A comparison between Pyrogallol Red and Sulphosalicylic acid turbidimetric methods for protein estimation in Cerebrospinal fluid

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Introduction and Objectives

The estimation of protein in cerebrospinal fluid (CSF) is important in certain disease conditions. The sensitivity of the Biuret method which is the standard method for protein estimation is not sufficient to be used for CSF specimens. This has lead to the development of various assay techniques for this purpose. The laboratory of Teaching Hospital, Karapitiya employs two such methods; the Pyrogallol red (PGR) method in the day laboratory and Sulphosalicylic acid turbidimetric method (SSA) in the on-call laboratory. The aim of this study was to compare these two methods.

Methods

Linearity and reproducibility were evaluated using solutions with known albumin concentrations while correlation was tested using retained CSF specimens.

Results

Linearity: The PGR method gave a linear response up to 200 mg/dL while the SSA method was linear up to 300 mg/dL. Reproducibility: the inter-assay CVs at 40 mg/dL were 9.94% and 5.09% for the PGR and SSA methods respectively. Reproducibility was superior at 120 mg/dL for both methods with CVs of 5.72% and 3.55% for PGR and SSA methods respectively. Correlation: Though a positive correlation (r) of 0.9077 (r^2=0.824) was observed there was a significant difference between the values obtained using the two methods and this was confirmed using the simple t-test ($p < 0.0001$). The equation of [PGR] = 0.435 x [SSA] + 0.693 was derived through linear regression.

Conclusions

The significant difference observed between the results obtained using the two techniques discredits the use of the two methods within the same laboratory. Further studies needs to be done to determine the best test method to be used in routine practice.