Case Report/*Olgu Sunumu*

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A Misplaced Femoral Venous Catheter in the Internal Iliac Vein: A Case Report

İnternal İliyak Vene Yerleşmiş bir Femoral Venöz Kateter Malpozisyonu: Olgu Sunumu

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ABSTRACT

Central venous catheters are used for many purposes in intensive care. Venous catheterization in the femoral region is safer than others regarding mechanical complications. Although femoral catheter malpositions are rare, they can lead to fatal consequences, especially when diagnosed late. In this article, the misplaced femoral central venous catheter in the internal iliac vein is presented.

A 36-year-old male patient diagnosed with respiratory failure displayed septicemia symptoms during his follow-up in the intensive care unit. A blood sample from the central catheter in the right femoral region showed bacterial growth. Therefore, a new central venous catheter was placed into the left femoral vein for an inotropic infusion. According to the abdominal computed tomography scan report performed for a different reason the next day, the catheter was seen in an incorrect position. The evaluation revealed the catheter to be situated in the internal iliac vein. The catheter was removed without complications.

We share a report regarding catheter malposition found in the internal iliac vein. Physicians must keep in mind that early detection of catheter malpositions is critical.

Keywords: Central venous catheters, catheterization, femoral vein, catheter-related infections

ÖZ

Santral venöz kateterler yoğun bakımda birçok amaç için kullanılmaktadır. Femoral bölgedeki venöz kateterizasyon, mekanik komplikasyonlar açısından diğerlerine göre daha güvenlidir. Femoral kateter malpozisyonları nadir olmakla birlikte, özellikle geç tanı konulduğunda ölümcül sonuçlara yol açabilmektedir. Bu yazıda internal iliak vene yerleşen femoral santral venöz kateter malpozisyonu sunulmaktadır.

Solunum yetmezliği tanısı alan 36 yaşında erkek hastanın yoğun bakımdaki takibinde septisemi belirtileri görüldü. Sağ femoral bölgedeki santral kateterden alınan kan örneğinde bakteri üremesi görüldü. Bunun üzerine, inotropik infüzyon için sol femoral vene yeni bir santral venöz kateter yerleştirildi. Ertesi gün farklı bir nedenle çekilen batın bilgisayarlı tomografi raporuna göre kateterin yanlış pozisyonda olduğu görüldü. Değerlendirmede kateterin internal iliak vene yerleştiği ortaya çıktı. Kateter komplikasyonsuz bir şekilde çıkarıldı.

Burada, internal iliyak vende tespit edilen kateter malpozisyonuna ilişkin bir raporu paylaşıyoruz. Hekimler, kateter malpozisyonlarının erken tespitinin kritik önem taşıdığını akılda tutmalıdır.

Anahtar sözcükler: Santral venöz kateterler, kateterizasyon, femoral ven, kateter ilişkili enfeksiyonlar

INTRODUCTION

Central venous catheters (CVCs) are used in daily medical practice for many purposes. The femoral region is preferred for central catheterization due to its quick and easy accessibility (1). Femoral CVC misplacements are rare in adults, unlike newborns, and can lead to fatal consequences if not diagnosed early (2). This manuscript presents a femoral CVC misplacement in the internal iliac vein and aims to create awareness of the importance of femoral CVC malpositions. This case report has been prepared in accordance with the rules for publication of case reports, and written consent was obtained from the patient's relatives for this presentation.

CASE DESCRIPTION

A 36-year-old male patient was brought to the emergency room when he was found to be in cardiac arrest due to

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COVID-19 pneumonia outside of the hospital. After successful resuscitation, the patient was admitted to the intensive care unit (ICU) with the diagnosis of respiratory failure and hypoxic encephalopathy. The patient was followed up on a mechanical ventilator due to acute respiratory distress syndrome (ARDS) as intubated. During follow-up, sepsis signs were observed, and a blood sample from the central catheter in the right femoral region showed bacterial growth. A new catheter was inserted on the left side while removing the infected catheter in the right femoral region. Due to the difficulties in accessing ultrasound (USG) during the COVID-19 pandemic, the procedure was completed using the Seldinger method without using USG guidance. It was observed that blood could be aspirated from the catheter. The next day, abdominal computed tomography (CT) was performed on the patient with abdominal distension for two days. The CT was completed without a contrast agent because of acute renal failure symptoms. According to the report, the tip of CVC was not within the inferior vena cava, and it seemed to be outside the vascular lumen. After the CT evaluation, the use of the catheter for infusion of fluid and inotropic drugs was interrupted. The patient was transferred to the operating room. Vascular surgeons administered a small amount of opaque agent through the catheter. Using fluoroscopy, vascular surgeons confirmed that the catheter was positioned inside the vessel's lumen. However, the catheter was not in the lumen of the inferior vena cava or common iliac vein, as seen in Figure 1A. It was observed that the distal part of the catheter turned to the entrance of the iliac vein and was placed in the iliac vein. In the Figure 1B, a drawing illustrates the path taken by the malpositioned catheter. After confirming that the catheter was not out of the vessel lumen, the catheter was removed without any complications. After being treated in intensive care for an extended period due to ARDS, the patient was discharged as a care patient with a tracheostomy.

DISCUSSION

Central venous access is usually obtained through the right internal jugular vein because of its direct path to the right heart and low risk of thrombosis (3). We inserted CVC in the femoral region instead of the right internal jugular vein to avoid possible mechanical complications and protect the patient's fragile lung function. Femoral venous catheterization is easy to perform, and catheters follow a more direct path than the subclavian region (4). The right common iliac vein is straight and short, but the left one's longer and more oblique course causes the veins to differ in left-side joining angles (5). This anatomical characteristic explains why catheter malpositions are more seen on the left than right. There are few case reports regarding femoral catheter malpositions. While two are related to catheters placed in the ascending lumbar vein, the other two describe catheters extravasated into the abdominal cavity (4,6-8). It was seen extravasated catheters cause intra-abdominal sepsis in one case report and abdominal compartment syndrome in another (7,8). Also, femoral catheter malpositions can cause severe complications, including spinal cord injury and neurological damage. Late diagnosis of these malpositions often results in deteriorating outcomes. In cases of femoral catheter malposition, catheters inadvertently inserted into small-diameter vessels like the ascending lumbar or internal iliac vein pose a higher risk of thrombosis and ischemia. We did not face any complications as we detected the case early and removed the catheter promptly. In addition,

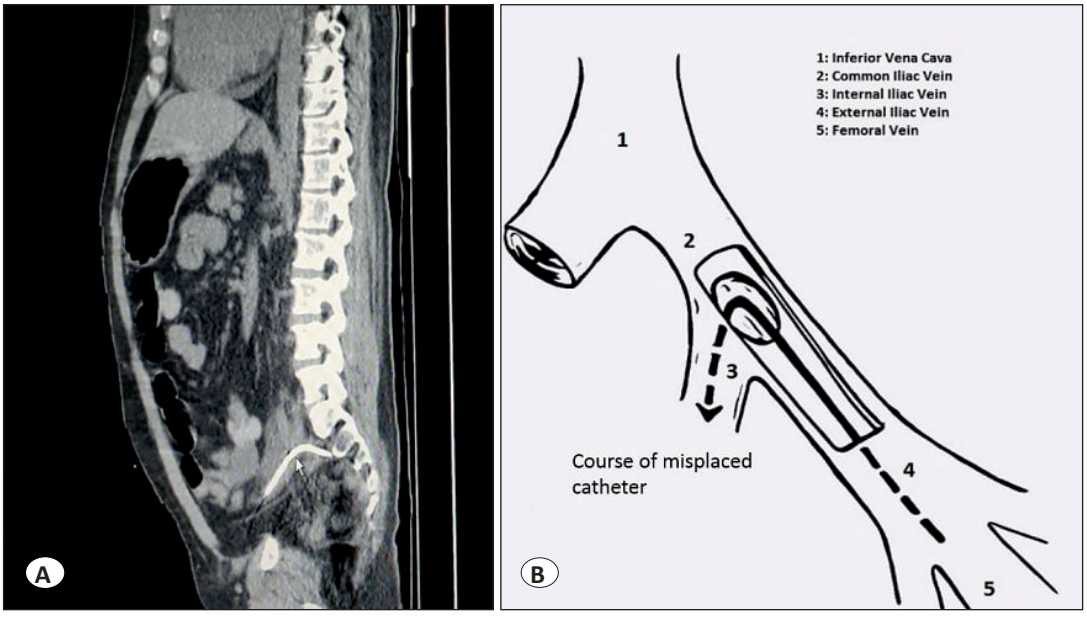

Figure 1: A) Computerized tomography image in the sagittal plane of the catheter placed in the internal iliac vein.
B) The drawing of the misplaced catheter's route.

blood aspiration from the catheter does not always indicate that the catheter is placed correctly. In the reported cases, it was observed that blood can come from the aspiration of the malpositioned catheters (4,6,7). In a presented case, although the femoral catheter was not in the vessel's lumen, the blood accumulated due to intra-abdominal bleeding was aspirated, and the catheter was thought to be in the correct position (7). This situation may cause a delay in the diagnosis of malposition and worsen the results. In fact, despite the catheter malposition in our case, successful blood aspiration from the catheter was possible. To prevent the misplacement of catheters, USG guidance is an essential tool that increases the procedure's safety by providing a clear view of the target vein (9). Although some articles in the literature report that USG has limitations in preventing misplacement of the catheter tip, it is a valuable technique for avoiding complications during the procedure (10,11).

We are sharing a report regarding the misplacement of a catheter in the internal iliac vein. This report highlights the importance of early diagnosis of catheter malpositions to prevent fatal consequences. Physicians must remember that the first step in diagnosis is to suspect that the catheter is incorrectly placed. In such cases, utilizing imaging techniques invariably enhances safety.

AUTHOR CONTRIBUTIONS

Conception or design of the work: RY, SY
Data collection: RY, SY
Data analysis and interpretation: RY, SY
Drafting the article: RY, SY
Critical revision of the article: RY, SY
The author (RY, SY) reviewed the results and approved the final version of the manuscript.

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