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ORIGINAL ARTICLE

Reporting Practices of Serum Protein Electrophoresis in Pakistan - a Multicenter Survey

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SUMMARY

Background: **Serum Protein Electrophoresis (SPE) is crucial for the diagnosis and follow-up of monoclonal gammopathy (MG), as it helps to separate and identify these paraproteins. Currently, Pakistan lacks standardized guidelines for SPE reporting and analytical performance. This survey aims to analyze reporting variations from Consultant Chemical Pathologists in Pakistani laboratories.**

Methods: **This cross-sectional survey was conducted by the section of Chemical Pathology, Department of Pathology and Laboratory Medicine, at Aga Khan University Hospital, Karachi. A previously validated and published tool was used with some modifications to assess analytical techniques, reporting patterns, and interpretations provided with SPE by different laboratories. Frequency and percentages were calculated for each response and descriptive results were also evaluated. Differences between laboratories were also assessed qualitatively.**

Results: **Out of the eight laboratories contacted, seven participated in the survey, yielding a response rate of 87.5%. Immunofixation Electrophoresis (IFE) was used by all labs for serum immunotyping. All labs reported a new small abnormal band in patients with no known monoclonal gammopathy or with a known M-protein. Variations were found in terminologies used to label paraprotein, terminologies used to report normal and pathological SPE patterns, electrophoretic technique, methods for quantifying paraprotein in the gamma region on SPE and for albumin quantification. Similarly, the number of decimal places reported, reporting of multiple monoclonal proteins and small paraprotein in the beta region or monoclonal proteins less than 1 g/L, approach for screening, number of fractions reported in gamma region and reporting of interferences were also not standardized and variations were noticed.**

Conclusions: **Our survey highlighted variations in practices of SPE reporting. These differences in laboratory practices could result in inconsistent test results, which could adversely affect patient care.**
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Supplementary Data

Table S1. Frequency of responses for the reporting practices.

Questions	Responses
1. What is the most common approach in your laboratory in order to screen an individual for the presence of a monoclonal gammopathy in the initial evaluation?	
A. Serum protein electrophoresis only	**1**
B. Serum protein electrophoresis with reflex to immunofixation or immunosubtraction	**0**
C. Serum protein electrophoresis and suggest immunofixation or immunosubtraction and serum-free light chain	**3**
D. Serum protein electrophoresis combined with serum protein immunofixation and serum-free light chain	**2**
E. Serum protein electrophoresis and urine for Bence-Jones protein	**0**
F. Serum protein electrophoresis and suggest immunofixation	**1**
2. Do you perform screening using urine protein electrophoresis?	
A. Yes	**4**
B. No	**3**
3. What would be the next test step you do, when you detect a monoclonal band in the beta region?	
A. Report increase in beta fraction	**0**
B. Reflex to immunofixation	**3**
C. Advise immunofixation	**4**
4. Do you report the other fractions of serum protein electrophoresis?	
A. Yes	**5**
B. No	**2**
5. Please specify the decimal places reported in quantitative fractions	
A. None	**2**
B. One	**3**
C. Two	**2**
6. Do you report total immunoglobulin concentration with protein electrophoresis (e.g. IgG, IgA or IgM)?	
A. Yes	**1**
B. No	**6**
7. How do you report the concentration of a medium to large monoclonal protein in the beta region on serum protein electrophoresis?	
A. Monoclonal protein concentration	**2**
B. Monoclonal protein concentration after subtracting a predetermined value for beta (beta-1 or beta-2)	**1**
C. 'Monoclonal protein + total beta'	**2**
D. None	**1**
E. Tested separately	**1**
8. How do you report a small paraprotein in the beta region that cannot be distinguished from the normal beta proteins?	
A. Do immunofixation and report the presence of paraprotein	**2**
B. Do not proceed with immunofixation	**2**
C. Suggest IFE	**1**
D. Suggest immunofixation	**1**
E. Do immunofixation and report the presence of paraprotein & use back gel technique for confirmation	**1**
9. How do you report monoclonal protein less than 1g/L?	
A. Numerical value	**4**
B. As <1g/L	**0**
C. We give a descriptive report of faint band	**1**

Table S1. Frequency of responses for the reporting practices (continued).

Questions	Responses
D. We do quantify monoclonal proteins	1
E. Qualitative analysis only	1
10. Do you report a significant change in the value of paraprotein level?	
A. Yes	3
B. No	4
11. When do you call it a significant change? Specify	
A. None	5
B. 15% change	0
C. 50% change	2
12. How do you report a normal serum protein electrophoresis pattern?	
A. Normal pattern	1
B. Normal pattern. M-protein not detected	3
C. Complete description of all bands with pattern and possible causes	1
D. No significant abnormality is noted	1
E. No para protein detected	1
13. Do you report other pathological patterns?	
A. Yes	6
B. No	2
14. Do you report an oligoclonal banding pattern?	
A. Yes	4
B. No	3
15. Do you report about the interferences to the clinician?	
A. Yes	5
B. No	2
16. Do you report small abnormal band (< 1g/L) seen for the first time in a patient with no known monoclonal gammopathy?	
A. Yes	4
B. No	3