UTILITY OF PROCALCITONIN IN THE MANAGEMENT OF FEBRILE INFANTS UNDER THAN SIX MONTHS WITH BACTERIAL INFECTIONS

Tej¹, R. Kbaili¹, S. Ghorbel¹, F. Ferhi², S. Boussetta³, N. Kahloul¹, S. Tilouche¹, J. Bouguila¹, L. Boughamoura¹.

¹Farhat Hached Hospital, pediatric, Sousse, Tunisia; ²Farhat Hached Hospital, anesthesia department, Sousse, Tunisia.
³Farhat Hached Hospital, biochemistry department, Sousse, Tunisia

Introduction:

The management of febrile infants is often difficult. Procalcitonin has demonstrated his potential as an acute-phase biomarker for severe bacterial infections. The purposes of our study were: Is to compare the biologic parameters: procalcitonin,C-reactive protein, white blood cell and absolute neutrophil cell counts in detecting of severe bacterial infections and to confirm that the serum PCT level was more sensitive and specific in the detection of bacterial infection.

Subjects and Methods

This was a prospective study that included infants with fever over a period of 8 months. The diagnostic characteristics of procalcitonin,C-reactive protein, white blood cell and absolute neutrophil cell counts for detecting severe bacterial infections were described and compared for overall population and for subgroups of infants. Laboratory tests cutoff values were calculated based on receiver operating curve analysis.

Conclusion

Our results have deduced that procalcitonin has better characteristic compared with traditional screening tests for identifying febrile infants less than 6 months with severe bacterial infection. In addition, it's a useful marker for monitoring treatment.

Results

Among 103 infants included, 43(41.75%) was diagnosed as having a severe bacterial infections. Median of procalcitonin, C-reactive protein, white blood cells count and absolute neutrophil count were singificatively higher in this group than in non –severe bacterial infection patients (Fig1)

	AUC [IC 95]	p
PCT ng/mL	0,909 [0,84-0,98]	<0,0001
CRP mg/L	0,708 [0,60-0,82]	0,001
GB cell/mm ³	0,641 [0,53-0,75]	0,019
PNN cell/mm ³	0,754 [0,66-0,85]	<0,0001

Fig 1 Comparison of PCT, CRP, GB and PNN ROC Curves for IBS Diagnosis.

Procalcitonin at a threshold of 0.495 ng/ml was the most effective for the identification of severe bacterial infection with a sensitivity of 83.7% and a specificity of 93.3%. A similar result was observed in infants younger than 28 days. (fig 2)

	AUC [IC 95%]	p
PCT ng/mL	0,913 [0,79-1]	0,003
CRP mg/L	0,719 [0,44-0,99]	0,109
GB cell/mm ³	0,663 [0,43-0,90]	0,233
PNN cell/mm ³	0,847 [0,67-1]	0,011

Fig 2: ROC curves for the detection of IBS in infants aged 7-28 days.

In the multivariate analysis, procalcitonin (Odds ratio=95,p<0.001) was the most predictive marker of bacterial infections (fig3). Kinetic study of procalcitonin showed that its decrease was associated with treatment efficacy(tab I)

	AUC [IC 95%]	p
PCT ng/mL	0,872 [0,77-0,97]	<0,000
CRP mg/L	0,556 [0,35-0,76]	1
GB cell/mm ³	0,517 [0,34-0,69]	0,535
PNN cell/mm ³	0,622 [0,46-0,79]	0,851
		0,173

Fig 3 Comparison of the ROC curves of the four parameters for IBI detection.

	Average PCT (ng/mL)		ATB change N (%)	No ATB change N (%)
	Initiale	At control		
Group with increasing kinetics (N=7)	16,8	51,32	7 (100)	0
Group with decreasing kinetics(N=11)	1,31	0,28	2 (18,2)	9 (81,8)

Table I: Kinetics of PCT and antibiotic therapy in the IBS group