic of 9.6981 and p value of 0.001845 (i.e. p < 0.05)

Table -2: Wasting in Pre-school children with Different Parasites (n=300)

Parasitic Infestation	No Wasting		Wasting		G Total
	N	%	N	%	
No	127	42.3%	12	04.0%	**139**
Yes	126	42.0%	35	11.7%	**161**
Total	**253**	**84.3%**	**47**	**15.7%**	

p-value = 0.001845

DISCUSSION

In this study we have attempted to highlight the issue of parasitic infections and the nutritional status of pre-school children in the district Skardu of Pakistan. We had selected

this region for our study as it is one of the remotest areas of Pakistan, considered to be deprived of the standard necessities of living. Its location at an altitude of nearly 2,500 meters, makes its residents exposed to extreme weather conditions. In such weather conditions, it becomes difficult to maintain hygiene especially the younger children who become very reluctant to put their hands into cold water. We, therefore, selected the children of this region as our subjects keeping in view the failure of these people in maintaining hygiene due to lack of standard conditions of sanitation, largely due to the low socioeconomic conditions.

The overall frequency of parasitic infections in our study sample was 53% which pointed towards the living standards of this locale. Out of this 53%, the major bulk was the male children in an age group of 3 years to 5 years. This is the age group of children that is up and about. Since they were the ones who would eat by themselves and would play outdoors, got infected the most. Somehow, the younger age groups got natural protection in the form of being breastfed and more contained within the premises of houses. These results were in line with the results of Tine and colleagues.[12]

These parasitic infections had impacted the health of the children included in our study. We observed that 15.7% of the studied children were malnourished (wasted). Out of these, the children infected with H.Nana, Cryptosporidium and Giardia were mostly stunted (3.7%, 3.0% and 2.7% respectively) followed by ascariasis (2.3%). A study done in 2018 shows that 17.1% of the children of school going age were wasted.[12] Similarly Amare and colleagues found out that 8.9 % of children were wasted because of parasitic infections.[2] An African study came up with a figure of 19.6 % wasting observed in school children in Ethiopia.[1] Suraweera and colleagues also reported similar figure of 19.3% of children being wasted.[13] The main reason for this high prevalence of under nutrition is explained by the poor socio-economic status of the people of these areas. Unlike the results for H. Nana by Abdel et al with a prevalence of 32.6%, our sample had a 9.7% prevalence.[14] In yet another study conducted in a village Budhni of Peshawar, the prevalence of H.Nana and giardia was found 6% and 19% respectively.[15]

We observed that the intensity of infections increased with the advancing age of the child. Moreover, there was an increase in the severity of wasting with this increase in age. It shows that less the nutrition was available for the infected children as more worms were competing for the child's food. So this all points towards the conclusion that with an increase in the worm load, there are more chances that the nutritional status of the child be drastically affected. This has affected those children who were more independent, running around in open. Some important factors like socio-economic conditions, poor sanitary facilities and dietary habits of the people may be the major reasons for the findings in this study.

Wasting indicates the children at high risk and points towards the acute nutritional changes. Somehow it does not stand corrected while predicting long term changes.[16] The main reason for it remains the decreased intake of food along with the presence of recurrent infections. It ultimately affects the cognitive development of the children.[17] Wasting may be an indicator of multiple issues including poor nutrition, less education and large family sizes.[18,19] These studies had been conducted on parasitic infections and nutritional statuses, however most of the studies could not bring out any significant association between the two.[20]

CONCLUSION

There is significant relation of intestinal parasitic infestation with wasting that had affected the nutritional status of pre-school children of Skardu. This pinpoints the hazards of bad sanitation and poor hygienic conditions. These findings will help in designing the strategies to combat this situation, improving the overall productivity of an area.

AUTHOR'S CONTRIBUTION:

MFA: Conceived and designed the study
KF: Collection of Data, Writing
SA: Final drafting of the manuscript
MQ: Data Analysis, Editing
ZA: Data analysis
HA: Critically reviewed the manuscript

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Original Article

COMPARISON OF DETEMIR VERSUS NEUTRAL PROTAMINE HAGEDORN FOR MANAGEMENT OF FEMALES PRESENTING WITH DIABETES DURING PREGNANCY.

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ABSTRACT

Background: Gestational diabetes mellitus (GDM) is the type of diabetes, first diagnosed during pregnancy. Increased Body mass index (BMI), previous history of gestational diabetes, family history of type II diabetes and polycystic ovarian syndrome are risk factors for the development of gestational diabetes mellitus. Gestational diabetes resolves after pregnancy in most cases. The main objective of the study was to compare the efficacy with Detemir versus Neutral Protamine Hagedorn for management of pregnant females presenting with gestational diabetes.

Material and Methods: A randomized Control Trial was carried out in obstetrics & gynecology department, Unit I, Services Hospital, Lahore for 6 months from 05-04-2018 to 05-10-2018. Total of 710 females were inducted into study. Then participants of study were divided into two groups. Then females were advised to take one shot daily at same time and followed-up till 36 weeks. Reports were assessed and level of HbA1c was noted. If HbA1c<6.0%, the efficacy labeled. SPSS version 20 was used to analyze all the collected data.

Results: The mean age of participants in Detemir group was 29.25±6.14 years whereas in the NPH group was 29.97±5.97 years. Efficacy was achieved in 267 cases (175 with determine vs. 92 with NPH, p-value=0.001).

Conclusion: Detemir is significantly more effective than NPH for management of pregnant females presenting with gestational diabetes.

Key Words: Gestational diabetes mellitus, Blood glucose level, Body mass index

INTRODUCTION

Gestational diabetes mellitus (GDM) is the type of diabetes, first diagnosed during pregnancy. International Association of Diabetes in Pregnancy Study Groups (IADPSG) recommended criteria are followed in diagnosing GDM and this is based on Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study.

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Implications of GDM are both on fetus and mother and early diagnosis and treatment of GDM should be done to improve pregnancy outcome.[1]

Pregnancy exerts a diabetogenic effect, even in women not having diabetes, and so it affects feto maternal metabolism. The reported incidence of GDM is 2% to 14% among pregnant females. The first line of therapy for women diagnosed with gestational diabetes is lifestyle and diet modification; and when these changes fail to bring required glycemic control, drugs like insulin should be added.[2]

Healthcare providers must have a proper understanding of managing gestational diabetes with insulin, to give absolute care to pregnant women diagnosed with diabetes.[3] Unfortunately, to achieve euglycemia, the available preparations of insulin and treatment regimens are not sufficient.[4] Randomized controlled trials studying basal

insulin analogs for the treatment of gestational diabetic women are sparse.[5]

Detemir is as good as Neutral Protamine Hagedorn (NPH) in terms of perinatal outcomes in women whose pregnancy has been complicated with gestational diabetes and so far, no safety concerns have been reported.[6] A randomized trial conducted in 2012 found that with Detemir, the efficacy (HbA1c<6.0% at 36 weeks) was achieved in 41% cases while with NPH in 32% cases. The difference, however, was insignificant (p=0.280).[7]

The rationale to conduct this study was to compare the efficacy of Detemir versus NPH for management of pregnant females presenting with gestational diabetes. Literature has reported that Detemir is more effective than NPH without compromising the health of pregnant female and also cause fewer side effects like hypoglycemia. But the work done in this regard is not sufficient and local data is lacking altogether. So we want to conduct this study to find the more effective drug. To enable the results of this study to be implemented in the future.

MATERIAL AND METHODS

A randomized Control Trial was carried out in obstetrics & gynecology department, Unit II, Services Hospital, Lahore for 6 months from 05-04-2018 to 05-10-2018. In total, 710 participants were enrolled in trial by using non-probability, consecutive sampling. The calculated sample size was 710 cases; 355 in both groups with power of test as 80%, level of significance as 5% and taking percentage of efficacy i.e. 41% with Detemir and 32% with NPH in pregnant females presenting with GDM. Pregnant females ranging from 18-40 years of age presenting during gestational age >20 weeks (on USG) presenting with GDM (as per operational definition) were included in study. Patients having pregnancy complicated with hypertensive disorder and those already diagnosed as a case of type 1 or type 2 diabetes were not included in this study.

Prior approval was taken from ethical committee of the Hospital (IRB). The 710 females who fulfilled the selection criteria were included in study. Informed consent was gained. Demographic information (age, name, parity, gestational age, and contact) was also obtained. Then participants were randomly grouped in two by using lottery method. Females in group 1 were given subcutaneous Detemir (100 units/mL; Novo Nordisk) while in group 2, females were given subcutaneous NPH (100 units/mL; Novo Nordisk). Then females were advised to take one shot daily at same time and were followed-up till 36 weeks. At 36 weeks of pregnancy, blood sample of the female was taken and was sent to the pathology department of hospital for measurement of HbA1c. Level of HbA1c was noted. If HbA1c<6.0%, the efficacy was labeled (as per operational definition). A pre-designed proforma was used to collect all the information. SPSS version 20 was used to analyze all the collected data. Quantitative variables like age, gestational age, HbA1c were calculated as mean and standard deviation. Qualitative variables like parity and efficacy were calculated as frequency and percentage. To compare both groups, the Chi-Square test was taken into use. The significant value of the chi-square test was set as P-value ≤0.05. Data stratification for age, BMI and parity was done. Chi-square test was applied to compare the efficacy in stratified groups taking p-value≤0.05 as significant.

RESULTS

In this study total of 710 females were enrolled. The mean age of the females in the Detemir group was 29.25±6.14 years whereas it was 29.97±5.97 years in the NPH group. The mean gestational age of the females in Detemir group was 26.29±3.73 weeks whereas in NPH group it was 25.54±3.69 weeks. The mean value of BMI of the females in Detemir group was 25.58± 4.07 kg/m2 whereas the mean value of BMI in NPH group was 25.59±4.062 kg/m2. The mean value of HbA1c at 36 weeks of the females in Detemir group was 6.21± 1.47 whereas the mean value of HbA1c of the

females in NPH group was 7.42±1.62. (Table-1)

Table-1: Comparison of age, gestational age, BMI and HbA1c at 36 weeks in study groups

		Group Study	
		Detemir	NPH
Age (years)	N	355	355
	Means	29.25	29.97
	SD	6.14	5.97
Gestational age (weeks)	N	355	355
	Means	26.29	25.54
	SD	3.73	3.69
BMI (Kg/m2)	N	355	355
	Means	25.58	25.59
	SD	4.07	4.062
HbA1c 36 weeks	N	355	355
	Means	6.21	7.42
	SD	1.47	1.62

In the present study, there were 144(20.28%) nulliparous females, 158(22.25%) had parity 1, 135(19.01%) females had parity 2, 120(16.90%) females had parity 3, 75(10.56%) females had parity 4 and 78(10.99%) females had parity 5. (Figure-1)

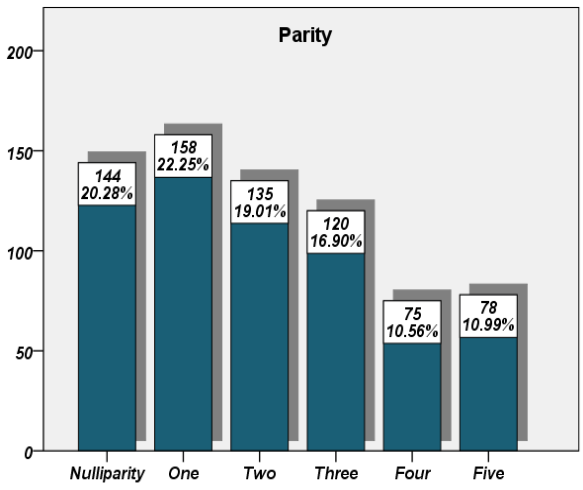

Figure-1: Frequency distribution of parity

According to this study, 267 females achieved efficacy, in which 175 were from Detemir group and 92 were from NPH group. Similarly, 443 females did not achieve efficacy, in which 180 belonged to Detemir group and 263 belonged to NPH group. Between study groups, significant statistical difference was found with efficacy i.e. p-value=0.001. (Table-2)

Table-2: Comparison of efficacy in study groups

		Group Study		
		Detemir	NPH	Total
Efficacy	Yes	175	92	**267**
	No	180	263	**443**
Total		**355**	**355**	**710**

Chi value=41.35
p-value=0.001*

The results of this study clearly showed that among females with age ≤ 30 years, 160 females achieved efficacy of which 103 belonged to Detemir group and 57 belonged to NPH group. Likewise the females with age > 30 years, 107 females achieved efficacy of which 72 belonged to Detemir group and 35 belonged to NPH group. Between study groups, significant statistical difference was found with efficacy stratified by age i.e. p-value=0.001 & 0.001 respectively. (Table-3)

Table-3: Comparison of efficacy in study groups stratified by age

Age (years)	Efficacy	Study Groups		Total	p-value
		Dete-mir	NPH		
≤ 30	Yes	103	57	**160**	**0.001**
	No	103	126	**229**	
> 30	Yes	72	35	**107**	**0.001**
	No	77	137	**214**	

The study results showed that among females of primary parity, 124 females achieved efficacy, of which 78 belonged to Detemir group and 46 belonged to NPH group. Likewise, the females with multiparity, 143 females achieved efficacy, of which 97 belonged to Detemir group and 46 belonged to NPH group. Between study groups, significant statistical difference was found with efficacy stratified by parity i.e. p-value=0.002 & 0.001 respectively. (Table-4)

Table-4: Comparison of efficacy in study groups stratified by parity

Age (years)	Efficacy	Study Groups		Total	p-value
		Dete-mir	NPH		
Primary	**Yes**	78	45	**124**	**0.002**
	No	79	99	178	
Multiple	**Yes**	97	46	143	**0.001**
	No	101	164	265	

The study results showed that among females with normal BMI, 119 females achieved efficacy of which 81 belonged to Detemir group and 38 belonged to NPH group. Likewise, the females with abnormal BMI, 148 females achieved efficacy of which 94 belonged to Detemir group and 54 belonged to NPH group. Between study groups, significant statistical difference was found with efficacy stratified by BMI i.e. p-value=0.001 & 0.001 respectively. (Table-5)

Table-5: Comparison of efficacy in study groups stratified by BMI

Age (years)	Efficacy	Study Groups		Total	p-value
		Dete-mir	NPH		
Normal	**Yes**	81	38	119	0.001
	No	84	127	211	
Abnormal	**Yes**	94	54	148	0.001
	No	96	136	232	

DISCUSSION

GDM develops during pregnancy. It means that a woman was having a normal blood glucose level before pregnancy now has raised blood glucose levels in pregnancy. During pregnancy, a balance is maintained between placental hormones, which increase blood glucose level, and pancreatic insulin. In GDM, this balance is disturbed by increase hormonal production by the placenta and blood glucose levels are increased

In this study the efficacy regarding the management of pregnant females presenting with GDM was achieved in 267 females in which 175 were from Detemir group 92 were from NPH group. Between study groups, significant statistical difference was found with efficacy i.e. p-value=0.001.

A study by Russell-Jones D et al. concluded that once-daily dosage of insulin Detemir at bedtime, provided better fasting blood glucose level with persistence in daily levels and steady control of mean blood glucose level over 24 hours as compared to NPH insulin, also, to decrease risk of night time hypoglycemia.[8] If the insulin Detemir is administered in evening time, it can further improve the fasting blood glucose levels, as findings suggest in study.[9]

Detemir is as good as Neutral Protamine Hagedorn (NPH) in terms of perinatal outcomes in women whose pregnancy has been complicated with gestational diabetes and so far, no safety concerns have been reported.[6]

Pollock RF and Chubb B concluded that the short-term evaluation of health economics revealed that insulin Detemir is an alternative to insulin NPH in the United Kingdom as it has lower rates of hypoglycemia in Type 1 and Type 2 Diabetes and fewer chances of weight gain in Type 2 Diabetes.[10]

One study demonstrated that the Detemir insulin is a convenient substitute for NPH insulin in terms of cost in insulin naive type 2 Diabetics patients.[11]

One more study by B. M. Frier et al concluded that insulin Detemir treatment provided better outcomes in terms of better glycemic controls, decreased day to day variability of blood glucose, lower incidence of hypoglycemia and less weight gain as compared with NPH insulin.[12] Another study concluded that Detemir insulin is associated with significantly good control of fasting blood glucose levels, and almost same control of HbA1C and incidence of hypoglycemia compared with NPH.[13] On the other hand, study showed NPH and Detemir to have almost the same efficacy in term of mean blood glucose control.[14]

One more study by Kimberly M. Herrera et al also resulted that Detemir insulin is as effective as NPH Insulin for the management of GDM and Type 2 Diabetes in pregnancy.

[15] No significant difference was found in both groups in terms of weight gain & perinatal outcome. The NPH group reported more incidence of hypoglycemia per participant.
A randomized trial conducted in 2012 found that with Detemir, the efficacy (HbA1c<6.0% at 36 weeks) was achieved in 41% cases while with NPH in 32% cases. However, the difference was insignificant (p=0.280).[7]

CONCLUSION

This study concluded that the Insulin Detemir is significantly more effective than insulin NPH for management of pregnant females presenting with GDM.

AUTHOR'S CONTRIBUTION

MK: Data collection
MR: Study design
KK: Conception of idea
MU: Drafting article
HN: Editing
NA: Data analysis

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Original Article

KNOWLEDGE AND ATTITUDE REGARDING USE AND MISUSE OF ANTIBIOTICS IN PATIENTS REPORTING TO RURAL HEALTH CENTER (RHC) SANN

Saima Aleem Khan[1], Muhammad Asif[2], Gulmina Saeed Orakzai[3]

ABSTRACT

Background: Antibiotics are amongst the most widely used drugs across the globe but owing to their inappropriate use, people tend to develop resistance. Many factors are associated with their irrational use. This study was conducted in an attempt to understand and evaluate the knowledge and attitude of the patient regarding the use and misuse of antibiotics.

Material and Methods: This cross-sectional study was conducted at Rural Health Center (RHC) Sann over 10 months from 1st November 2018 to 31st August 2019. Both males and females over the age of 15 years were included in this study subject to their willingness. The sample size was 1200. A pre-tested, pre-validated structured questionnaire was used for data collection.

Results: The sample size was 1200, out of which 43.3% were male and 56.7% were female. 78.4% were married. 68% of respondents thought that antibiotics were always safe to use. 71% responded that they take antibiotics from friends and family without even consulting a medical practitioner. 42% responded that they completed the course of treatment even if they felt better.

Conclusion: This specific study reflects a gap regarding the appropriate knowledge about the usage of antibiotics and owing to this the misuse is likely to happen.

Key Words: Attitude, Antibiotics, Rural Health Center

INTRODUCTION

Humans are using drugs in all forms for ages in different forms but in recent times antibiotics are amongst the quite regularly used and prescribed medications for different ailments. The sole purpose of these drugs was to contribute effectively to the cure of disease, but this needed to be prescribed by the authorized health care provider. This led to the drafting of drug regulatory guidelines but in the majority of the under developed and developing countries, over-the-counter sale of antibiotics without any authentic prescription became a routine practice. Such irrational use of antibiotics contributed significantly to drug resistance and people are generally not aware of it at all. The World Health Organization set the theme of World Health Day as "Combat Antimicrobial Resistance: No Action Today, No Cure Tomorrow.[1]

Globally, 50% of antibiotics are purchased without any prescription, and many pharmacies and vendors without having any license had a major share in such type of illegal activity.[2,3] Factors including lack of awareness regarding proper usage of the drug, illiteracy, lack of strict drug regulation and monitoring policies, and illegal sales emerged as a source of developing resistance.[4] Although antibiotics cover a wide range of infections and when prescribed properly, they do contribute to the healing effect.[5]

Literature has contributed significantly in pinpointing the situations where irrational use of antibiotics, self-medication made the treatment questionable and reported an increase in patients asking for antibiotics unnecessarily.[6-8] In countries like Pakistan, where rural population due to lack of awareness follow word of mouth and use drugs just on the recommendation of friends

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and family. Many studies conducted in different parts of the world do report unsatisfactory knowledge about the use of antibiotics.[9,10] Keeping in view the trend in antibiotic usage, this study was conducted in rural populations to get a better understanding of the level of knowledge and practices observed while using antibiotics.

MATERIAL AND METHODS:

This cross-sectional study was conducted at RHC Sann, Jamshoro from 1st November 2018 to 31st August 2019. A similar parallel study was conducted in dental out patient department of the same rural health center for six months. A nonprobability, convenient sampling technique was incorporated and patients (male & female) of age >15 years were included in the study after seeking consent. The sample size was calculated using openepi.com with 95% CI, absolute precision of 3%, and anticipated knowledge regarding harm related to misuse of antibiotics as 59%. The calculated sample size was 1032 but to increase the statistical power to study the sample size was increased to 1200. The questionnaire covered the demographic profile, knowledge, and practices about the use and misuse of antibiotics. The confidentiality of all the participants was ensured. Data were analyzed using SPSS version 24. Frequencies and percentages were used to represent the responses.

RESULTS

In this study, a total of one thousand and two hundred participants were included and the response rate was 100%. Table 1 represents the demographic profile of the participants including gender, age, marital status, and educational status of the participants out of 1200. 43.3% were male and 56.7% were female. The age group of 15-49 years showed the maximum percentage of 81.5%. The number of married participants (78.4%) was more than unmarried (18.4%). Regarding educational status, 68.7% were uneducated, 16.9% were middle pass and 14.3% were high school pass.

Table-1: Demographic profile of the participants

Characteristic		Frequency	Percentage %
Gender	Male	520	43.3%
	Female	680	56.7%
Age	15 – 49	979	81.5%
	50 & above	221	18.41%
Marital status	Married	941	78.41%
	Unmarried (single)	259	21.58%
Educational status	Uneducated	825	68.75%
	Middle	203	16.9%
	High school & above	172	14.3%

Table 2 represents the knowledge, attitude, and practices of the study participants regarding the use and misuse of antibiotics in the respondents.

Table-2: Knowledge and attitude regarding use and misuse of antibiotics

Questions	Yes	No
Antibiotics are always safe to use	68.3%	31.7%
Antibiotics treat any type of infection regardless of its nature (bacterial, viral)	71%	29%
Taking antibiotics speeds up recovery	78%	22%
Regular use of antibiotics develops resistance	26%	74%
Antibiotics can be harmful for children teeth	32%	68%
Antibiotics are safe to use during pregnancy	35%	65%
Ever purchased antibiotic from outside the hospital at least once	63%	37%
Ever purchased antibiotic without prescription	65%	35%
Take antibiotics mentioned by friends or family without even consulting doctors	71%	29%
Complete the full course of treatment even if you feel better	42%	58%
Keep unnecessary antibiotics at home to be used later	57%	43%
Self-request doctors for antibiotics prescription even if it is not needed/ unnecessary	81%	19%
Use antibiotics even for cough and sore throat on self-medication basis	86%	14%
Keep antibiotics in kitchen cabinets/ open	63%	37%

DISCUSSION

This study was an attempt to get a better understanding of the rural population's knowledge and practices while using antibiotics. 68.3% labeled the antibiotics to be safe for use and 78% thought that they speed up their recovery. The results of this study showed that 71% of the participant responded about the antibiotic use for any type of infection were in line with another similar study.[11,12] Similarly, 68% of the respondents were ignorant regarding the effect of antibiotics on their child's dentition which closely follows the result of a Saudi Arabian and Indian study in this regard.[12, 13]

Without prescription antibiotics, the purchase was practiced by around 65% of the study participants which was also reported in studies conducted in different parts of the world.[14-16] This also led to another practice of using antibiotics without consulting any physician but on the recommendation of peers and family members. Both these practices are closely knit and interlinked. The participants (58%) reported not complete the full course of treatment which is also established from literature to be a leading cause of drug resistance.[17]

Since this study was conducted in a rural area, patient pressurizing physicians for unnecessary drug prescriptions was also observed as 81% self-request for antibiotics. They were found to be strongly believing that the more the number of drugs is prescribed, the more rapid is their recovery. Once refused, the ease of getting over-the-counter medications helps them to practice their belief. The results projected in table-2 strongly reflect the gap in the appropriate knowledge regarding the proper usage of antibiotics.

CONCLUSION

Based on the results of this study, it was evident that respondents were not having adequate knowledge about antibiotics usage. To minimize the irrational usage of antibiotics, there is a dire need to provide the appropriate awareness at all levels, especially to rural communities.

AUTHOR'S CONTRIBUTION

SAK: Drafting and review
MA: Conception of idea
GSO: Data collection & editing

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Review Article

RENIN – ANGIOTENSIN ALDOSTERONE SYSTEM (RAAS)

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

Abstract

In the control of arterial blood pressure, fluid, and electrolyte balance, the renin-angiotensin-aldosterone system (RAAS) plays a very important role. Juxtaglomerular (JG) cells secrete renin which converts angiotensinogen to angiotensin 1 which is further changed into angiotensin II by angiotensin-converting enzyme (ACE) located in endothelial cells of the lung capillaries. Angiotensin II exerts its actions to regulate blood pressure, fluid, and electrolyte balance.

Key Words: Renin, Angiotensinogen, Blood Pressure

INTRODUCTION

Renin-Angiotensin Aldosterone System (RAAS) is very important in the regulation of arterial blood pressure and fluid-electrolyte balance.[1,2]

Juxta Glomerular Cells (JG Cells) of the kidney are modified smooth muscle fibers present in the wall of afferent arterioles near the glomeruli.[3-5] Renin is formed and stored in these cells. JG cells release renin into general circulation when arterial blood pressure falls.[6] Renin acts on a plasma protein angiotensinogen (synthesized in the liver) to form angiotensin I.[7,8] Renin circulates in the blood for 30 minutes to 1 hour and continues to form angiotensin I.[9]

Circulating angiotensinogen is an alpha 2 globulin in the plasma. Its levels are increased by cortisol, thyroid hormones, estrogens, several cytokines and angiotensin II.[3] Angiotensin I has a mild vasoconstrictor activity. Angiotensin I is converted within a few seconds to minutes into angiotensin II (octapeptide) by the Angiotensin Converting Enzyme (ACE) present in endothelial cells of lungs capillaries.[9,10] The kidney and blood vessels also contain this enzyme.[8] (Figure-1)

Juxtaglomerular cells are innervated by renal sympathetic nerves. When these cells are stimulated, there is release of renin.[11] When blood pressure falls, glomerular filtration rate decreases and concentration of NaCl at macula densa decreases. This causes the release of renin from JG cells.[8] By regulating sodium balance and plasma volume and being potent vasocomtrictor, it contributes to the regulation of blood pressure.[12,13]

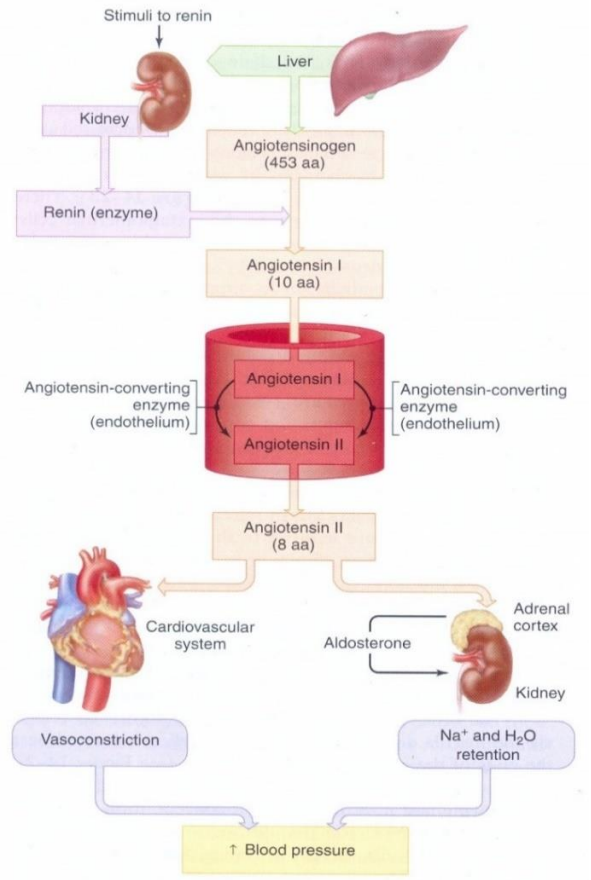

Figure-1. Renin-Angiotensin System[9]

Renin secretion is inversely proportional to NaCl concentration in distal renal tubules.[2]

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Angiotensin II remains in the blood for 1-2 minutes as it is rapidly inhibiter by the enzyme angiotensinase present in blood and tissues.[1]

Angiotensin II receptors. In the human body, two types of angiotensin II receptors are present; AT_1 and AT_2. AT_1 are further of 2 types. AT_{1A} and AT_{1B}. AT_{1A} are present in blood vessel walls and brain and these mediate most of effects of angiotensin II. AT_{1B} is found in anterior pituitary and adrenal cortex.[14] An excess of angiotensin II down regulates vascular receptors (AT_{1A}) and upregulates the adrenocortical receptors (AT_{1B}).[14-16]

Physiological actions of Angiotensin II. Angiotensin II causes arteriolar vasoconstriction and a rise in arterial blood pressure. It is a 4-8 times more potent vasoconstrictor as compared to nor-epinephrine. Angiotensin II acts on zona glomerulosa of the adrenal cortex to release aldosterone. It is the major controller of aldosterone secretion. It facilitates release of nor-epinephrine from postganglionic sympathetic neurons and has a direct effect on renal tubules to increase Na^+ reabsorption. It stimulates thirst center in the brain to increase water intake. It also increases secretion of vasopressin (ADH) from hypothalamo-neurohypophyseal system. These actions of angiotensin II increase Na^+ and water reabsorption from renal tubules to increase blood pressure.[1,3]

Angiotensin III is also active in zona glomerulosa of adrenal cortex. Renin – angiotensin system has a role in maintaining normal blood pressure despite large variations in salt intake.[1] Several signal pathways including Angiotensin II are known to trigger synthesis and degradation of collagen fibers in the heart leading to its remodeling, which may be manifested as cardiac dysfunction /cardiac failure.[17]

Inhibition of renin angiotensin aldosterone system

Inhibitors of prostaglandin synthesis such as indomethacin and beta-adrenergic blockers such as propranolol reduce renin secretion. Pepstatin and enalkirem prevent conversion of angiotensinogens into angiotensin 1.[18-21] Angiotensin-converting enzyme (ACE) inhibitors such as catapril and enalapril prevent the conversion of angiotensin 1 to angiotensin II.[22,23] Saralasin is an analog of angiotensin II and is a competitive inhibitor of action of angiotensin II on both AT_1 and AT_2 receptors.[24]

Losartan (DUP – 753) selectively blocks AT_1 receptors on vascular smooth muscle and adrenal cortex.[25-28] These drugs are used in the management of high blood pressure and heart failure.[29]

CONCLUSION

The control of blood pressure, water and electrolyte balance involves renin angiotensin aldosterone system.

AUTHOR'S CONTRIBUTION

HJQ: Conception of idea and writing
NH: Review critically

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Case Report

A CASE OF PLASMODIUM FALCIPARUM MALARIA WITH COMPLICATIONS PRESENTED IN FAROOQ HOSPITAL, LAHORE.

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INTRODUCTION

Malaria is a serious parasitic disease that is affecting more than 200 million people in the world and accounting for about half a million deaths every year.[1,2] According to World Health Organization (WHO), around 229 million cases all over the world and 405,000 deaths were reported in 2019.[2,3]

Malarial infections are not common in the United States. About 1500–2000 malaria cases have been reported annually in the United States; almost all of them were among the people who travel recently and arriving from endemic countries.[4]

Cerebral malaria is a harmful form of malarial infection caused by Plasmodium falciparum and mostly affecting children, pregnant women, or adults with malaria-limited immunity.[5] Despite proper management and advancements in healthcare, mortality rates remain very high in cerebral malaria, ranging between 15% to 25%.[5,6] Poor outcomes are especially common among patients who present late, those who develop signs of cerebral edema and in the immunocompromised patients.[6]

We present a case of a young man who suffered a severe form of Cerebral Malaria and successfully recovered despite a poor initial prognosis.

CASE REPORT

A 43-years-old male patient presented to Farooq Hospital, West Wood, Lahore, with complaints of severe abdominal pain and loose stools, 10-15 in frequency, watery inconsistency, but having no blood in it. At the time of admission, his blood pressure was 80/40mmHg, and the patient was immediately resuscitated in the Emergency Department and was then shifted to ICU, where he was administered 3 liters of Normal Saline. However, despite this initial therapy, his blood pressure failed to show any signs of improvement. On initial examination of the patient, he was found dehydrated, deeply jaundiced, and unconscious with a GCS of 9/15. He was put on oxygen 6-7 Liters to maintain a saturation of 92%.

A provisional diagnosis of hypovolemic shock was made and it was decided to shift the regimen; the CVP line was passed and the patient was administered with an additional 1 liter of IV Normal Saline infusion with nor-epinephrine. This started to improve his blood pressure and finally stabilized at 100/60 mmHg.

His initial investigations revealed that he had a hemoglobin of only around 8g/dl, while bilirubin was 7mg/dl and Renal Function Tests (Creatinine) was raised around 2.1mg/dl; so initial suspicion and differentials also indicated that he might have Hemolytic Uremic Syndrome.

But, the peripheral smear of the patient showed Malarial Parasite, Ring Forms, Gametocytes and Trophozoites of Plasmodium Falciparum, so his history was taken again, which revealed that the patient had recently returned from South Africa and as labs also revealed thrombocytopenia, so there was a suspicion of Malarial/Viral Hemorrhagic Fever. However, Peripheral Smear revealed more than 50% Parasitemia along with Gametocytes of Plasmodium Falciparum; he had severe complicated falciparum malaria along with Black Water Fever, Hemolysis, and complication of Cerebral Malaria. His brain CT scan was clear, so, a possible diagnosis of Cerebral

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Malaria with complications was made.

Immediately, the patient was started on injectable antimalarial therapy; due to potentially severe adverse effects of Quinine, he was started on intramuscular Artemether 160mg stat, followed by 80mg i/m daily, which is comparatively more effective and safer. In addition to that, the patient was started on broad-spectrum antibiotics including iv injection Meronem 500mg, TDS which was adjusted, and iv injection Flagyl 500mg, BD. While the patient was being managed, he developed Severe Metabolic Acidosis; his bilirubin kept on increasing and went up to 16mg/dl, and his Renal Function Test (Creatinine), went up to 2.8mg/ dl. He was transfused with 4 PCV's and 2 Whole Blood but his hemoglobin remained around 8g/dl. The patient was also a known case of Chronic Hepatitis B and the liver showed coarse architecture on ultrasound examination. The patient was also started on Tab Rifaximin 550mg, BID. On Day 3, the Patient developed constipation so he was given Duphalac Enema and oral Duphalac 30ml daily. Along with that, the patient was also started on Cap Usro, 250mg BD. On day 4, the patient showed signs of improvement, Chest x-ray showed infiltrates which were suspicious of Hospital-Acquired Pneumonia. HRCT was done 2 days later, which showed Subsegmental Consolidations and showed a picture of Viral Pneumonia. Covid Antibody Test was negative. Dengue serology and leptospiral antibodies were also negative. Blood Cultures revealed no growth in 5 days. The patient was well managed and on the 8th day of admission, he started showing signs of improvement. His hemoglobin improved to around 8g/dl, bilirubin dropped to 6mg/dl, and creatinine improved to1.5mg/dl. Parasitemia gradually decreased from 50% to <2% and then the patient was discharged.

This was the case of complicated falciparum malaria which has a mortality of almost 50% but he recovered well.

DISCUSSION

Malaria is a common parasitic infection infecting a large number of populations around the world. Our patient had a history of travel from the malaria-endemic area and came with the symptoms of high-grade fever, chills and presented in the emergency with shock, dehydration, impaired consciousness level. The lab reports confirmed the diagnosis of malaria. These findings are inconstant with the findings of a large number of studies conducted nationally and internationally.[7,8]

The patient had raised urea and creatinine and raised liver enzymes. Released Hemoglobin causes renal damage, which causes Acute Renal Failure. If no treatment is given to the patient, Anemia and broken Hemoglobin Products lead to Coma or Death in some cases.[9,10]

Patient presentation is mostly Acute Hepato-Nephritis within 24 to 48 hours after the administration of the antimalarial drug. Severe anemia even in the beginning and intravascular hemolysis due to severe malaria can lead to Oliguria, Dark Colored Urine, Abdominal Pain, Jaundice, Hepatic Splenomegaly, Vomiting, and Renal Failure.[10] The life-threatening situation seen initially has been significantly reduced now in the hospitals.[11]

Presently, morbidity data reported by most of the authors is between 23 to 26%.[11,12] Acute kidney damage pathogenesis and other organ dysfunction in plasmodium falciparum malaria understood properly.[12] Contributing factors may be volume depletion, hemolysis, disseminated intravascular coagulation, and sepsis.[12,13] Thrombotic microangiopathy has been seen in malaria.[13] Falciparum malaria-causing endothelial dysfunction may have a role in organ failure and not frequently seen in the course of vivax malaria.[13,14]

The time to coma recovery, which is about 7 days, is much better with Artemether than Quinine and that was observed in our case of P. falciparum malaria patient with recent traveling to the malaria-endemic area. It is therefore pointed out that the treating physicians should be aware of the chances of plasmodium falciparum infections in the patients who have travel history or have been in contact with travelers who returned from the malaria-endemic area recently (luggage,

airport, local transmission). Physician and pathologist communication is needed for the early diagnosis and effective management of such cases to prevent mortality.

AUTHOR'S CONTRIBUTION

OF: Conception of idea
AW: Drafting article
AA: Data analysis, editing

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