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Original

BANDEMIA IN SHIGELLOSIS

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Bandemia is a phenomenon observed in infections caused by gram negative organisms, particularly of shigella species. The occurrence has not been quantitated as a diagnostic guideline implicating shigella organisms prior to availability of culture results. We have looked at bandemia in 55 patients with documented shigellosis and compared it to that in 36 non-shigella diarrhoea cases. A 5% or more band cells in the peripheral blood smear is being proposed as a significant indicator of possibility of shigellosis given the proper clinical set up.

Shigellosis, an infection caused by various shigella species is characterised by bandemia, an increase in number of band cells (stabs) in the differential count of the white blood cells. The phenomenon has occasionally been associated with other gram negative organisms such as E.coli and Salmonella but not viral infections although recent reports have attributed the appearance of immature neutrophils in rota virus enteritis[1]. The purpose of this study is to identify a cut off point in the number of band cells that favours diagnosis of shigellosis prior to availability of blood and stool culture results.

METHODS

Hospital records of 55 patients with documented shigellosis by stool culture and that of 36 non-shigella diarrhoea cases admitted to the Departments of Paediatrics at Salmaniya Medical Centre and Bahrain Defence Force Hospital were retrospectively reviewed for the presence of bandemia. The shigellosis cases were mostly due to Shigella flexnerie, Shigella sonnie and Shigella boidii. None were due to Shigella dysenteriae (Table 1).

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Table 1: Number of cases and serotype of shigella species responsible for diarrhoea in this study

Type	No. of cases
Sh. flexnerie	33
Sh. sonnie	13
Sh. boidii	9
Sh. dysenteriae	0
Total	55

Ranges of band cells (stabs) considered included: <5%, 5-7%, 8-9% and >10%. These ranges were compared in the two categories of patients using Chi square (X2) test (Table 2).

Table 2: Cases of shigellosis and non-shigellosis and ranges of bands in the peripheral blood smears

Type of infection	Percentage of Bands				
	<5	5-7	8-9	>10	Total
Shigellosis	5	16	5	29	55
Non-shigellosis	30	2	4	0	36
Total	35	18	9	29	91

RESULTS

In the 55 patients with documented shigellosis only 5 had <5% bands in the peripheral smear while 27 out of 36 non-shigella diarrhoea cases had this low percentage of bands (Table 1). Using Chi square (X2) test for comparison between the two categories of patients P was < 0.001.

DISCUSSION

It was observed that predominance of bands over segmented neutrophils in the differential leutocytic count in a patient with diarrhoea was strongly suggestive of shigellosis. Bands exceeded segmented neutrophils in 85% of children with shigellosis but the predominance of bands were present only in 19% of children with non-shigella diarrhoea[2]. In another study only 32% of the children with shigella had more bands than segmented[3]. In Shigella septicaemia, monocytosis of greater than 25% is reported as a common finding[4]. We are not aware that the percentage of bands per se in the differential count has previously been correlated with diagnosis of shigellosis. Moreover systemic infections, particularly due to gram negative organisms such as E.coli and salmonella species and diarrhoea of viral aetiology have been clinically observed to be associated with significant bandemia[1]. We have made an attempt to find out a significant cut off point for bandemia that in itself may indicate shigellosis regardless of the total number of the white blood cells or number of the segmented granulocytes. It may be more appropriate subsequently to consider the absolute count of band cells rather than just the percentage. Such consideration will account for variation in the total number of the white blood cells. A cut off point of >5% band cells observed in over 90% of the situations is suggested to be due to shigellosis, albeit in the appropriate clinical set up for the disease.

CONCLUSION

Bandemia is a phenomenon observed in gram-negative infections particularly shigellosis. This has been documented in a retrospective study comparing documented shigellosis cases with non-shigella diarrhoea. A cut off point of statistical significance for bandemia that favours shigellosis has been proposed. Such an observation requires collaboration on a large number of studies in a multicentre project.

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