

Congress Abstract

Infectious Complications in a Patient with Type 2 Diabetes on Hemodialysis: Development of Abscessing Pneumonia, Sepsis, and DIC

Gulnoza Zokirova¹, Djurat Zakirov¹, Muyassar Zufarova¹, Durdona Saipova¹, Asalya Abduvakhitova¹

¹National Specialized Research and Practical Medical Center for Nephrology and Kidney Transplantation, Tashkent, Uzbekistan

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Corresponding author's email:
gulnozazakirova369@gmail.com

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ABSTRACT

Background: Patients with type 2 diabetes mellitus (T2DM) on maintenance hemodialysis represent one of the highest-risk populations in nephrology practice. End-stage kidney disease (ESKD) and T2DM create a state of profound immunosuppression that predisposes patients to life-threatening infections.

Central venous catheters (CVCs), frequently required for hemodialysis access, are a well-recognized gateway for bacteremia. When bacteremia is complicated by coagulopathy, the clinical course can rapidly evolve toward disseminated intravascular coagulation (DIC).

Case Presentation: A 58-year-old woman was admitted with a 3-day history of nausea, vomiting, and body pain. Examination revealed anasarca, lower-extremity purpura, and petechial rash, with concern for coagulopathy. T2DM diagnosed in 2007 and ESKD on maintenance hemodialysis since October 2025 (three 4-hour sessions weekly). Vascular access was a right internal jugular CVC.

On admission, hemoglobin 62 g/L, RBC $2.02 \times 10^{12}/L$, platelets $93 \times 10^9/L$, WBC $11.18 \times 10^9/L$, glucose 24.28 mmol/L, total protein 63 g/L, D-dimer 2,680 ng/mL, procalcitonin (PCT) 14.8 ng/mL, creatinine 405 $\mu\text{mol}/L$, urea 13.9 mmol/L, INR 1.46, Prothrombin Index 66%, fibrinogen 4.0 g/L, APTT 28.2 sec. Antibiotics had been started at home without improvement. In hospital, broad-spectrum therapy was escalated to a carbapenem plus a fluoroquinolone, with packed red blood cell and fresh frozen plasma transfusions. Hemoglobin increased to 87 g/L, PCT decreased to 1.78 ng/mL, and D-dimer to 1,178 ng/mL; thrombocytopenia persisted. After treatment, creatinine 592 $\mu\text{mol}/L$, urea 20.7 mmol/L, glucose 16.55 mmol/L, albumin 26 g/L, total protein 53 g/L, INR 1.39, Prothrombin Index 69%, fibrinogen 7.55 g/L, APTT 25.4 sec.

On days 5–6, livedo reticularis, worsening dyspnea, and persistent coagulopathy prompted chest MSCT. It revealed bilateral peribronchial foci with formed cavities, consistent with abscessing (necrotizing) pneumonia. The bilateral cavitory pattern suggested hematogenous dissemination, likely from the indwelling CVC. Patient transferred to the ICU with sepsis-associated DIC.

Linezolid 600 mg IV twice a day was added to provide coverage for possible methicillin-resistant *Staphylococcus aureus* and other gram-positive organisms. Following treatment escalation, hemoglobin reached 118 g/L, PCT decreased to 0.9 ng/mL, INR normalized to 0.92, and Prothrombin Index increased to 117%.

Conclusion: CVC-related bacteremia should be considered early in hemodialysis patients with unexplained coagulopathy or bilateral pulmonary infiltrates. Purpura followed by livedo reticularis may indicate DIC progression and should prompt urgent reassessment. Cavitation despite antibiotics signals treatment failure and need to reassess pathogen coverage, including biofilm-forming gram-positive organisms.

T2DM and ESKD create a multiplicative immunocompromised state, requiring multimodal management and glycemic control.

Keywords: Type 2 Diabetes Mellitus; Hemodialysis; CVC-Related Infection; Abscessing Pneumonia; Sepsis; Disseminated Intravascular Coagulation (DIC)