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LIVER FUNCTION TEST AND C-REACTIVE PROTEIN IN CHILDREN WITH HAND FOOT MOUTH DISEASE

Paediatrics

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ABSTRACT

Hand and foot mouth disease is extremely commonly encountered in our country. Development of erythematous papulovesicular rashes on the hand, foot, and mouth is the commonest presentation. Myocarditis, pulmonary oedema, aseptic meningoencephalitis, and even death are some of the complications. Therefore, early diagnosis of HFMD is of particular importance. This study tries to compare the values of liver function test and CRP in mild and severe cases of HFMD.

KEYWORDS

HFMD, papulovesicular, complications, liver function test and CRP.

INTRODUCTION

Hand and foot mouth disease is extremely commonly encountered in our country. Development of erythematous papulovesicular rashes on the hand, foot, and mouth is the commonest presentation. Myocarditis, pulmonary oedema, aseptic meningoencephalitis, and even death are some of the complications. Therefore, early diagnosis of HFMD is of particular importance.

Hand-foot-mouth disease is chiefly transmitted through the respiratory and digestive tracts, and via intimate contact. It commonly occurs in children below 5 years. Coxsackievirus and Enterovirus and Echo virus are the commonly encountered viruses[2]. A majority of the infected children show mild symptoms and a relatively good prognosis; the disease develops rapidly in the others, leading to severe complications, such as meningitis, myocarditis, liver damage, acute flaccid paralysis, and even death[1]. Recently Coxsackievirus A 6 and A 10 are also causing HFMD[3].

C-reactive protein (CRP), an acute-phase protein synthesized in the liver, combines with polysaccharides, lecithin, and nucleic acids from various microorganisms (such as bacteria, fungi, and protozoa) to activate the complement system, in order to induce an inflammatory response to the immunomodulatory and phagocytic invasion of host cells. However, CRP expression is up regulated under severe pathological conditions, such as acute myocardial infarction and traumatic inflammation; therefore, CRP expression is a non-specific diagnostic index and must be supplemented by other indices for early diagnosis of severity of paediatric HFMD[1]. This study tries to compare the values of liver function test and CRP in mild and severe cases of HFMD.

OBJECTIVES

To study and compare the values of liver function test and CRP in mild and severe cases of HFMD

MATERIAL AND METHODS

This study was done in the Department of Pediatrics, The Oxford Medical College, Hospital and Research Center, Bangalore.
60 patients were chosen for the study.

Inclusion criteria:

1. Children between 6months to 5 year of age

Exclusion criteria:

1. Children with raised Liver function tests and CRP values.
2. Children on immunosuppressant drugs.

RESULTS

Table 1: Age Distribution

Number	Mean age	Std Deviation
60	2.45	0.82 years

Table 2: Sex Distribution

Number	Male	Female
60	43	17

Table 3: ALT, AST and CRP values in mild and severe cases

VARIABLES	VALUES	MILD	SEVERE
ALT	MEAN	24.96	58.45
	SD	6.02	7.97
AST	MEAN	15.34	46.58
	SD	5.76	3.75
CRP	MEAN	1.34	19.75
	SD	1	2.73

DISCUSSION

The mortality and complication rates were much more in later epidemics than in those preceding. Because of this transformation of a mild self limited condition to a killer disease, increasing attention is now being paid to the study of HFMD[4,5,6].

Hand-foot-mouth disease (HFMD) is chiefly transmitted through the respiratory and digestive tracts, and via intimate contact. EV71 replicates in the intestinal tract and is typically shed for between two and four weeks, and sometimes for as long as 12 weeks post-infection. Replication also occurs in the upper respiratory tract and the virus has been recovered from throat swabs for up to two weeks post-infection. Thus transmission can include faecal-oral and respiratory secretions through direct person-to-person contact, droplets or fomites. Incubation period averages 3-6 days. Factors that affect the transmission include level of hygiene, water quality, and the extent of Crowding. Patient education includes good hygiene and avoidance of rupturing blisters[7].

HFMD usually manifests in a mild manner in children, in the form of a fever, erythematous papulo vesicular rash, on the hand, foot, and mouth. However, some patients also develop encephalitis, acute flaccid paralysis, and myocarditis induced by impairment of central nervous system and respiratory system. Mild cases that rapidly develop these conditions have a short therapeutic time window and high fatality rate.The severity of HFMD is closely associated with the activation of an inflammatory cytokine cascade. CRP is a typical inflammatory marker secreted by an acute phase protein that is closely correlated with the oxidative stress response (Wang et al., 2007)[6]. According to recent studies ;virus invasion and continuous breeding in children with severe hand-foot-mouth disease lead to viremia and various viscera complications, and the liver function injury is the most common.

CONCLUSION

In our study we conclude that CRP and liver function could be used to characterize the severity of HFMD; that severe cases of HFMD have elevated AST, ALT and CRP.

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