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Case Report

Successful Localization and Removal of an Aberrant Sewing Needle in the Posterior Mediastinum: Usefulness of Multidetector Computed Tomography

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ABSTRACT

Foreign metallic bodies in the mediastinum are relatively rare and may cause life-threatening damages to multiple organs in the mediastinum; therefore, the foreign body warrants urgent or elective removal. When the foreign body remains in the posterior mediastinum surrounded by important organs, for example, the heart or the great vessels, it is critical to determine the right approach for its safe removal. Here, we present the successful removal of a sewing needle from the posterior mediastinum using multidetector computed tomography that helped identify the foreign body's location and its relationship with the surrounding organs.

RÉSUMÉ

La présence de corps étrangers métalliques dans le médiastin est relativement rare et peut endommager divers organes dans cette région au point de mettre la vie du patient en danger. Le retrait du corps étranger est donc nécessaire, de manière urgente ou non. Lorsque le corps étranger demeure dans la partie postérieure du médiastin et qu'il est entouré d'organes importants (p. ex., le cœur et les gros vaisseaux sanguins), la bonne approche pour un retrait sans danger doit être établie. Ici, nous présentons le retrait réussi d'une aiguille à coudre de la partie postérieure du médiastin. Une tomodensitométrie multidétecteur a aidé à déterminer l'emplacement du corps étranger et sa relation avec les organes environnants.

Case

A 77-year-old seamstress presented to our hospital after 3 months of unsuccessful treatment for unknown fever and persistent septicemia. After admission, she was assessed to identify the infection source. *Klebsiella pneumoniae* was detected in her blood culture. A plain computed tomography revealed the presence of a fine foreign metallic body in the posterior mediastinum. Considering her occupation, we assumed that the foreign body was a sewing needle that caused the persistent infection. Surgical removal was planned, and several other examinations were performed to decide the strategy. Esophageal endoscopy revealed that the needle was outside the esophagus. We performed electrocardiography (ECG)-gated enhanced multidetector computed tomography (MDCT) and analysed the data using multiplanar reconstruction and volume-rendering endoscopic navigation. The foreign body was present in front of and to the left of the esophagus, with its tip on the left upper pulmonary vein (LUPV) between the left main bronchus and the left pulmonary artery (LPA) (Fig. 1). Extraction using left thoracotomy was planned as the needle may have penetrated the LPA and LUPV (Fig. 2, A and B). Following gentle dissection between the esophagus and the LPA, a 3-cm-long rusted sewing needle was removed (Fig. 2C). The needle contained *K. pneumoniae*; therefore, ceftriaxone was prescribed. She was discharged home after 18 days without event.

Discussion

Sewing needles may enter the body by ingestion, aspiration, or directly penetrating the skin.[1-3] When working, our patient often held her sewing needles in her mouth and may have unknowingly swallowed it. Although most ingested foreign bodies uneventfully pass through the gastrointestinal tract, some exit the tract and travel into the other organs.[1,4] No case of ingested sewing needle that penetrated the esophagus and remained in the posterior mediastinum has been reported. Considering that the needle end faced the esophagus in the MDCT (Fig. 1A), we speculated that it was ingested and penetrated the esophagus. Our patient experienced persistent septicemia, and the needle's tip was on the LUPV; therefore, surgical removal was performed to cure the infection and avoid serious bleeding from the vessel.

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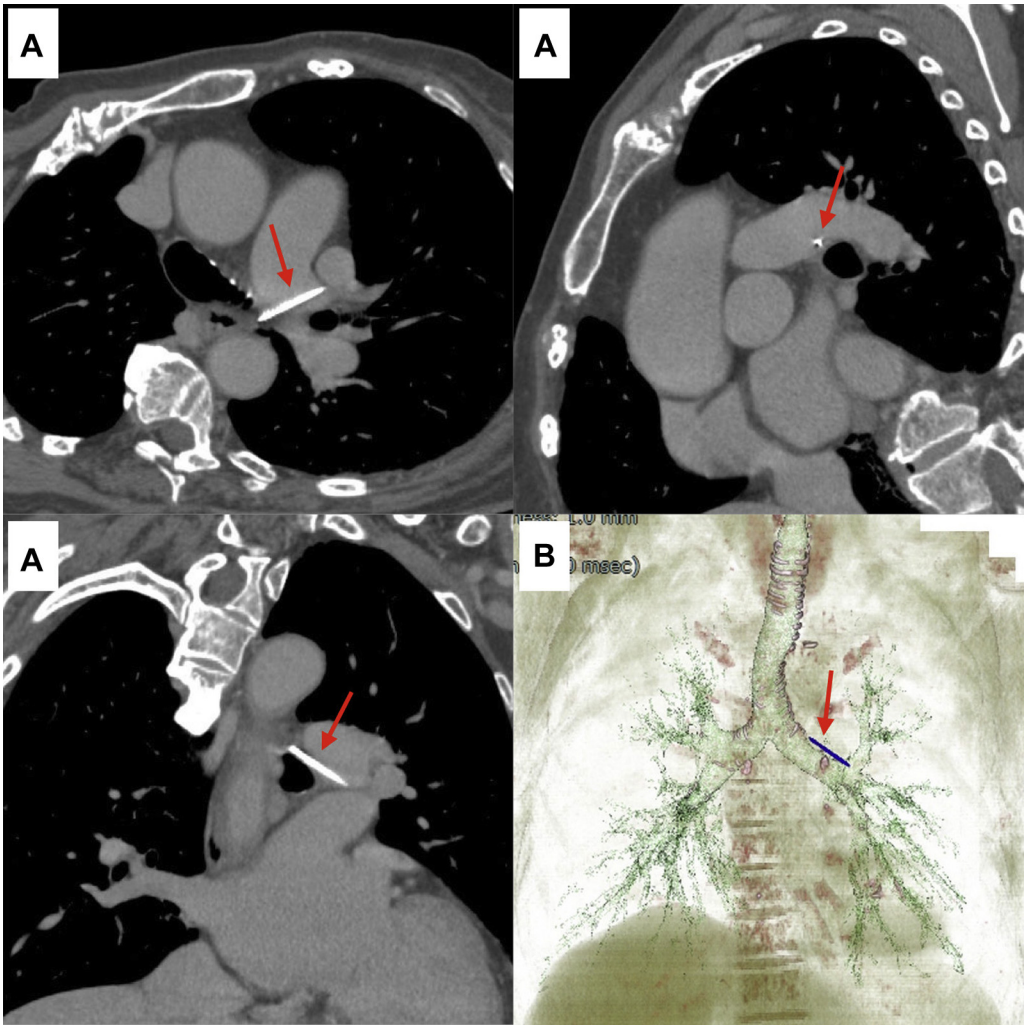

Figure 1. (**A**) Multiplanar and (**B**) 3-dimensional reconstruction using enhanced multidetector computed tomography showing a needle (**arrow**) surrounded by the left main bronchus, the left pulmonary artery, the esophagus, and the left upper pulmonary vein.

The extraction approach was highly critical because the needle was surrounded by important structures in the posterior mediastinum. When a needle remained in the digestive tract or travelled far from the posterior mediastinum, some other imaging modalities such as ultrasonography and fluoroscopy might facilitate localization.[2,5] However, the needle in our case was concealed in the posterior mediastinum, and it was necessary to determine which end of the needle should have been dissected for safe extraction. We evaluated the area using ECG-gated MDCT with 1-mm slices and observed it with multiplanar reconstruction and volume-rendering endoscopic navigation. We selected left thoracotomy and eventually succeeded in the removal by dissecting between the esophagus and the LPA without major bleeding.

Conclusions

ECG-gated MDCT can help determine the location of foreign bodies enabling their successful removal. Few reports are present that determined the precise location of penetrating foreign bodies using this modality.

Disclosures

The authors have no conflicts of interest to disclose.

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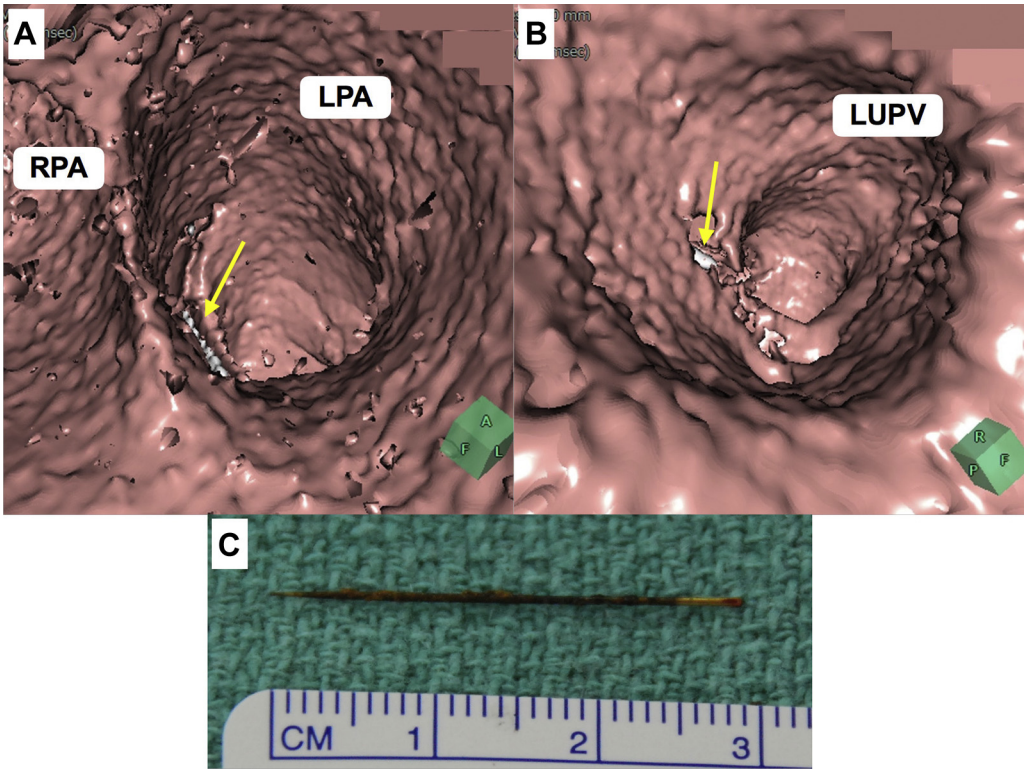

Figure 2. Volume-rendering endoscopic images of 3-dimensional computed tomography showing a needle (**arrow**) on the surface of (**A**) the left pulmonary artery (LPA) and (**B**) the left upper pulmonary vein (LUPV). (**C**) The rusted sewing needle after extraction. RPA, right pulmonary artery.