Unexpected Trio: Bisalbuminaemia and Autoimmune Haemolytic Anaemia Emerging in Monoclonal Gammopathy

Sir,

Human serum albumin (ALB) is an essential protein in human plasma, accounting for approximately 60-65% of the total plasma protein content. It plays a key role in preserving plasma oncotic pressure.[1] Bisalbuminaemia, also known as alloalbuminaemia, is a rare serum protein abnormality that can be either inherited or acquired. It is characterised by a distinctive bicuspid electrophoretic pattern within the ALB fraction observed during serum protein electrophoresis (SPE). On densitometry, it appears as a bifid peak, resembling a double-headed mountain.[2] Hereditary and acquired forms of bisalbuminaemia are typically identified incidentally during screenings for monoclonal gammopathy.[3,4]

A 42-year female presented with a 1–2 month history of fatigue and generalised weakness. She had been receiving corticosteroid therapy for an underlying autoimmune disorder. There was no significant past medical or family history. The patient was referred to our laboratory for SPE and immunofixation electrophoresis (IFE). SPE revealed an unexpected finding of bisalbuminaemia characterised by a bicuspid electrophoretic pattern in the ALB fraction (Figure 1A). Additionally, a sharp, discrete, well-defined M-spike was observed in the gamma region, indicating a monoclonal protein peak. This monoclonal component measured 7.18 g/dL, accounting for 82.7% of the total protein in the gamma region (Figure 1A). Subsequent immunofixation confirmed the presence of IgG kappa monoclonal gammopathy (Figure 1B). Further haematological evaluation included a direct antiglobulin test (Coombs test), which demonstrated a positive result (2+), indicating the coexistence of autoimmune haemolytic anaemia (AHA) (Table I).

Table I: Haematological investigations.

Parameters	Results	Reference ranges
Haemoglobin	6.1 g/dL	11-14.5
Total leucocyte count	6.2 x 10^9/L	4.6-10.8
Platelets	132 x 10^9/L	154-433
Peripheral film	Anisocytosis, poikilocytosis with marked rouleaux formation	-
Total bilirubin	3.0 mg/dL	0.1-1.2
Direct bilirubin	1.5 mg/dL	0-0.2
Indirect bilirubin	1.5 mg/dL	0.1-0.8
Coombs test	Positive (2+)	Negative

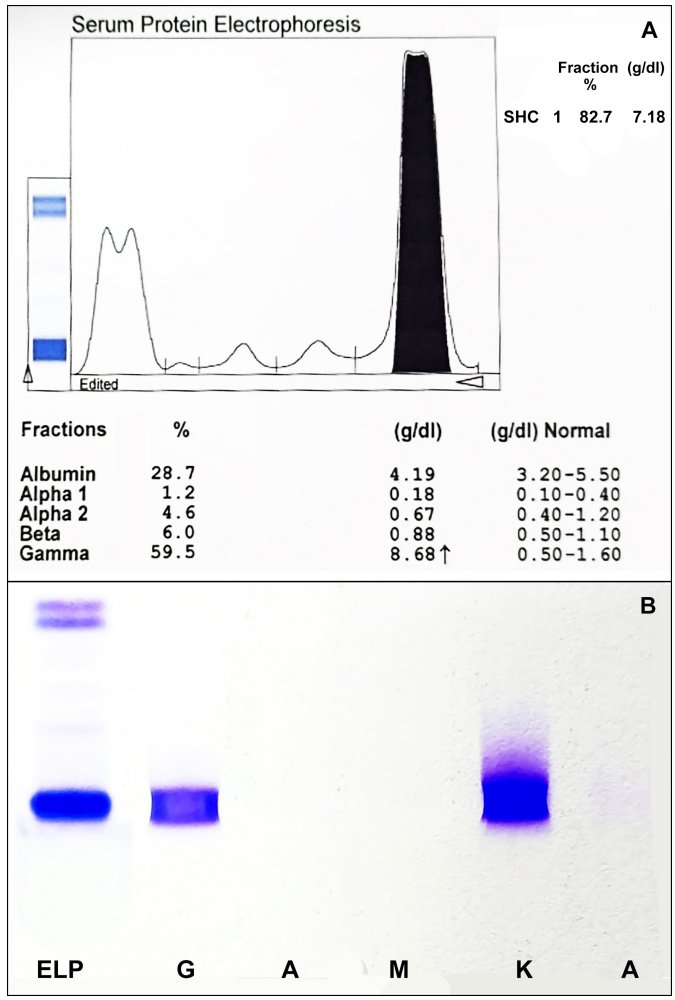

Figure 1: (A) Electrophoretogram showing bifid albumin peak as well as M-spike. (B) Serum immunofixation electrophoresis showing bisalbuminaemia with IgG kappa monoclonal gammopathy.

The coexistence of bisalbuminaemia, monoclonal gammopathy, and AHA in this patient represents a highly unusual and previously unreported clinical phenomenon. While bisalbuminaemia is often detected incidentally during monoclonal gammopathy screenings, there is no established pathophysiological link between the two conditions. The presence of an IgG kappa monoclonal protein in this case, along with a positive Coombs test indicating AHA, raises intriguing questions about potential underlying mechanisms and interactions between these anomalies.

This case represents a rare and unexpected trio of bisalbuminaemia, monoclonal gammopathy, and AHA. To the best of the authors' knowledge, this unique combination has not been previously reported, emphasising the need for further investigation into the potential relationships and underlying mechanisms of these findings.

COMPETING INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

MUNE, HM: Drafting and critical revision of the manuscript.
SBH: Conception, design, acquisition, analysis, and interpretation of data.
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Muhammad Umer Naeem Effendi, Syed Bilal Hashmi and Hafsa Majid

Department of Pathology and Laboratory Medicine, The Aga Khan University Hospital, Karachi, Pakistan

Correspondence to: Dr. Syed Bilal Hashmi, Department of Pathology and Laboratory Medicine, The Aga Khan University Hospital, Karachi, Pakistan
E-mail: syedbilal355@gmail.com

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