

An audit of follow-up of small bands detected on serum protein electrophoresis

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Background & aims

Low level paraproteins are relatively common, with most accounted for by monoclonal gammopathy of uncertain significance (MGUS). However, some patients have clinically important disease¹ and a proportion of patients will progress to having an identifiable paraprotein².

Guidance from the Australasian Association of Clinical Biochemists (AACB) on standardised reporting of protein electrophoresis³ recommends that small protein bands on a polyclonal background (SBPB) should be reported with a comment indicating uncertain clinical significance, and advises 1) urine protein electrophoresis or serum free light chains (SFLC), and 2) repeat serum protein electrophoresis in 3-6 months if clinically indicated.

Our current practice is to add a comment advising repeat serum protein electrophoresis in 3-6 months, and urine protein electrophoresis/SFLC if not already performed.

This audit aimed to assess the effectiveness of our reporting practice in initiating appropriate follow-up. We also wanted to know how many patients with SBPB went on to develop a paraprotein, and how many developed an associated neurological disorder.

Criterion	Compliance
Repeat electrophoresis comment added	90.4%
Urine protein electrophoresis/SFLC comment added	61.5%
Repeat electrophoresis within 3-6 months	21.2%
Urine protein electrophoresis/SFLC done	30.7%

Findings and observations

- Most results had comments recommending follow-up serum protein electrophoresis and further testing; however, relatively few patients had these tests performed.
- 5/6 repeat samples in which no band was detected were not immunofixed to confirm absence of the band.
- The Walton Centre is a specialist centre with a large catchment area, and patients may be followed up locally. Review of clinical letters showed that 48.1% of audited patients had local follow-up of SBPB requested. Overall, 61.5% had at least one form of relevant follow-up documented.
- 47 patients had a probable or definite diagnosis recorded; of these 6 (12.8%) were paraprotein-associated neurological disorders.
- Of the 17 patients with repeat serum protein electrophoresis requested by Walton Centre clinicians, 12 (70.5%) went on to develop a detectable paraprotein. This emphasises the importance of following up small protein bands.

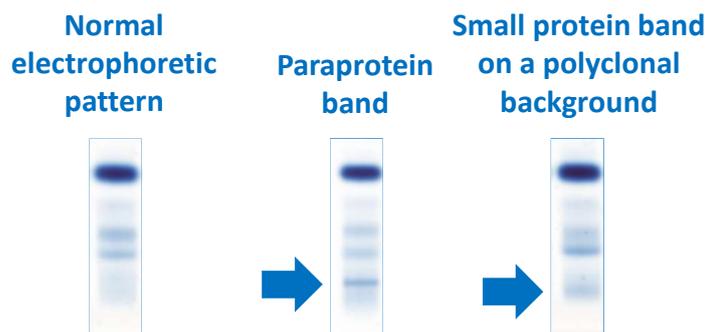
Recommendations

- Present findings at a Trust Grand Round to increase clinical awareness of the importance of small protein bands and appropriate follow-up, before re-auditing.
- Update laboratory SOPs to improve consistency of recommending follow-up tests and ensure that all repeat serum protein electrophoresis samples with no detectable band undergo immunofixation to confirm the absence of the protein band.

References

1) UKMF & NMSG guidance (2009) British Journal of Haematology 147: 22-42
3) Tate et al. (2012) Ann Clin Biochem 49(3): 242-256

2) Merlini and Stone (2006) Blood 108: 2520-2530



Standards

For all samples in which SBPB are detected:

- Comment(s) should be added to the report advising follow-up tests
- Repeat serum electrophoresis should be requested in 3-6 months
- Urine protein electrophoresis or SFLC should be requested

Methods

4409 requests for immunofixation electrophoresis from April 2012 to December 2018 were extracted from the LIMS. 57 had a SBPB result and were included in the audit, and checked for the presence of a follow-up test comment. The electronic record for each patient was reviewed for:

- Repeat serum electrophoresis
- Urine electrophoresis/SFLC
- Clinical letters requesting external follow-up
- Final/most recent differential diagnosis