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Case Report

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Nephrotic syndrome complicated with severe dengue infection and pediatric Multisystemic Inflammatory Syndrome (MIS-C)

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Abstract

Dengue infection is endemic in India and can be associated with other illnesses like nephrotic syndrome [1]. Dengue and nephrotic syndrome share a common spectrum of presentation of plasma leakage leading to proteinemia and hypoalbuminemia further manifesting in form of generalized edema, pleural effusion, and ascites [2]. Hence, dengue infection features may mimic nephrotic syndrome in clinical practice and vice versa. Therefore nephrotic syndrome features may be masked and interpreted clinically entirely as dengue infection in the endemic area at peak season [1]. We report a case of nephrotic syndrome complicated by severe dengue infection and pediatric Multisystemic Inflammatory Syndrome (MIS-C).

Introduction

Dengue fever ranges from mild febrile illness to severe dengue in form of Dengue Hemorrhagic Fever (DHS) and Dengue Shock Syndrome (DSS) [3]. Expanded Dengue Syndrome (EDS) is a relatively new entity that incorporates a wide range of unusual manifestations of dengue virus infection involving the kidney, liver, heart, and muscle [4]. Though it is a self-limiting disease, there is an increase in morbidity and mortality related to dengue in recent years due to multi-organ involvement.

The covid -19 pandemic represents a multifaceted challenge for health systems across the globe in terms of the clinical spectrum, diagnosis and management as well, when compared with adults, covid -19 is less frequent in the pediatric population and typically presents as respiratory syndrome however, the virus can produce unusual manifestation in children [5].

Case report

A 3½-year-old female child was apparently healthy 8 days back then the child was taken to a private clinic with the complaint of nausea, vomiting, pain abdomen, and abdominal distension, fever, one episode of blood in stools, generalized weakness. The child was admitted for 3 days and investigation showed a normal range Complete Blood Hemogram (CBC), deranged Liver Function Test (LFT) normal urea, creatinine, hypoproteinemia, urine albumin (++), whole abdomen Ultrasonography (usg) suggestive of hepatomegaly with moderate ascites with bilateral pleural effusion. The child was managed with In-

travenous (i.v) fluids proton pump inhibitors, ofloxacin, walamycin (colistin sulphate), tablet udiliv (ursodeoxycholic acid), Injection MVI (Multivitamin Injection), injection soda-bicarbonate, injection hepamerz. But in view of nonresolution of symptomatology with persistent oliguria with worsening condition child was referred to a higher center for further evaluation and management. So the Child was brought to our hospital by her parent in very sick condition on the 8th day of illness. The child was having persistent abdominal distension, pain abdomen, nausea, vomiting, decreased urine output, one episode of blood in stool, and generalized weakness. On examination GCS-15/15, severe pallor, icterus, sunken eyes, coated tongue, oral ulcers present, tachycardia, hypotension, low volume feeble pulse with bilateral pitting edema, decreased air entry at bases on auscultation with distended abdomen and hepatomegaly, abdominal girth 50 cm. Initial management was done in PICU (pediatric intensive care unit) on lines of probable dengue with warning signs and started on antibiotics (cefotaxime and azithromycin), iv fluid bolus was given in view of poor urine output followed by injection Lasix, maintenance fluid was continued according to current dengue guidelines, also injection artesunate was given and injection vitamin K in view of blood in the stool. Supportive treatment in the form of laxative, antiemetic, proton pump inhibitor, ursodeoxycholic acid. On further Investigation Dengue Serology (IGM) was positive with a low platelet count of 60000 cell/cm on CBC, covid RTPCR was negative, deranged LFTs, normal urea, creatinine with hyponatremia, and raised acute phase reactant CRP, urine routine and microscopy shown significant pus cells, Also covid antibody titer done which was raised, d dimer was very high and serum ferritin, ESR was also raised, so baby' was treated on the line of MIS-C, and started on injection methylprednisolone and injection enoxaparin (low molecular weight heparin), intravenous immunoglobulin was also planned but it was refused by father. The patient responded to steroids and there was a resolution of all clinical symptoms. Despite clinical improvement, there was a persistent nephrotic range of proteinuria. After ruling out all secondary causes of nephrotic syndrome, the patient was started on steroid therapy for 6 wks. The patient responded to steroid therapy for a nephrotic range of proteinuria. Lately, steroids tapered off in a period of another 6 wks, and the patient remains asymptomatic.

Table 1:

Investigations	Outside report	Outside report	Day 8	Day 10	Day 11	Day 13	Day 15	Day 16	Day 23	Day 25	Day 26	Day 27
Hemoglobin (g/dl)	12.9	13	7.8	7.9	7.3		6.4		8.5	8.4		
Total leucocyte count/mm^3	8400	7600	6000	6300	5200		9400		20,400	21,300		
Platelet count	2.18	2	60,000	150000	150000		456000		9,32000	9,48,000		
ESR	45	23	45									
PCV	39.71	38.7	24	25.2	23.4		22.2		29.1	29		
MCV									95.7	96		
Bilirubin (TOTAL)	5	5.72	4.3	4		2.1		1.6				
DIRECT	2.01	4.07	2.4	2.4		1.6		1.1				
INDIRECT	3	1.65	2	2		0.5		0.5				
SGOT	216	264	157	77		47		32				
SGPT	242	137	102	63		40		32				
Total protein	8.3	4.50	4.4	5.8		5.5		6.3				
serum albumin (mg/dl)	4.2	2.1	2.2	2		2		2.3				
Alkaline phosphatase	306	448	385	33.9		599		438				
Blood sugar	109	120										
Urine routine and microscopy	Dark yellow Acidic Albumin ++ Pus cells 8-10/ hpf RBC	Yellow Acidic Albumin-nil Pus cells 2-3/ hpf	p.yellow acidic albumin-nil pus 1-2/hpf rbc-nil				Alkaline, PH-8.5 p.yellow pus-2-4 cell/ hpf rbc-nil		Acidic Albumin +) p.yellow pus 2-3 cell/ hpf rbc-nil			
Blood urea (mg/dl)	38.52	29.60	28 mg/dl	22		10		10				
Creatinine	.52	.54	0.4	0.5		0.5		0.4				
Serum sodium (mmol/l)	129	129	139	134		134		135				
Serum potassium (mmol/l)	5	3.60	4.2	4		4.4		4				
Calcium (TOTAL)			7.8	8.3		7.1		7.4				
ANA												negative
24- hour urine protein creatinine ratio												

USG abdomen			Ascites with bilateral pleural effusion, border-line hepatomegaly									
APTT PTT INR			37.9 sec 13.1 sec 0.9 sec					PT-14.2 sec INR-1	23.5 13.1 1			
HBS AG			Non -reactive									
Malaria antigen detection test			Negative									
Antibodies to Hcv			Non-reactive									
ESR			45 mm/hr						55			
CRP			110		67		17.2					
Dengue IgG Antibody			6.020 panbio negative									
Dengue IgM			22 panbio Positive									
Scrub Typhus Antibody			Non reactive									
Sars-cov-2 total antibody elisa			1.21 positive									
Dengue eElisa			1.080									
Ferritin			299.1ng/ml									
Covid -19 (Rtpcr)			Negative									
USG whole abdomen				Acites with bilateral pleural effusion Borline hepato-megaly								
Urine culture			No growth									
Rectic count			10									
Dimer				4455ng/ml				810 ng/ml		25/10/2021-473.3ng/ml		
Blood culture			No growth									
Echo							Mild pleural effusion					
Urine culture							No growth					
D dimer												
Protein/ creatinine Ratio-urine-spot												Protein/creati-nine spot-30.7 Creatinine-spot urine-52.617 Protein/creati-nine ratio-0.58
Urine culture							No growth					
Mountoux									Negative			
Total serum cholestrol									214 mg/dl			
Serum Triglyc-eriside									230.7 mg/dl			
LDL									52.4 mg/dl			
VLDL									115.5 mg/dl			
25(OH) vit D									46 mg/dl			18.5ng/ml

Discussion

New-onset nephrotic syndrome may mimic Dengue infection in clinical practice. Also, new-onset nephrotic syndrome can be triggered by virus illnesses including SARS-COV-2 Virus [6]. So in a country like India where Dengue infection is endemic & in times of covid -19 pandemic, detailed history, thorough clinical examination & appropriate investigations, along with the high index of suspicion, guide the clinician for correct diagnosis & management. The steroid responsiveness seen in the majority of childhood nephrotic syndrome does not to be altered by SARS-covid-2 infection and dengue [7]. More studies are needed to understand the impact & long-term outcome of covid-19 & dengue on new-onset nephrotic syndrome [6]. In the absence of clinical leads, therapeutic guidelines become more apparent as more cases are reported.

New-onset nephrotic syndrome following various viral illnesses has been reported [8-13] our patient, was managed initially on the lines of Dengue Shock syndrome & post covid MIS-C. Our patient responded well to the care and treatment provided & did not have any new-onset clinical symptoms. Lately, even despite the clinical improvement, there was persistent proteinuria in the nephrotic range & then the child started on steroid therapy. Our patient did well & had normalization of proteinuria following corticosteroids. Even though the nephrotic range of proteinuria due to dengue infection, there were no other characteristic features of nephrotic syndrome. Both puffiness around the eye & generalized anasarca can be seen in nephrotic syndrome & dengue infection complicated dengue and nephrotic syndrome can clinically mimic the same with hypoalbuminemia & proteinuria.

Conclusion

The sars-cov-2 virus could be the trigger for a new-onset nephrotic syndrome that shares the same clinical spectrum, capillary leakage as in complicated dengue.

References

1. Jagadishkumar K, Jagwani H, Malebennur SK, Seshadri T. Nephrotic syndrome complicated with severe dengue infection in a child. Sudanese Journal of Paediatrics. 2020; 20: 181. https://dx.doi.org/10.24911%2FSJP.106-1524477758

2. Perera C. Early manifestation of severe plasma leakage with fluid overload and early acute kidney injury and liver injury in dengue haemorrhagic fever and lessons learnt from using N-acetylcysteine and CRRT: A Case Report. Journal of the Postgraduate Institute of Medicine. 2022; 9. http://doi.org/10.4038/jpgim.8359

3. Halstead SB. Dengue. Lancet. 2007; 370: 1644–1652. [PubMed] [Google Scholar https://doi.org/10.1016/S0140-6736 (07) 61687-0

4. Tansir G, Gupta C, Mehta S, Kumar P, Soneja M, et al. Expanded dengue syndrome in secondary dengue infection: A case of biopsy proven rhabdomyolysis induced acute kidney injury with intracranial and intraorbital bleeds. Intractable & rare diseases research. 2017; 6: 314-318.

5. Rafferty MS, Burrows H, Joseph JP, Leveille J, Nihtianova S, et al. Multisystem Inflammatory Syndrome In Children (MIS-C) and the coronavirus pandemic: Current knowledge and implications for public health. Journal of infection and public health. 2021; 14: 484-494. https://doi.org/10.1016/j.jiph.2021.01.008

6. Morgan KM, Imani PD. Case report: A 5-year-old with new onset nephrotic syndrome in the setting of COVID-19 infection. BMC Nephrol. 2021; 22: 323. https://doi.org/10.1186/s12882-021-02520-w https://doi.org/10.1186/s12882-021-02520-w

7. Enya T, Morimoto Y, Oshima R, et al. Nephrotic syndrome relapse in a boy with COVID-19. CEN Case Rep. 2021; 10: 431-434.

8. Morgan KM, Imani PD. Case report: A 5-year-old with new onset nephrotic syndrome in the setting of COVID-19 infection. BMC nephrology. 2021; 22: 1-4.

9. Pascual M, Thadhani R, Chung RT, Williams Jr WW, Meehan S, et al. Nephrotic Syndrome After Liver Transplantation In A Patient With Hepatitis C Virus-Associated Glomerulonephritis. Transplantation. 1997; 64: 1073-1076.

10. Lai KN, Li PK, Lui SF, Au TC, Tam JS, et al. Membranous nephropathy related to hepatitis B virus in adults. New England Journal of Medicine. 1991; 324: 1457-1463.

11. Zikos D, Grewal KS, Craig K, Cheng JC, Peterson DR, et al. Nephrotic syndrome and acute renal failure associated with hepatitis A virus infection. American Journal of Gastroenterology (Springer Nature). 1995; 90. https://www.sjkdt.org/text.asp?2007/18/3/422/33763

12. Taton B, Moreau K, Lepreux S, Bachelet T, Trimoulet P, et al. Hepatitis E virus infection as a new probable cause of de novo membranous nephropathy after kidney transplantation. Transplant Infectious Disease. 2013; 15: E211-E215.

13. Dossier C, Sellier Leclerc AL, Rousseau A, Michel Y, Gautheret Dejean A, et al. Prevalence of herpesviruses at onset of idiopathic nephrotic syndrome. Pediatric nephrology. 2014; 29: 2325-2331.