KESANS: International Journal of Health and Science
2808-7178 / 2808-7380
http://kesans.rifainstitute.com/index.php/kesans/index

Prolonged Activated Partial Thromboplastin Time in Adults with Nephrotic Syndrome: A Case Report

[1]Mutiara Ferina*, [2]Alvina, [3]Karina Shasri Anastasya, [4]Deasyka Yastani, [5]Andira Larasari, [6]Rima Anindita Primandari
[1]Department of Clinical Pathology, Faculty of Medicine, Universitas Trisakti, Indonesia*; email: mutiara.ferina@trisakti.ac.id
[2] Department of Clinical Pathology, Faculty of Medicine, Universitas Trisakti, Indonesia
[3]Department of Nutrition, Faculty of Medicine, Universitas Trisakti, Indonesia
[4]Department of Biochemistry, Faculty of Medicine, Universitas Trisakti, Indonesia
[5]Department of Neurology, Faculty of Medicine, Universitas Trisakti, Indonesia
[6]Department of Neurology, Faculty of Medicine, Universitas Trisakti, Indonesia
*Correspondence

Article Information
Submitted: **08 July 2026**
Accepted: **20 July 2026**
Publish: **24 July 2026**

Keyword: Nephrotic Syndrome; Dyslipidemia; Haemostasis; aPTT;

Abstract
Introduction: *Nephrotic syndrome is classically associated with a hypercoagulable state driven by the compensatory hepatic overproduction of procoagulant proteins and platelet hyperreactivity. However, massive proteinuria can rarely disrupt this paradigm, inducing a paradoxical bleeding diathesis that presents a significant clinical challenge.* ***Discussion:*** *A 22-year-old man presented to the emergency department with a two-week history of generalized edema and a recent onset of melena. Laboratory investigations revealed profound hypoalbuminemia (1.1 g/dL) and extraordinary, massive nephrotic-range proteinuria (63.42 g/24 h), accompanied by dyslipidemia and anemia. Coagulation profiling demonstrated a significantly prolonged activated partial thromboplastin time (aPTT) of 51.4 seconds, confirming an active upper gastrointestinal hemorrhage in the setting of ultra-severe nephrotic. He was treated with methylprednisolone, furosemide, candesartan, and simvastatin, together with albumin transfusion for severe hypoalbuminemia.* ***Conclusion:*** *This case highlights a rare hemorrhagic paradox in nephrotic syndrome and underscores the importance of prompt coagulation workup, including a mixing study, when bleeding occurs in a condition typically considered prothrombotic.*

How to Cite **Mutiara Ferina, Alvina, Karina Shasri Anastasya, Deasyka Yastani, Andira Larasari, Rima Anindita Primandari/Prolonged Activated Partial Thromboplastin Time in Adults with Nephrotic Syndrome: A Case Report/Vol. 5, No. 10, 2026**
DOI https://doi.org/10.54543/kesans.v5i10.689
e-ISSN/p-ISSN **2808-7178 / 2808-7380**
Published by **CV. Rifainstitut/KESANS: International Journal of Health and Science**

Prolonged Activated Partial Thromboplastin Time in Adults with Nephrotic Syndrome: A Case Report

Introduction

Nephrotic syndrome is syndrome that characterized with massive proteinuria, hypoalbuminemia, hyperlipidemia and fluid retention (Hayward et al., 2023; Mizdrak et al., 2024). While predominantly observed in the pediatric population, with an incidence of 1.15 to 16.9 cases per 100,000 children (Verma & Patil, 2024), nephrotic syndrome also affects in adults with approximately 2.7-3 cases per 100,000 adults (Frățilă et al., 2024).

Clinical manifestation of nephrotic syndrome include swelling of body and declined frequency of urine. Nephrotic syndrome also knows had hypercoagulable state because of hypoalbuminemia. Hypoalbuminemia can drive overproduction of pro-coagulant factors together with urinary loss of anticoagulant factors such as antithrombin III (Greenberg & Choi, 2023). However, a rare and paradoxical clinical phenomenon may instead occur, in which NS is accompanied by an isolated prolongation of the activated partial thromboplastin time (aPTT) and an associated bleeding tendency rather than thrombosis. Proposed mechanisms for this paradox include systemic depletion of intrinsic coagulation pathway factors through massive urinary protein loss, as well as circulating coagulation inhibitors such as lupus anticoagulant; the relative contribution of each remains debated. This paradox has been described in only a small number of recent reports, most of which occurred in the context of autoimmune renal disease (Frydrysiak et al., 2023; Son & Yim, 2024).

Reports describing this bleeding phenotype secondary to acquired coagulation factor loss in nephrotic syndrome remain scarce, and awareness of this complication among clinicians is limited. Herein, we report a rare case of a 22-year-old man with severe nephrotic syndrome, without evidence of autoimmune disease, who presented with paradoxical gastrointestinal bleeding accompanied by markedly prolonged aPTT, with the aim of highlighting this underrecognized hemostatic complication and its implications for clinical diagnosis and management.

Case Presentation

A 22-year-old man visited the emergency unit at the hospital with swelling of his body and face that started two weeks ago. He also had a cough and a fever five days before developing the swelling in his body. His urine frequency had declined. A few days before being admitted to the hospital, he noticed blood in his feces, and the color of the blood was black. He denied having diarrhea or mucus in his feces. His general examination findings were: blood pressure 118/88 mmHg, pulse rate 118 beats/minute, respiratory rate 20 breaths/minute, body temperature 38.8°C, and peripheral oxygen saturation of 98% on room air. His physical examination revealed edema in his upper and lower extremities. His electrocardiogram and chest radiograph showed normal results. Laboratory examinations revealed anemia and dyslipidemia. Urinalysis revealed 3+ protein, and the confirmatory urine protein test was high. The laboratory results are depicted in Table 1.

Table 1
Laboratory Results

Parameters	Result	Refereance Value
Hematology		
Hb (g/dL)	10.7	13-17
Hematocrit (%)	30.8	(40-50%)
Leukocyte (10^3/µL)	12.05	4.00-10.00
Diff. Count		
Basophils	0.2	0-2
Eosinophils	2.0	1-6
Neutrophils	78.5	40-80
Lymphocyte	14.4	20-40
Monocyte	4.9	2-10
Hemostasis		
PT (seconds)	11.2	9.8-12,6
aPTT (seconds)	51.4	31.0-47.0
Chemistry		
Albumin (g/dL)	1.1	3.5-5.2
Ureum (mg/dL)	30.0	18-55
Creatinine (mg/dL)	1.4	0.73-1.18
Total Cholesterol (mg/dL)	388	<200
HDL (mg/dL)	38	< 40 low
LDL (mg/dL)	324	<100 (optimal) 100-129 (near optimal) 130-159 (borderline high) 160-189 (high) ≥ 190 (very high)
Triglycerides (mg/dL)	132	< 150 normal 150-199 (borderline) 200-499 (high) ≥500 (very high)
Electrolytes		
Sodium (mEq/L)	136.0	136-145
Potassium (mEq/L)	3.5	3.5-5.1
Chloride (mEq/L)	108.9	98.0-107.0
Urine Protein (mg/L)	3171.8	<15
Protein Urine Quantitative 24 hours (g/24 hours)	63.42	<0.15

Patient received therapy with methylprednisolone, furosemide, candesartan, and simvastatin. He also received albumin transfusion for hypoalbuminemia state.

1. Discussion

Patient had compliance his swelling body and face two weeks before being admitted to hospital. His physical examination also had showed edema in his upper and lower extremities. This symptom raised a suspicion that underlying cause of this swelling are hypoalbuminemia. Hypoalbuminemia can lower oncotic pressure, which can lead to water retention which manifests in edema extremity and swelling of face. Laboratory result showed that albumin was 1.1 g/dL. His urine frequency also declined, suggesting the underlying cause of hypoalbuminemia was a renal injury (Frățilă et al., 2024).

Swelling of his body can be caused by cardiac disease, but his physical examination showed that he did not have problem with that.

Laboratory result from a urine dipstick showed was 3+ protein urine, which implied he had protein in urine. A confirmatory test was run in urine sample and the results showed that protein urine concentration was 3171.9 mg/L and the 24-hour quantitative urine protein was 63.42 g/24 hours. Protein urine in patient showed above 3 g/24 hours, so this patient was suspect nephrotic syndrome. Nephrotic syndrome is a syndrome characterized by massive proteinuria, hypoalbuminemia, high level of lipid and fluid retention (Mizdrak et al., 2024). His lipid profile also showed that he had high levels of cholesterol, low density lipoprotein (LDL) and Triglyseride. He also had low level of HDL.

Massive proteinuria in nephrotic syndrome can be cause by primary and secondary etiologies. Because this patient did not undergo a biopsy test, a primary cause could not be excluded. Although this etiology was not excluded, he had respiratory tract infection before he had nephrotic syndromes and reflected by a high leukocyte count. Nephrotic syndrome can also induce by secondary cause like infection. This massive proteinuria was a result of loss of podocyte, causing protein filtration fail in renal. Protein can escape the renal filtration and induced low albumin in the blood, which result hypoalbuminemia in the patient (Verma & Patil, 2024). The hyperlipidemia that occurred in this case was induced by hypoalbuminemia. Hypoalbuminemia triggers hepar to produce more protein, which also increase lipoprotein like total cholesterol, LDL and Triglyceride. The loss of protein in urine like ApoA1 and LCAT can impaired maturation of high density lipoprotein (HDL), so the result of that mechanism is low HDL levels (Tan et al., 2026).

Patient complained about black color in his feces (melena), implying that he had bleeding from upper gastrointestinal tracts. This condition can be caused impaired coagulation that showed in prolonged aPTT (51.4 seconds). A case report from Japan described a 72-year-old woman with nephrotic syndrome who developed a spontaneous rectus sheath hematoma while receiving corticosteroid and heparin therapy; anticoagulant exposure was an important contributing factor in that case, whereas the present patient was considerably younger, had no documented anticoagulant exposure before the bleeding episode, and presented with suspected gastrointestinal rather than abdominal-wall bleeding (Fujii et al., 2024). In China also similarly reported a 77-year-old man with NS who developed a chronic subdural hematoma without a history of head trauma; his proteinuria (approximately 10.9 g/24 hours) and hypoalbuminemia, though substantial, were markedly less severe than in the present patient (Xue et al., 2024). Although the anatomical bleeding site and patient characteristics differed across all three cases, together they illustrate that clinically significant hemorrhage may occasionally coexist with the generally prothrombotic state of nephrotic syndrome, and in both prior reports the causal relationship between nephrotic syndrome and bleeding remained uncertain.

Unlike the cases that reported before (Fujii et al, 2024 and Xue et al, 2024), in which mechanism of bleeding was not specifically implicated. This present case's hemorrhage occurred alongside documented, markedly prolonged aPTT, and this laboratory results toward an underlying coagulation factor abnormality. In this case, abnormality bleeding closely resembles reports in which aPTT prolongation itself was identified as the cause of bleeding in autoimmune renal disease. In Fydrysiak et al (2023), a patient with lupus-associated nephrotic syndrome which prolonged aPTT induced bleeding manifestations that resolved with corticosteroid. In other case, some patient with ovarian cyst with lupus

nephritis and coagulation factor II deficiency also induced bleeding complication (Son & Yim, 2024). However, both of those cases are in the context of lupus related, which autoantibody mediated coagulopathy, whereas the present patient had no serological evidence of autoimmune disease org deficiency of coagulation factor through proteinuria.

Physiologically, nephrotic syndrome is more frequently associated with hypercoagulable rather than a hemorrhagic case. This situation is driven by producing thromboxane A2 (TxA2) and endoperoxides which leads platelet to hyperreactivity. This condition also leads to the production of high molecular protein weight like fibrinogen. Hyperreactivity of platelets and production of fibrinogen can induce condition of hypercoagulation along with hyperlipidemia (Tan et al., 2026). This situation is different from bleeding with this patient, who experienced bleeding in gastrointestinal tracts. The patient's presentation therefore represents a clinical paradox rather than the expected course.

A prolonged aPTT in this case should not be assumed to result from urinary loss of coagulations factors, other potential causes could contributing causes include deficiencies of coagulation factors, lupus anticoagulant, and acquired coagulation factors inhibitors (Santoro et al., 2023). The way to differentiate these possibilities is to do a mixing study, which involves mixing the patient's plasma with normal plasma. Normal plasma will support a factor deficiency, but if the result failure to support, it would be a specific inhibitor (Losos & Chen, 2022). Because neither a mixing study nor specific coagulation-factor assays were performed in this patient, the exact mechanism underlying the aPTT prolongation such as urinary factor loss, an undetected inhibitor, or another cause could not be definitively established, and this represents an important limitation of the present case.

Similarly, although melena suggested an upper gastrointestinal source, endoscopic examination was not performed, so common causes of gastrointestinal bleeding such as peptic ulcer disease, erosive gastritis, or vascular lesions could not be excluded. Intestinal mucosal edema secondary to hypoalbuminemia may have increased mucosal vulnerability to bleeding, but in the absence of endoscopic evidence this should be regarded as a plausible contributing factor rather than an established cause (Busuioc & Mircescu, 2022).

Compared with the previously reported cases, the distinctive features of the present case were the young age of the patient, the absence of documented anticoagulant exposure, extremely severe proteinuria, profound hypoalbuminemia, suspected gastrointestinal bleeding, and isolated aPTT prolongation. This case therefore expands the limited literature on hemorrhagic manifestations associated with nephrotic syndrome. Nevertheless, the association should be interpreted cautiously because the bleeding source and the mechanism of aPTT prolongation were not definitively established.

Conclusion

A 22-year-old man was admitted to the hospital with swelling of his body and face that started two weeks prior. Based on physical and laboratory examinations, he exhibited massive proteinuria, an elevated lipid profile, and hypoalbuminemia, leading to a diagnosis of nephrotic syndrome.

This case illustrates a rare paradox in which nephrotic syndrome presented with gastrointestinal bleeding and a markedly prolonged aPTT, rather than the hypercoagulable state typically expected. As the underlying mechanism was not confirmed, clinicians should consider prompt coagulation workup, including a mixing study, when bleeding occurs in patients with nephrotic syndrome despite its classically prothrombotic nature.

Reference

Busuioc, R. M., & Mircescu, G. (2022, Mar). Nephrotic Syndrome Complications - New and Old. Part 1. *Maedica (Bucur), 17*(1), 153-168. https://doi.org/10.26574/maedica.2022.17.1.153

Frățilă, V.-G., Lupușoru, G., Sorohan, B. M., Obrișcă, B., Mocanu, V., Lupușoru, M., & Ismail, G. (2024). Nephrotic Syndrome: From Pathophysiology to Novel Therapeutic Approaches. *Biomedicines, 12*(3), 569. https://www.mdpi.com/2227-9059/12/3/569

Frydrysiak, M., Pachniak, P., Krysicka, A., & Moczulski, D. (2023, Jun). Patient with lupus anticoagulant caused aPTT prolongation corrected with prednisolone treatment and later anticoagulation treatment due to chronic atrial fibrillation. *Clin Case Rep, 11*(6), e7284. https://doi.org/10.1002/ccr3.7284

Fujii, A., Matsuda, Y., Yabe, T., Norifumi, H., Fujimoto, K., Yamazaki, M., Yokoyama, H., & Furuichi, K. (2024, 2024/03/10). Nephrotic syndrome with rectus sheath hematoma: a case report. *Journal of Medical Case Reports, 18*(1), 148. https://doi.org/10.1186/s13256-024-04388-4

Greenberg, K. I., & Choi, M. J. (2023, Feb 1). Understanding Hypercoagulability with Nephrotic Syndrome: How the Clot Thickens. *Clin J Am Soc Nephrol, 18*(2), 149-151. https://doi.org/10.2215/cjn.0000000000000054

Hayward, S., Parmesar, K., Welsh, G. I., Suderman, M., & Saleem, M. A. (2023). Epigenetic Mechanisms and Nephrotic Syndrome: A Systematic Review. *Biomedicines, 11*(2), 514. https://www.mdpi.com/2227-9059/11/2/514

Losos, M., & Chen, J. (2022). Utility and Interpretation of Coagulation Mixing Studies. *Journal of Clinical and Translational Pathology, 2*(1), 8-11. https://doi.org/10.14218/JCTP.2022.00002

Mizdrak, M., Smajic, B., Mizdrak, I., Ticinovic Kurir, T., Kumric, M., Paladin, I., Batistic, D., & Bozic, J. (2024). Endocrine Disorders in Nephrotic Syndrome—A Comprehensive Review. *Biomedicines, 12*(8), 1860. https://www.mdpi.com/2227-9059/12/8/1860

Santoro, R. C., Molinari, A. C., Leotta, M., & Martini, T. (2023, Jun 17). Isolated Prolongation of Activated Partial Thromboplastin Time: Not Just Bleeding Risk! *Medicina (Kaunas), 59*(6). https://doi.org/10.3390/medicina59061169

Son, M. H., & Yim, H. E. (2024, 6). Lupus anticoagulant hypoprothrombinemia syndrome associated with a hemorrhagic ovarian cyst in a girl with systemic lupus erythematosus: a case report. *Child Kidney Dis, 28*(2), 80-85. https://doi.org/10.3339/ckd.24.007

Tan, S., Qu, T., Ai, J., & Fu, Y. (2026, 2026/04/01). Lipid Profile Alterations Across Coronary Heart Disease, Metabolic Syndrome, and Nephrotic Syndrome. *Journal of Clinical Laboratory Analysis, 40*(7), e70189. https://doi.org/https://doi.org/10.1002/jcla.70189

Verma, P. R., & Patil, P. (2024, Feb). Nephrotic Syndrome: A Review. *Cureus, 16*(2), e53923. https://doi.org/10.7759/cureus.53923

Xue, H., Xue, K., Wang, X., Xu, W., Zhang, W., & Xia, G. (2024, 2024-August-22). Chronic subdural hematoma that may be caused by nephrotic syndrome: a case report and literature review [Original Research]. *Frontiers in Neurology, Volume 15 - 2024*. https://doi.org/10.3389/fneur.2024.1454361