

# LACTATE IS THE BEST CEREBROSPINAL FLUID (CSF) PREDICTOR OF BACTERIAL ETIOLOGY AMONG COMMUNITY MENINGITIS



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## INTRODUCTION

The early diagnosis of infectious meningitis is difficult. Indirect CSF findings often contribute to guide therapeutic approach, for instance, in deciding the use of antibiotics.

The aim of this study was to compare the diagnostic sensitivity of several CSF parameters for bacterial meningitis etiological definition.

## METHODS

CSF samples from community meningitis cases analyzed in “Senne Liquor Diagnostico” were included. We considered bacterial meningitis all the cases in which *S. pneumoniae*, *N. meningitides*, or *H. influenzae* were identified by bacterioscopy, culture, and or latex agglutination. We considered viral meningitis all the cases in which a virus was identified by polymerase chain reaction (PCR). Sensitivity analysis and ROC curve of leukocyte count, glucose, protein, and lactate were carried out for bacterial meningitis diagnosis.

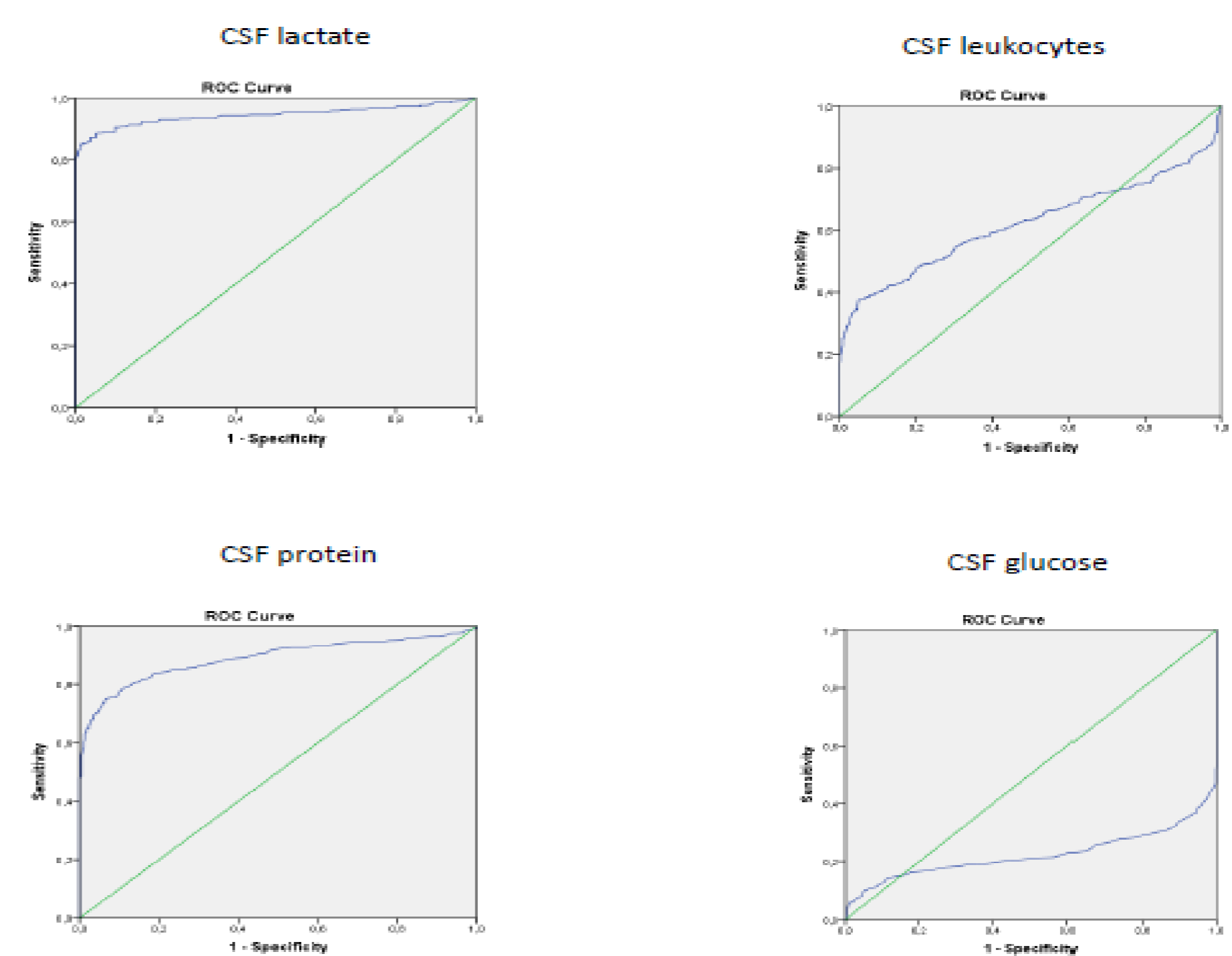
## RESULTS

We included 634 cases of bacterial meningitis and 525 cases of viral meningitis. The greater area under the curve was of CSF lactate (AUC=0.995). The others AUCs were: glucose (AUC=0.091), protein (AUC=0.983), and leukocyte count (AUC=0.428). With CSF lactate cut-off of 30 mg/dl the sensitivity was 88.8% and the specificity was 93.3%. With CSF lactate cut-off of 30 mg/dl the sensitivity was 84.1% and the specificity was 99%.

## CONCLUSION

CSF lactate was the parameter with better association with the diagnosis of bacterial meningitis.

The CSF lactate with cut-off of 30 mg/dl had high sensitivity and specificity for the diagnosis of bacterial meningitis diagnosis.



**Figure 1.** ROC curve analysis of CSF biomarkers. Receiver operating characteristics (ROC) of cerebrospinal fluid markers of bacterial meningitis: CSF lactate (AUC 0.944; 95% CI 0.929 – 0.959), CSF leukocytes (AUC 0.620; 95% CI 0.588 – 0.653), CSF protein (AUC 0.889; 95% CI 0.869 – 0.909), and CSF glucose (AUC 0.225; 95% CI 0.196 – 0.254).

**Table 2:** Sensitivity and specificity of CSF lactate for the diagnosis of acute bacterial meningitis.

CSF lactate (mg/dl)	Sensitivity (%)	Specificity (%)
20	93.3	71.4
25	88.8	93.3
30	84.1	99
35	79.6	100

### REFERENCES:

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