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A COMPARATIVE ANALYSIS OF CLINICO-PATHOLOGICAL PROFILE IN DENGUE SHOCK SYNDROME VERSUS OTHER TYPES OF MALARIA IN PEDIATRIC DEPARTMENT OF JINNAH HOSPITAL LAHORE

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Abstract:

Purpose: *Dengue, a mosquito-borne arbovirus, comes from dengue serotypes belonging to the Flaviviridae family (DEN-1, DEN-2, Den-3, DEN-4). The purpose of this study is to examine the clinical-pathological profile of dengue shock syndrome in comparison with other types of children in a tertiary health center.*

Methods: *This observational cross-sectional study was conducted in the Pediatric Unit II of Jinnah Hospital Lahore for one-year duration from March 2019 to February 2020 after approval by the Corporate Ethics Committee. Chi-square statistical analysis, ANOVA, paired t 22 SPSS version test (IBM SPSS Statistics, Somers NY) was used for Data analysis.*

Results: *The average age of patients was 8.08 ± 2.72 years, the majority of cases were females (51.9%) and 48.1% males, clinical features such as hepatomegaly and ascites associated with pleural effusion were significantly present in DSS (p <0.001). The study showed no significant difference in dengue symptoms and severity, except for one seizure. Thrombocytopenia (platelets <1 lakh / cmm) in 74% of cases, leukopenia in 56% (total number of leukocytes <4000 / cmm), more than 40 hemocytes were observed in 21.27% of cases. There was acute kidney damage, TLC and encephalopathy in Dengue syndrome. Observations of complications between dengue severity were statistically significant. There was a significant difference in hematocrit values between the three dengue diagnoses from day 1 to day 4. Initially a higher hematocrit was observed in the dengue shock syndrome, and this decrease continues to decrease.*

Conclusion: *According to our research, it can be concluded that dengue shock syndrome is acute kidney damage, TLC and encephalopathy. There was a significant difference between the hematocrit values between 1 and 4 days between the three dengue fevers. Initially, higher hematocrit was observed in dengue shock syndrome.*

Key words: *dengue complication, dengue hemorrhagic fever (DHF), dengue shock syndrome (DSS), laboratory profile of dengue fever.*

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INTRODUCTION:

Dengue, a mosquito-borne disease, comes from dengue serotypes belonging to the Flaviviridae family (DEN-1, DEN-2, Den-3, DEN-4). These serotypes differ from antigen but are closely related. Globally, 50 million dengue infections are reported annually, with an annual incidence of 7.5 to 32.5 million cases in Pakistan. The first case of dengue and the hemorrhagic fever occurred in Lahore Pakistan. The disease is endemic in over 100 tropical and subtropical countries, and there are 2.5 billion people living in these countries with a serious international public health problem. Dengue mortality is around 5%[1-3]. Mortality is reported more commonly in the case of dengue fever, hemorrhagic fever (DHF) and dengue shock syndrome (DSS). In cases of early intervention, mortality can be reduced to 1%. Dengue fever occurs like a normal fever with dangerous complications. Infection with dengue virus (DENV) provides lifelong immunity to the affected serotype and provides temporary and partial protection against re-infection with three other serotypes[4-6]. Studies have shown that sequential infection with different DENV serotypes increases the risk of DH. Dengue fever, high fever, myalgia, headache and vomiting are common clinical signs of retro-style bladder pain, similar to many viral diseases[7-8]. However, these symptoms are variable for adults and children. In addition to the normal signs and symptoms, children have nosebleeds, melena and an enlarged liver. More cases of DH have been reported in children than in adults[9]. Dengue fever remains a surprising disease in many respects, including virus and host dependence, and variability in clinical expression.

METHODS:

This cross-sectional observational study was held in Pediatric Unit II of Jinnah Hospital Lahore for one year duration from March 2019 to February 2020. All data is collected after admission to our institute. Children suspected of being infected with dengue virus (WHO guidelines were admitted to hospital of the third degree and were serologically confirmed by persons confirmed and ready for a positive IgM test for dengue compared to 2009. Class DHF19: class I: symptoms of fever and bleeding (positive bandaging test)) and plasma leakage, stage II: stage I plus spontaneous bleeding, pulse pressure (≤20 mmHg), hypotension, anxiety Level IV: undetectable blood pressure for level III deep pressure and DSS class III and IV in chi-square data analysis, ANOVA (analysis of variance) Statistical analysis with paired t test: MS Excel, SPSS version 22 (IBM SPSS Statistics, Somers NY, USA) Announced.

RESULTS:

The mean age of patients was 8.08 ± 2.72. Most cases occurred in the age group 6-10 years (55.8%), in the age group 25%> 10.

Table 1: Age distribution among cases.

Age	**Count**	**(%)**
> 10 years	10	19.20
6 to 10 years	29	55.80
< 5 years	13	25.00
Total	52	100.00

Table 2: Gender distribution of cases.

Gender	**Count**	**(%)**
Male	25	48.10%
Female	27	51.90%
Total	52	100.00%

Most cases are women (51.9%) and 48.1% are children, with a male to female ratio of 0.92.

Table 3: Dengue classification among cases.

Dengue classification among cases	**Count**	**Percentage (%)**
Dengue shock syndrome	4	7.70%
Dengue fever with warning signs	21	40.40%
Dengue fever without warning signs	27	51.90%
Total	52	100.00%

In the study, 51.9% had dengue fever without warning symptoms, 40.4% had dengue fever with warning symptoms, and 7.7% dengue shock syndrome.

Table 4: Association between dengue classification and clinical examination findings.

Present	Dengue classification						P value
	Dengue fever without warning signs (n=27)		Dengue fever with warning signs (n=21)		Dengue shock syndrome (n=4)		
	Count	Percentage (%)	Count	Percentage (%)	Count	Percentage (%)	
Hepatomegaly	7	25.9%	16	76.2%	4	100.0%	<0.001*
Splenomegaly	0	0.0%	2	9.5%	0	0.0%	0.215
Ascites	0	0.0%	16	76.2%	3	75.0%	<0.001*
Pleural effusion	0	0.0%	21	100%	4	100.0%	<0.001*

25.9% of dengue cases without warning symptoms had an enlarged liver without ascites and pleural effusion. In dengue cases with warning symptoms, 76.2% had an enlarged liver, 9.5% had an enlarged spleen, 76.2% ascites, and 100% had pleural effusion.
100% of cases with Dengue syndrome had liver, 75% had ascites and 100% had pleural effusion. This observation in the results of studies between the severity of dengue fever was statistically significant.

Table 5: Association between dengue classification and symptoms at presentation.

Present	Dengue classification						P value
	Dengue fever without warning signs (n=27)		Dengue fever with warning signs (n=21)		Dengue shock syndrome (n=4)		
	Count	Percentage (%)	Count	Percentage (%)	Count	Percentage (%)	
Fever	27	100.00%	21	100.00%	4	100.00%	-
Myalgia	8	47.05%	5	23.80%	0	0.00%	0.436
Rash	6	23.10%	5	25.00%	0	0.00%	0.554
Pain abdomen	4	14.80%	8	38.10%	0	0.00%	0.086
Cough	1	3.70%	4	19.04%	2	50.00%	0.025
Vomiting	2	7.40%	3	14.30%	0	0.00%	0.575
Convulsion	0	0.00%	3	14.30%	2	50.00%	0.004*
Loose stool	1	3.70%	2	9.50%	0	0.00%	0.606
Head ache	1	3.70%	1	4.80%	0	0.00%	0.9

Table 6: Association between dengue classification and clinical examination findings.

Present	Dengue classification						P value
	Dengue fever without warning signs (n=21)		Dengue fever with warning signs (n=27)		Dengue shock syndrome (n=4)		
	Count	Percentage (%)	Count	Percentage (%)	Count	Percentage (%)	
Hepatomegaly	7	25.90%	16	76.20%	4	100.00%	<0.001*
Splenomegaly	0	0.00%	2	9.50%	0	0.00%	0.215
Ascites	0	0.00%	16	76.20%	3	75.00%	<0.001*
Pleural effusion	0	0.00%	21	100%	4	100.00%	<0.001*

Table 7: Association between dengue classification and symptoms at presentation.

Present	Dengue classification						P value
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Convulsion	0	0.00%	3	14.30%	2	50.00%	0.004*
Loose stool	1	3.70%	2	9.50%	0	0.00%	0.606
Head ache	1	3.70%	1	4.80%	0	0.00%	0.9

The study found no significant difference in dengue severity, except for fever and seizure symptoms, 50% of dengue cases had seizures, and 14.3% of seizures and warning symptoms. 25.9% of dengue cases without warning symptoms had an enlarged liver without ascites and pleural effusion. In dengue cases with warning symptoms, 76.2% had an enlarged liver, 9.5% had an enlarged spleen, 76.2% ascites, and 100% had pleural effusion. 100% of cases with Dengue syndrome; 75% had ascites and 100% had pleural effusion. This observation of the study results between dengue severities was statistically significant in the study, excluding seizures, and there was no significant difference between symptom severity and dengue. 14.3% of dengue attacks and dengue warning symptoms were reported.

Thrombocytopenia (platelets <1 lakh / cmm) in 74% of cases, leukopenia (total leukocyte count <4000 / cmm) in 56% of cases, and hematocrit in 56% of cases. 21.27% of cases.

Table 8: Laboratory investigation.

		Frequency	Percentage (%)
Platelet count (n=50)	< 50,000	13	26
	50,001-1,00,000	24	48
	> 1,00,000	13	26
TLC count/ cmm (n=50)	< 4000	28	56
	4001-11,000	18	36
	> 11,000	4	8
Hematocrit (n=47)	< 30	4	8.51
	31-40	33	70.21
	> 40	10	21.27

The above-mentioned complications were found in 1.9% of cases. 25% of people with dengue shock syndrome had acute kidney damage, TLC and encephalopathy, and there were no dengue fever and dengue fever with warning signs. Observations of complications between dengue severity were statistically significant.

		Table 9:Dengue classification						P value
		Dengue fever without warning signs (n=27)		Dengue fever with warning signs (n=21)		Dengue shock syndrome (n=4)		
		Count	Percentage (%)	Count	Percentage (%)	Count	Percentage (%)	
acute kidney injury	Absent	27	100.00%	21	100.00%	3	75.00%	<0.001
	Present	0	0.00%	0	0.00%	1	25.00%	
congestive cardiac failure	Absent	27	100.00%	21	100.00%	3	75.00%	<0.001
	Present	0	0.00%	0	0.00%	1	25.00%	
Encephalopathy	Absent	27	100.00%	21	100.00%	3	75.00%	<0.001
	Present	0	0.00%	0	0.00%	1	25.00%	

Table 10: Comparison of hematocrit between three groups during follow-up.

	Dengue classification						P value
	Dengue fever without warning signs (n=27)		Dengue fever with warning signs (n=21)		Dengue shock syndrome (n=4)		
	Mean	SD	Mean	SD	Mean	SD	
Day 1	36.91	4.57	36.30	4.23	37.00	3.61	<0.001*
Day 2	34.00	3.90	34.31	7.20	34.33	5.03	<0.001*
Day 3	33.95	4.64	34.05	5.38	34.00	5.19	<0.001*
Day 4	33.84	4.52	33.84	6.16	32.33	4.61	0.0006*
Day 5	33.66	2.93	33.66	5.09	31.66	4.93	0.0047
Day 6	32.33	3.60	32.60	3.30	31.50	6.36	0.056
Day 7	32.00	-	33.50	0.78	31.33	1.115	0.064

Table 10 and Fig. 1 showed a significant difference in hematocrit values between the diagnosis of three dengue fever from day 1 to day 4. Initially the team had higher hematocrit. Dengue fall is falling.

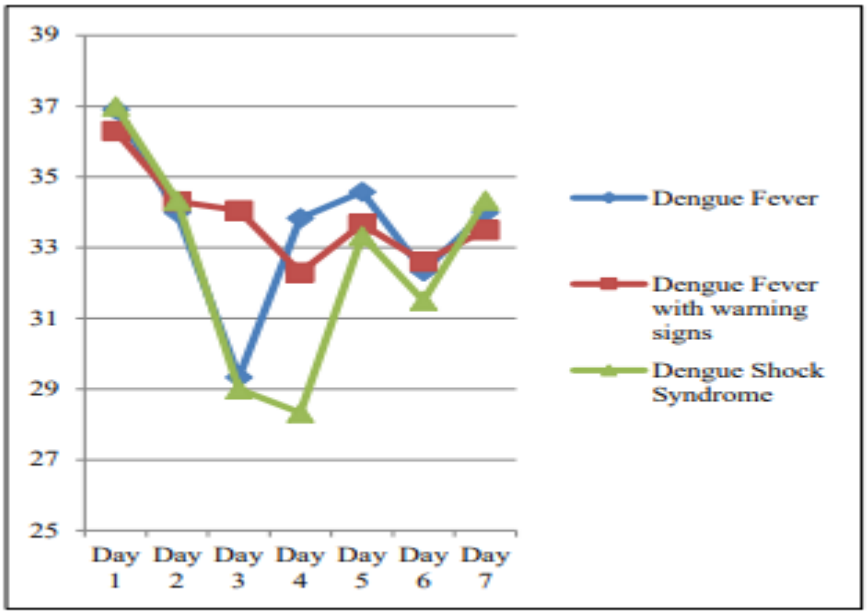

Figure 1: Line diagram showing comparison of haematocrit between three groups during follow-up.

DISCUSSION:

Dengue fever is the fastest spreading mosquito viral disease in the world. Over the past 50 years, the incidence of this disease has increased by 30 as geographic expansion has increased to new countries, and its forecasts cover urban and rural areas in the current decade. About 1.8 billion (over 70%) of the population at risk of dengue globally live in Member States in the Southeast Asia region and the West Pacific region. The World Health Organization (WHO) accounts for about 75% of the current global dengue burden. Recently, an increase in dengue (DF) and complex forms has been observed in Pakistan. Viral dengue infections show a variety of clinical spectrums, from asymptomatic diseases to fatal shock syndrome (DSS) [10]. In our study, we found that the average age of patients was 6.5 ± 3.5 years and 6 months to 15 years. Malavige GN et al[11]. While the average age of patients was 7.9 ± 2.9 years, the age range was from 1 month to 12 years, Ahmed et al[12]. The average age is 9.0 ± 2.8 years - 2.5 years - 12 years. The majority of patients affected were women, the distribution of cases was women (51.9%) and 48.1% men. The male to female ratio was 0.925, but men dominated most other studies. Doke et al[13]. (1.1: 1), Alam AS et al[14]. (1: 1), Kamath et al[15]. This can be compared to (1: 1). The most common symptom in our study was 51.9% hepatomegaly, 3.8% spleen, 36.5% ascites and 50% pleural effusion. Alam AS et al. Liver enlargement (31.5%), pleural effusion (27.8%), ascites (14.8%) were observed.

Prathyusha CV et al. The most common clinical detection was hepatomegaly (33.75%) followed by evidence of increased capillary permeability (25%) in the form of ascites, pleural effusion and edema. Acute renal damage, congestive heart failure and encephalopathy were found in 1.9% of all cases. Although none of the symptoms of dengue fever and dengue warnings were complicated, 25% of cases with dengue shock syndrome did not have acute kidney damage, TLC and encephalopathy. Observations of complications between dengue severity were statistically significant (p-value 0.001).

In our study, mean hematocrit on day 1 was 36.62 ± 4.31 and gradually decreased to 33.80 ± 5.03 on days 4, 6 and 7, this significant hematocrit was 32.00 ± 3.57, 32, 00 ± 0.98. is the answer to smooth hematocrit treatment. Gomber et al. In a study of 202 patients with dengue and 283 healthy children, the mean hematocrit value was 38.34 ± 6.02% and 32.03 ± 2.98%, respectively.

CONCLUSION:

From our study, it can be concluded that shock syndrome is clearly acute kidney damage, TLC and encephalopathy. There was a significant difference between the hematocrit values between 1 and 4 days between the three dengue fevers. Initially, higher hematocrit was observed in dengue shock syndrome.

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