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Prolonged aPTT as a diagnostic clue in a patient with monoclonal gammopathy of renal significance: A case report

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Abstract
Activated partial thromboplastin time (aPTT) is typically used to evaluate intrinsic and common coagulation pathways, but unexplained prolongation csan occassionally serve as a diagnostic clue for systemic diseases. We report a case of a 34-year-old male with thalassemia intermedia who developed proteinuria and prolonged aPTT during pre-biopsy evaluation. Renal biopsy ultimately revealed proliferative glomerulonephritis with monoclonal immunoglobulin deposition disease (PGNMID), indicative of monoclonal gammopathy of renal significance (MGRS). This case underscores the importance of recognizing atypical coagulation abnormalities as potential indicators of underlying plasma cell dyscrasia. Here's an introduction for your case report.

Keywords: aPTT prolongation, thalassemia intermedia, monoclonal gammopathy of renal significance, PGNMID, glomerulonephritis, cryoprecipitate, renal biopsy, kappa light chain

Introduction

The activated partial thromboplastin time (aPTT) serves as a common initial screening test for evaluating the intrinsic and common pathways of coagulation. While typically associated with bleeding disorders or anticoagulant use, an unexplained prolongation of the aPTT can occasionally point towards underlying systemic conditions. This case report details the presentation of a 34-year-old male with thalassemia intermedia who developed proteinuria and, notably, a prolonged aPTT during his pre-renal biopsy workup. Subsequent investigations and renal biopsy revealed proliferative glomerulonephritis with monoclonal immunoglobulin deposition disease (PGNMID), a manifestation of monoclonal gammopathy of renal significance (MGRS). This unusual presentation underscores the potential for atypical coagulation findings to act as a crucial diagnostic clue in identifying subtle plasma cell dyscrasias affecting the kidney.

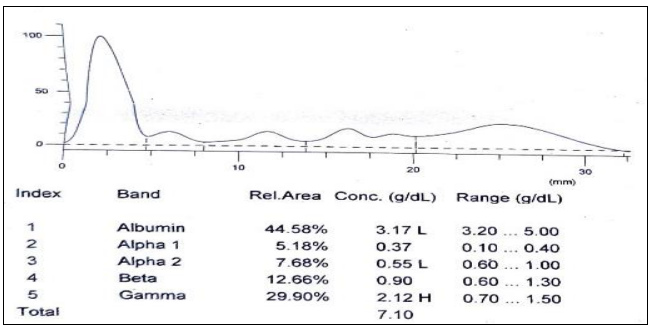
Case Report

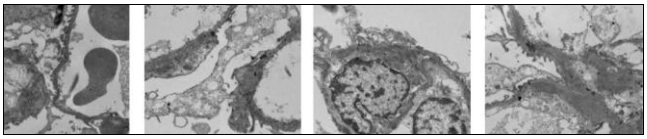
A 34-year-old male with known thalassemia intermedia, on maintenance therapy with hydroxyurea, thalidomide, and aspirin, presented with new-onset mild pedal edema. Initial investigations revealed 1+ proteinuria on dipstick, and a 24-hour urine protein of 1.3 g/day. A renal biopsy was planned for further evaluation.

Routine pre-biopsy coagulation studies revealed a prolonged aPTT of 20 seconds above the control (aspirin had been withheld four days prior). Platelet count was normal, and liver function tests and abdominal ultrasonography were unremarkable. Due to the unexplained prolongation, the biopsy was deferred. The patient received cryoprecipitate, and repeat aPTT performed the following day remained 14 seconds above normal, prompting further evaluation.

Additional workup revealed:

- Platelet count: Normal
- Liver functions: Normal
- Lupus anticoagulant: Negative
- ANA and extended autoimmune profile: Negative
- Serum protein electrophoresis and immunofixation: No monoclonal band.





The aPTT subsequently corrected, and the renal biopsy was safely performed. Histopathology demonstrated immune complex–mediated glomerulonephritis with kappa light chain restriction, favoring a diagnosis of proliferative glomerulonephritis with monoclonal immunoglobulin deposition disease (PGNMID)—a form of monoclonal gammopathy of renal significance (MGRS). A whole-body PET scan revealed a small lytic lesion in the iliac bone, further supporting an underlying plasma cell dyscrasia.

Discussion

Monoclonal gammopathy of renal significance (MGRS) refers to renal disorders caused by nephrotoxic monoclonal immunoglobulins secreted by non-malignant B-cell or plasma cell clones. While MGRS is typically associated with proteinuria and renal dysfunction, coagulation abnormalities such as prolonged aPTT are rare but can serve as a diagnostic clue.

In this patient, aPTT prolongation may have been due to one or more of the following mechanisms:

- Interference by circulating monoclonal proteins with phospholipid-dependent clotting assays.
- Non-specific binding of monoclonal immunoglobulins to clotting factors (particularly factor VIII or IX), resulting in functional inhibition.
- Assay interference from paraproteins, similar to lupus anticoagulant-like behavior, despite negative lupus anticoagulant testing.

While the initial protein electrophoresis was negative, the renal biopsy findings and PET-avid lytic lesion confirmed an underlying monoclonal process. This highlights the limitations of serum electrophoresis alone in early MGRS and reinforces the diagnostic value of tissue biopsy and advanced imaging.

Conclusion

This case illustrates the diagnostic importance of unexplained aPTT prolongation in patients with subtle systemic symptoms. In the presence of proteinuria and absence of overt bleeding, a persistently prolonged aPTT should prompt evaluation for plasma cell disorders, even in the absence of typical paraproteinemia. Monoclonal gammopathy should be considered a potential cause of prolonged aPTT, particularly in cases with renal involvement, and may precede other hematologic or imaging findings.

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