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TO KNOW THE DENGUE FEVER PREVALENCE WITH ITS CLINICAL AND HAEMATOLOGICAL FEATURES: AN OBSERVATIONAL STUDY

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Abstract:
Objective: *To know the incidence of dengue as a cause of fever and to compare the haematological and clinical characteristics of dengue in proven and susceptible cases.*
Study design: *An observational study.*
Place and Duration: *In the Medicine department of Mayo Hospital Lahore for six months duration from August 2019 to February 2019.*
Methods: *All patients older than 14 years of age who were treated in Services hospital for an acute febrile illness were assessed for dengue fever (DF) and haemorrhagic fever clinical features were noted. Dengue Shock Syndrome (DSS) and Dengue haemorrhagic fever (DHF) Patients with typical dengue fever clinical features (as stated by WHO) and haematological findings were evaluated in detail to compare possible and established cases of dengue fever. All acute febrile illness cases that did not show haematological abnormalities or clinical features of dengue fever were omitted. Laboratory and Clinical topographies were recorded in the SPSS 18.0 program and were identified as necessary for a statistical and descriptive analysis.*
Results: *Of the 5200 febrile illness subjects, DF typical features were noted in 107 (2%) cases, dengue testing was done in 40/107 (37%), and most susceptible to have dengue in 67/107 (63%) cases. Of the cases tested with dengue, 38 were from DF and 2 were from DHF. The temperature of day 1 ranged from 99-1050 ° C (average 1010 ° C). Myalgia, 86 (80%), pharyngitis in 35%, headache in 54%, haemorrhagic symptoms in 2% and skin rash in 28% were observed. lymphadenopathy in 1, Hepatomegaly in 1 (0.5%) and in 12 (11.2%) splenomegaly was noted. Leukopenia (count <4x109 / L) was observed in 73%, platelet count <84% 109 / L, in 57% of cases ALT> 40 U / L was noted.*
Conclusion: *The clinically suspected dengue virus infection frequency was (2%) 107 cases, of 5200, 40 (0.8%) dengue fever cases were proven. Shivering and chills, , headache, body ache, rash, myalgia, haemorrhagic symptoms, total white blood cell count, platelet count, and ALT and fever are parameters for detecting suspected dengue virus infection; The diagnosis cannot be established lest reinforced by dengue-specific IgM or molecular studies.*
Keywords: *Dengue haemorrhagic fever (DHF), Dengue fever (DF), Administration, Dengue Shock Syndrome (DSS).*

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INTRODUCTION:

The dengue fever global prevalence has raised theatrically in current years. Each year, approximately 51-105 million dengue infections, DHF cases approximately 500,000, and worldwide minimum 12,000 deaths occurs[1-3]. In 1970, only 9 countries were known to outbreak the haemorrhagic dengue. This number raised in 1995 more than fourfold, and about now 2500 million people are at dengue fever risk[4-5]. Dengue virus (DENV) contains four closely related serotypes of members of the Flaviviridae family: DENV-1, 2, 3 and DENV-4. All of them were the genus Aedes mosquitoes, especially ades aegypti[6]. During the rainy season; significant rise in mosquito larval populations are noted. This may be one cause why the dengue outbreak tends to concur with the rainy period. Once infected with one of the serotypes has never the same serotype infection later, but will lose the immunity of the other three serotypes within 12 weeks[7]. During the first infection; residual antibodies produced cannot deactivate a 2nd infection with alternative serotype, and 2nd infection results in a serious infection and a disease under the influence of the improved antibodies. This spectacle is known as antibody-dependent healing. In one of three ways: Clinically dengue virus infection manifests itself as dengue haemorrhagic fever (DHF), classic dengue fever (DF) and dengue shock syndrome[8]. DF is defined by musculoskeletal pain, high fever, morbilliform skin rash and retrobulbar headaches. The arrival of haemorrhagic symptoms or haemorrhagic rash characterizes dengue haemorrhagic fever (FHD) in addition to conventional DF. Dengue syndrome is categorized by altered mental status, delayed capillary filling and hypotension[9]. This study was conducted to determine the incidence of dengue fever in acute febrile patients during the study period. In addition, it has been found that the features of the disease detect any differences in clinical and haematological presentation of the disease in possible cases and are proven by dengue.

MATERIALS AND METHODS:

This observational study was held in the Medicine department of Mayo hospital Lahore for six months duration from August 2018 to February 2019. All patients older than 14 years of age who were hospitalized or treated in Services Hospital, Lahore for an acute febrile illness were evaluated with clinical features of DF, DHF and DSS. All patients with typical clinical features according to WHO criteria and associated thrombocytopenia or haem-concentration were included in the study. Other confirmed cases of acute febrile disease with confirmed diagnoses or some non-specific origins but without typical features of dengue fever or haematological abnormalities were excluded. Patients with clinically suggestive DF and dengue-specific positive IgM serology were confirmed with dengue. Possible and confirmed patients with DF, DHF and DSS were accepted; and clinical features were recorded. The treatment consultant determined the gradual response of the characteristics. Two millilitres of blood in EDTA anticoagulant, 2.8 ml of blood in 0.2 ml of citrate anticoagulant, blood count, malaria parasites, dengue-specific IgM, 3 ml of blood were collected in a single vial for prothrombin time (PT), PTTK, Widal test and aminotransferase. Blood count together with haemoglobin (Hb), red blood cell count (RCC), mean corpuscular volume (MCV), haematocrit (HCT), platelet count, mean corpuscular haemoglobin concentration (MCHC), total white blood cell count (TWBC) were checked by an automated haematology Sysmax analyser. A qualified haematologist examined the blood film to detect malaria parasites. PT and PTTK were achieved by visually observing clot formation. Serum ALT was made using a standard technique as defined by the producer using microlab 200 (Merck Marker). Dengue-specific IgM was checked using ELISA. Blood counts were monitored serially until platelet counts began to increase and were within safe limits. Symptomatic treatment was recommended for dengue patients. Antimalarial treatment was recommended if malaria parasites were positive. Platelet concentrate was recommended in case of bleeding. In the case of PT or PTTK changes, fresh frozen plasma (FFP) was recommended in addition to platelet support. In the case of haemoglobin below 7 g / dl, red blood cell concentrate or total blood transfusion was recommended.13 Patients were discharged when they were asymptomatic. Clinical characteristics and laboratory results were recorded. SPSS 11.0 program was used for statistical analysis. Chi-square test was used to investigate statistical significance.

RESULTS:

A total of 5200 patients with febrile disease were selected for the study. One hundred seven (2%) presented typical features of DF and were included in the study. The ages of the patients ranged from 14 to 67 years (mean 31 years). They were all men. Forty (37%) cases were proven dengue, in 67/107 (63%) dengue fever was likely. Of the dengue cases proven on test, 38 were of DF and 2 were from DHF. One was presented with a state of adjustment and confusion due to multiple small intracerebral haemorrhages, the second with developing epistaxis, ecchymosis, and gingival bleeding with a platelet count of less than 10 x 10 9 / l. Of the 67 possible dengue congenital cases, one patient developed haemorrhagic findings in the form of conjunctival haemorrhage. 107/107 (100%) patients had fever for 1-10 days. Day 1 temperature ranges from 99-105 ° C (average 101 ° C), Day 3

temperature varies from 99-103 ° C (average 99.5 ° C), Day 5 temperature 98-102 ° C (average 98.1) ° C). Day 7 ranged from 98-100 ° C (average 98 ° C). The clinical characteristics of both tested and probable equilibrium are summarized in Table I.

Table I: Clinical features of dengue fever cases (n=107).

Symptom	DEN Proven (40)	DEN Probable (67)	p-value
Chills/rigors	30 (75%)	56 (84%)	0.5
Diarrhoea	4 (10%)	13 (19%)	0.5
Vomiting	19 (47%)	41 (61%)	0.5
Sweating	15 (37%)	29 (43%)	0.5
Headache	25 (63%)	33 (50%)	0.01
Myalgia	29 (73%)	34 (64%)	0.05
Pharyngitis	13 (32%)	24 (36%)	0.5
Rash	12 (30%)	16 (24%)	0.1
Purpura	4 (2.68%)	4 (10%)	0.5
Bleedings	1 (0.67)	2 (5%)	0.5
Lymphadenopathy	1 (1.5%)	0	-
Hepatomegaly	1 (1.5%)	0	-
Splenomegaly	8 (12%)	4 (10%)	0.05

Leukopenia (count <4x109 / L) 73%, neutrophil count <2x109 / L, 53%, lymphocyte count <2x109 / L 97% platelet, 84% <150 x 108 / L, 57% ALT> 40 U / L. Serum creatinine increased marginally in the event of a possible dengue event. The coagulation profile was changed in 2 proven dengue and one possible dengue. The laboratory results of proven and possible Dengue fever cases are summarized in Table II.

Table II: Laboratory findings of dengue fever cases (n=107).

Parameter	DEN Proven (40)	DEN Probable (67)	p-value
Leukopenia	31(77%)	46(69%)	0.1
Neutrophils < $2x10^9$/L	21(52%)	36(53%)	0.5
Lymphocytes < $2x10^9$/L	39(97%)	65(97%)	0.02
Platelet < $150x10^9$/L	34(85%(	58(87%)	0.5
ALT > 40 U/L	19(47%)	42(63%)	0.1

Total mean white blood cell count was lower on day 3 and started to increase on day 7. The mean haematocrit was higher at admission, decreasing after onset with oral and intravenous fluids. The platelet count continued to decrease and decreased between day 3 and day 5 of entry and began to recover on day 7. All cases improved and were discharged from the hospital on the tenth day of admission, with the exception of 3 people discharged 2 weeks later.

DISCUSSION:

Differential analyses related with DF comprise a wide variety of viral infections including bacterial, Chikungunya, parasitic and rickettsial which produce a similar syndrome. A mild dengue infection is clinically impossible to diagnose[11]. By viral serology or isolation; the definitive diagnosis is confirmed. Multivariate analysis in a study by Wilder-Smith et al. together, three laboratory properties have been identified which are highly predictive for dengue diagnosis: platelet count <140 x 109 / L, white blood cell count <5x109 cells / L and aminotransferase aspartate> 34 IU / LA Combination of these parameters 75% sensitivity and 100% specificity[12]. There were many cases in this outbreak that clinically recommended DF and met the above three criteria, which were negative for typhoid and malaria parasites serology. The restriction was the absence of molecular studies and IgM could not be detected at an early stage of infection. Since there was no significant statistically variation in the laboratory and clinical data of the 2 groups, these were likely to be DF cases. However, the probability of another viral outbreak with the possibility of infection with the Chikungunya virus cannot be ruled out because the vector is the same. In general, in adults the DF onset is sudden, with occasional chills and sudden increase in temperature which is always associated with severe headache and redness of the face. The 39oC to 40oC was the optimum temperature[13]. Fever can be lasting 5-7 days and biphasic. 2% of patients with clinical fever had DF and only 0.8% had positive serology. Wilder-Smith et al. In Vietnam in 2006, the DF was 33.6% in all febrile cases, but this depends on the severity of the outbreak. In a study conducted in India, the fever mean duration was 4.6 ± 1.3 days, back pain (57.8%), headache (61.6%), abdominal pain (21%) and vomiting (57.8%). Haemorrhagic findings were gingival and nosebleed (40%), positive tourniquet test (21%), hematemesis (22%) and skin rash (20%). In this study, in all cases fever was notedt; 43% of sweats, 61% vomiting, 19% diarrhea, 84% diarrhea, 64% of myalgia headache 50%, 64% pharyngitis, 20% had rash[14]. Below 100,000 / mm3 platelet count is commonly between the 3rd and 8th day of the disease. The platelet count

was less than 150x109 / L at 85%. Dengue fever can be considered a strong predictor, but the thrombocytopenia absence does not exclude the dengue infection possibility. Leukopenia is initially common in the predominance of neutrophils. In this study, leukopenia was 77%, neutrophils <2x109 / l, 52%, lymphocytes <2x109 / L, 97%. Singh's leukopenia (WBC <3,000 / mm2) was 68%. Haematocrit increased in all DH cases, especially in patients with shock syndrome. Haem-concentration with haematocrit increases by 20% or more and is considered objective evidence of increased vascular permeability and plasma loss. In this study, ALT> 40 U / L was found in 47% of the cases. In one Méndez study, hepatitis was detected in 27% of cases. A significant number of liver can be involved in the patient, but the absence of high enzymes should not be taken as evidence to exclude the possibility of DF[15]. In this study, rash was observed in 24% of cases not associated with significant red itching. Itoda et al. rash was observed in 82% of cases.

CONCLUSION:

In this study, it was suspected that 2% (107/5200) of patients with acute febrile disease were febrile and 0.8% confirmed in serological tests. Clinical features and laboratory findings are closely related to confirmed and probable dengue cases. The incidence of dengue fever was much higher during the hot and humid months between August and October.

REFERENCES:

1. Anwar, Faheem, Sohail Ahmad, Mohammad Haroon, Ihtesham Ul Haq, Habib Ullah Khan, Jawad Khan, Sabih Ullah, and Iftikhar Ali Shah. "Dengue virus epidemics: A recent report of 2017 from district Mardan, Khyber Pakhtunkhwa province, Pakistan." (2019).
2. Anwar, Faheem, Sohail Ahmad, Mohammad Haroon, Ihtesham Ul Haq, Habib Ullah Khan, Jawad Khan, Sabih Ullah, and Iftikhar Ali Shah. "Dengue virus epidemics: A recent report of 2017 from district Mardan, Khyber Pakhtunkhwa province, Pakistan." (2019).
3. Shahid, Muhammad, Iram Amin, Samia Afzal, Zareen Fatima, and Muhammad Idrees. "Comparative Analysis of Immunological and Genomic Outcomes of Dengue Virus Outbreak in Pakistan." *Pakistan Journal of Zoology* 51, no. 5 (2019).
4. Ali, Amjad, Zareen Fatima, Braira Wahid, Shazia Rafique, and Muhammad Idrees. "Cosmopolitan A1 lineage of dengue virus serotype 2 is circulating in Pakistan: A study from 2017 dengue viral outbreak." *Journal of medical virology* (2019).
5. Haroon, Muhammad, Hasnain Jan, Shah Faisal, Nasir Ali, Muhammad Kamran, and Farhan Ullah. "Dengue Outbreak in Peshawar: Clinical Features and Laboratory Markers of Dengue Virus Infection." *Journal of infection and public health* 12, no. 2 (2019): 258-262.
6. Asghar, Muhammad, Naheed Asghar, Noor Rehman, Naveed Sharif, Muhammad Haroon, and Safia Rehman. "FREQUENCY OF DIFFERENT GENOTYPES OF DENGUE VIRUS IN PATIENTS ADMITTED IN A TERTIARY CARE HOSPITAL KHYBER PAKHTUNKHWA." *KJMS* 12, no. 1 (2019): 20.
7. Imran, Muhammad, Yasra Hamid, Abeer Mazher, and Sajid Rashid Ahmad. "Geo-spatially modelling dengue epidemics in urban cities: a case study of Lahore, Pakistan." *Geocarto International* (2019): 1-15.
8. Naqvi, Syed Ali Asad, Bulbul Jan, Saima Shaikh, Syed Jamil Hasan Kazmi, Liaqat Ali Waseem, Muhammad Nasar-u-minAllah, and Nasir Abbas. "Changing Climatic Factors Favor Dengue Transmission in Lahore, Pakistan." *Environments* 6, no. 6 (2019): 71.
9. Badar, Nazish, Muhammad Salman, Jamil Ansari, Aamer Ikram, Javaria Qazi, and Muhammad Masroor Alam. "Epidemiological trend of chikungunya outbreak in Pakistan: 2016–2018." *PLoS neglected tropical diseases* 13, no. 4 (2019): e0007118.
10. Qureshi, Ahmad, Ejaz Mahmood, Amtul Bari Tabinda, Seemal Vehra, and Atif Yaqub. "Distribution and Seasonality of Horizontally Transmitted Dengue Viruses in Aedes Mosquitoes in a Metropolitan City Lahore, Pakistan." *Pakistan Journal of Zoology* 51, no. 1 (2019).
11. ABDULLAH, SHER ALI, MUHAMMAD SALMAN, MISBAHUD DIN, KACHKOL KHAN, MUNIB AHMAD, FAISAL HAYAT KHAN, and MUHAMMAD ARIF. "Dengue outbreaks in Khyber Pakhtunkhwa (KPK), Pakistan in 2017: an integrated disease surveillance and response system (IDSRS)-based report." *Polish journal of microbiology* 68, no. 1 (2019): 115-119.
12. Manjunath, V. G., Sruthi Balla, and K. Jagadish Kumar. "Serum ionic calcium levels and hypocalcemia in dengue fever in children and its correlation with its severity: case control study." *International Journal of Contemporary Pediatrics* 6, no. 3 (2019): 1.
13. Yusuf, Amir Mohammed, and Neil Abdurashid Ibrahim. "Knowledge, attitude and practice towards dengue fever prevention and associated factors among public health sector health-care professionals: in Dire Dawa, eastern Ethiopia." *Risk Management and Healthcare Policy* 12 (2019): 91.

14. Tareen, Masood, Riaz Hussain Awan, Seema Nayab, and Khadim Hussain Awan. "FREQUENCY AND SEVERITY OF LIVER INVOLVEMENT IN DENGUE VIRUS INFECTION." *The Professional Medical Journal* 26, no. 07 (2019): 1074-1078.
15. Rasheed, Muhammad Kamran, Syed Shahzad Hasan, and Syed Imran Ahmed. "Extensively drug-resistant typhoid fever in Pakistan." *The Lancet Infectious Diseases* 19, no. 3 (2019): 242-243.