The clinical value of plasma hepcidin levels in predicting bacterial infections in febrile children

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Background

Febrile children are often evaluated for the risk of bacterial infections in the pediatric emergency department (PER). Hepcidin is an acute phase inflammatory protein. In this study, we examined the plasma hepcidin levels in febrile children.

Method

This study was conducted at a pediatric emergency department with 123 febrile children. We measured plasma hepcidin levels using an enzyme-linked immunosorbent assay. We further evaluated clinical characteristics and routine blood tests along with the hepcidin levels.

	Subjects	Bacterial culture		p-value
Number	112	11		
		Stool	Urine	
		6	5	
Mean Age (months)	35.4	19.1		0.084
Male gender, N (%)	59 (52.7%)	5 (45.5%)		0.650
Length of hospital stay (day)	3.7	5		0.044
CRP (mg/L)	27.0	34.9		0.546
White blood cells (1000/uL)	9.5	8.5		0.535
Hemoglobin (g/dL)	12.1	11.8		0.445
GOT (IU/ml)	48.4	43.3		0.745
GPT (IU/ml)	34.9	23.8		0.663
Hepcidin (ng/mL)	59.8	97.6		0.007

Results

We observed significantly higher plasma hepcidin levels in bacterial enteritis ($p = 0.026$) and combined with urinary tract infection ($p = 0.007$). Furthermore, hepcidin levels had a significantly positive correlation with CRP level and length of hospital stay ($R = 0.296$, $p = 0.001$ and $R = 0.213$, $p = 0.018$). Hepcidin levels greater than 65 ng/mL also more accurately predicted bacterial infections than values below 65 ng/mL (11.7% vs. 2.1%, Odds ratio 8.4, 95% confident interval 1.7-40.9, $p = 0.002$).

Conclusion

This study provides evidence that febrile children with bacterial infection have higher plasma hepcidin levels, and the values correlated with CRP level and length of hospital stay. Therefore, hepcidin values can potentially be adopted as a biomarker for identifying febrile children with bacterial infection, particularly bacterial enteritis.