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ST VINCENT'S PATHOLOGY

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ISOELECTRIC FOCUSING OF CSF SAMPLES FOR DIAGNOSIS OF MULTIPLE SCLEROSIS

INFORMATION SHEET

INTRODUCTION

The detection of oligoclonal bands in cerebrospinal fluid (CSF) is an important tool in the diagnosis of multiple sclerosis as they are rarely seen outside this disorder. These bands indicate the local production of antibodies of restricted specificities within the central nervous system (CNS). Isoelectric focusing (IEF) is a highly sensitive electrophoretic technique that separates proteins according to their charge (isoelectric point). Polyclonal immunoglobulins migrate as a smear, whilst monoclonal, or oligoclonal bands, migrate as a series of discrete bands. The migrated IgG immunoglobulins within the gel are visualised by immunostaining.

THE TEST

To perform this test, we require both 0.5 mL of CSF and 0.5 mL of serum, collected on the day of the lumbar puncture. The serum sample is essential in order to ensure that any oligoclonal immunoglobulin bands detected are of CSF origin and do not simply represent spill over into the CSF of oligoclonal immunoglobulins that are present in the serum.

INTERPRETATION

The various patterns of results and the clinical interpretations are listed below.

RESULTS	
No CSF restricted IgG oligoclonal bands	No evidence of CNS inflammation
CSF restricted IgG oligoclonal bands	Evidence of CNS inflammation, Suggestive of multiple sclerosis
No CSF restricted IgG oligoclonal bands. Identical oligoclonal bands in both CSF and serum	Evidence of systemic inflammation
CSF specific IgG oligoclonal bands detected with additional identical oligoclonal bands in both CSF and serum	Evidence of CNS inflammation in the context of systemic inflammation
One CSF specific band detected	Uncertain significance. Repeat on a later occasion if clinically indicated
Similar monoclonal profile detected in both CSF and serum	Suggestive of a serum paraprotein

The sensitivity and specificity of the detection of CSF restricted IgG oligoclonal bands by IEF in the diagnosis of multiple sclerosis are 96% and 92% respectively.