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Cervical Metallic Foreign Body Cause of Cervical Cellulitis: A Case Report

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Abstract | **Case Report**

Introduction: Iatrogenic injuries from medical procedures, such as retained guidewires during venous cannulation, are rare but can lead to serious complications including cellulitis, abscess formation, and even septicemia. These metallic foreign bodies are radiopaque, making CT scanning the imaging modality of choice. Definitive treatment typically involves surgical removal. ***Case Report:*** We present the case of a 24-year-old woman who was admitted to the ICU in 2018 following a snake bite complicated by right forearm necrosis, requiring multiple necrosectomies. A central venous catheter was placed in the right internal jugular vein to facilitate treatment. Five months later, she developed right-lateral cervical cellulitis with localized swelling and a central area of skin loss at the catheter insertion site. A cervical CT scan revealed soft tissue infiltration with a metallic-density object. Surgical exploration of the area revealed a retained metal needle, which was successfully removed. Intraoperative X-ray confirmed no remaining foreign material. Postoperative recovery was uneventful, and the patient healed well. ***Conclusion:*** This case highlights the importance of considering retained foreign bodies in patients presenting with delayed infections at previous catheter sites. CT imaging is essential for diagnosis, and timely surgical exploration ensures effective treatment and prevents further complications.

Keywords: Retained guidewire, Iatrogenic injury, Central venous catheter, Cervical cellulitis, CT scan.

INTRODUCTION

Iatrogenic injury induced by medical procedures can occur. There are various reports of retained or missing guidewires during venous cannulation [1.2]. As a result, they can cause minor lesions of the skin, but in extreme cases can lead to abscesses, cellulitis or septicemia. Metal objects are radiopaque; therefore, CT scanning is considered the gold standard in imaging. However, surgical removal is the best option, a neck exploration and then a removal of the foreign body is essential [1.3].

CASE REPORT

We report a case of a 24-year-old woman, who was admitted in 2018 to the ICU department for a snake bite complicated with right forearm necrosis requiring several necrosectomies, the last one was 5 months ago, and therefore the ICU team placed a central venous catheter on the right internal jugular vein that allows delivery of medications.

The patient presented a right- lateral cervical cellulitis after 5 months, with no other associated clinical signs. On clinical examination, the patient had a right-lateral cervical swelling centered by a loss of substance (figure 1) in the area where the central venous catheter has been placed, with inflammatory signs.

Figure 1: image of the patient showing the cervical loss of substance

We performed a cervical CT scan that showed infiltration of the right cervical soft tissue, with the presence of metallic density material (figure 2).

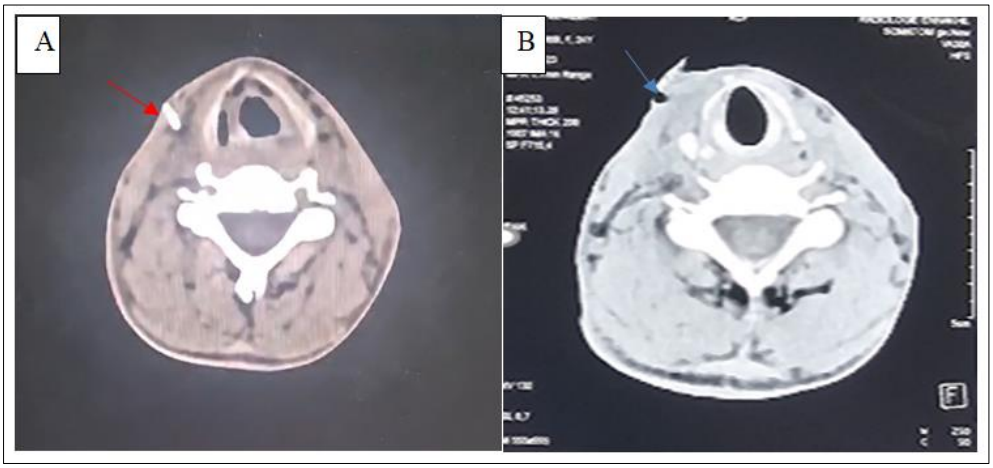

Figure 2: A: Axial-section CT scan showing the foreign body (red arrow). B: Axial section CT scan showing the loss of substance surrounding the foreign body (blue arrow)

An exploration was carried out in the operating room, which consisted of an incision around the loss of substance with the discovery of a metal needle which was removed (figure 3).

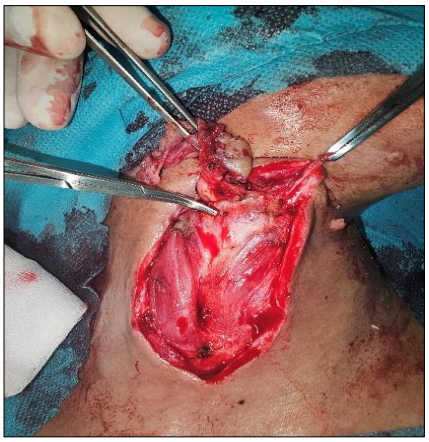

Figure 3: per operative image showing the metallic guide wire

A per-operative X-ray showed no residual foreign body (figure 4).

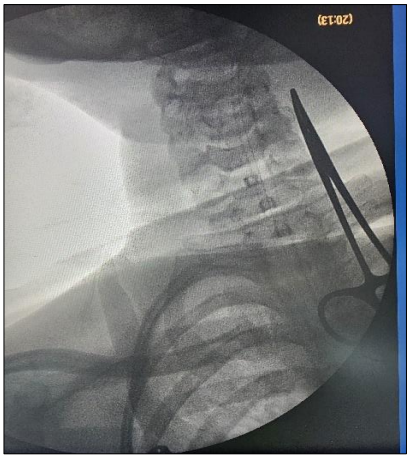

Figure 4: X- ray image after the removal of the metallic guide wire

Post-operative follow-up was marked by good healing (figure 5).

Figure 5: image of the patient after the surgery

DISCUSSION

The head and neck are a complex anatomical region in the human body, comprising vulnerable organ systems including vascular and nervous structures, the aero-digestive tract [4]. Central venous catheterization is a routine technique in emergency department and intensive care unit. Central venous catheters (CVCs) are needed for monitoring patients in special conditions and as a route for medications and parenteral nutrition. Depending on the catheter type, cannulation is performed at different sites such as the jugular, subclavian, femoral, and brachial veins. Complications associated with the CVCs are infection, failure to place the catheter, arterial puncture, improper catheter position, pneumothorax, hematoma and others [5]. One of these extremely rare complications is the loss or retainment of a guide wire, which is usually recognized immediately or sometimes with delay [6]. In our case the guide wire was diagnosed within 5 months of delay.

The presence of a foreign body-like guidewire in the neck may cause life-threatening suppurative; like minor lesions of the skin or mucous, and in extreme cases can lead to abscesses, cellulitis or septicemia and can cause also intravascular or extravascular complications. Therefore, accurate location and removal is thereby essential. Vascular involvement can lead to common carotid artery and internal jugular vein rupture; hence, torrential bleeding while hematoma and subcutaneous emphysema may compress the airway and lead to airway obstruction [7].

Foreign body carry a risk of acute and potentially life-threatening complications such as bleeding, airway compromise or neurovascular injury. While some retained foreign bodies may remain clinically silent for months or years. We can have also delayed complications including persisting pain, impaired wound healing and inflammatory responses with potential abscess formation, cellulitis, fistulas, necrotising fasciitis and foreign object migration [8].

A thorough investigation of the patient's medical history and clinical examination are the first and crucial steps in the workup. Imaging studies not only can detect a foreign body, but they can also aid in surgical planning by precisely determining the anatomical location of the foreign object and its spatial relation to neighboring structures, thereby reducing the risk of collateral damage [1].

Imaging modalities includes radiographs, computed tomography (CT), ultrasound and magnetic resonance imaging (MRI) that can be used for the detection of foreign objects.

Each imaging modality has strengths and limitations. Moreover, radiation exposure, cost, availability and patient specific limitations (inability to cooperate or the presence of ferromagnetic implants) need to be considered. Even if a foreign body cannot be visualised directly, there may be image artefacts that hint at its presence, sequelae like emphysema, hematoma, foreign body granuloma, inflammatory reactions or even frank abscesses. In our case, the CT scan showed an inflammatory reaction with extensive loss of substance around the area of the metallic guide wire.

Conventional X-ray imaging is widely used and accessible in virtually every emergency room, providing an excellent and fast overview of an anatomic region. Dense materials like metal are clearly depicted on X-ray [9].

CT scanning is considered the gold standard in foreign body imaging. Cross-sectional CT images improve detectability and allow for precise anatomic localisation of foreign body materials. Furthermore, a three-dimensional CT dataset can be used with intraoperative navigation systems in order to facilitate surgical removal. CT scan can easily detect radiopaque objects like metal. Hence, it is important to watch out for indirect signs mentioned above. Contrast enhanced CT scan can accentuate these indirect signs and provide further information on vascular injuries or active bleeding. This aids in estimating injury severity and in surgical planning.

Ultrasound scanning is available in most emergency departments that can be used also intraoperatively for a confirmation of complete foreign body removal [10]. Foreign objects are generally hyperechoic; reverberation artefacts may therefore provide further clues about their presence and can be enhanced with Doppler imaging. Ultrasound scanning is well suited for assessing superficial tissues where it can afford even higher spatial resolutions than CT imaging [11]. The evaluation of deeper structures. The field of view is also limited by the penetration depth of the acoustic waves.

In clinical practice, MRI is only infrequently used to detect or exclude the presence of foreign bodies, mainly due to cost and availability barriers. Moreover, safety issues must be considered given that ferromagnetic objects are subject to torque and translation forces in the static magnetic field and can also undergo radiofrequency- induced heating. Indeed, inadvertent exposure of metallic foreign objects to the MRI environment can result in adverse events, potentially injuring neighboring structures [12].

Various reports of successful removal of intravascular retained guidewire under fluoroscopic guidance by interventional radiologist; however, if the sharp guidewire was embedded in the deep neck space, surgical removal is the best option. Immediate neck exploration, removal of the foreign body [1-6].

CONCLUSION

Foreign bodies entering the head and neck region are potentially dangerous. Central venous catheterisation (CVC) in the neck region is a common but not innocuous procedure in medical practice. Adequate attention, supervision and experienced manipulation are important factors in avoiding unnecessary iatrogenic complication. Despite improvements in imaging techniques, their detection remains a challenge, Consequently, detailed questioning and a good clinical examination are essential. Appropriate management involves surgical removal of the foreign body, with neck exploration of any associated lesions in the surrounding organs.

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