

Labelled leucocyte scintigraphy in an infected externalized Riata lead

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Conductors' externalization of Riata leads may cause abnormal images at transoesophageal echocardiography; therefore, in cases of infection, the early correct diagnosis of lead-associated vegetations may be prevented. In blurred clinical settings, leucocyte-labelled scintigraphy may provide unvaluable aid in ascertaining a difficult diagnosis, so strengthening the tough decision of performing the dangerous and difficult procedure of lead extraction of an externalized Riata.

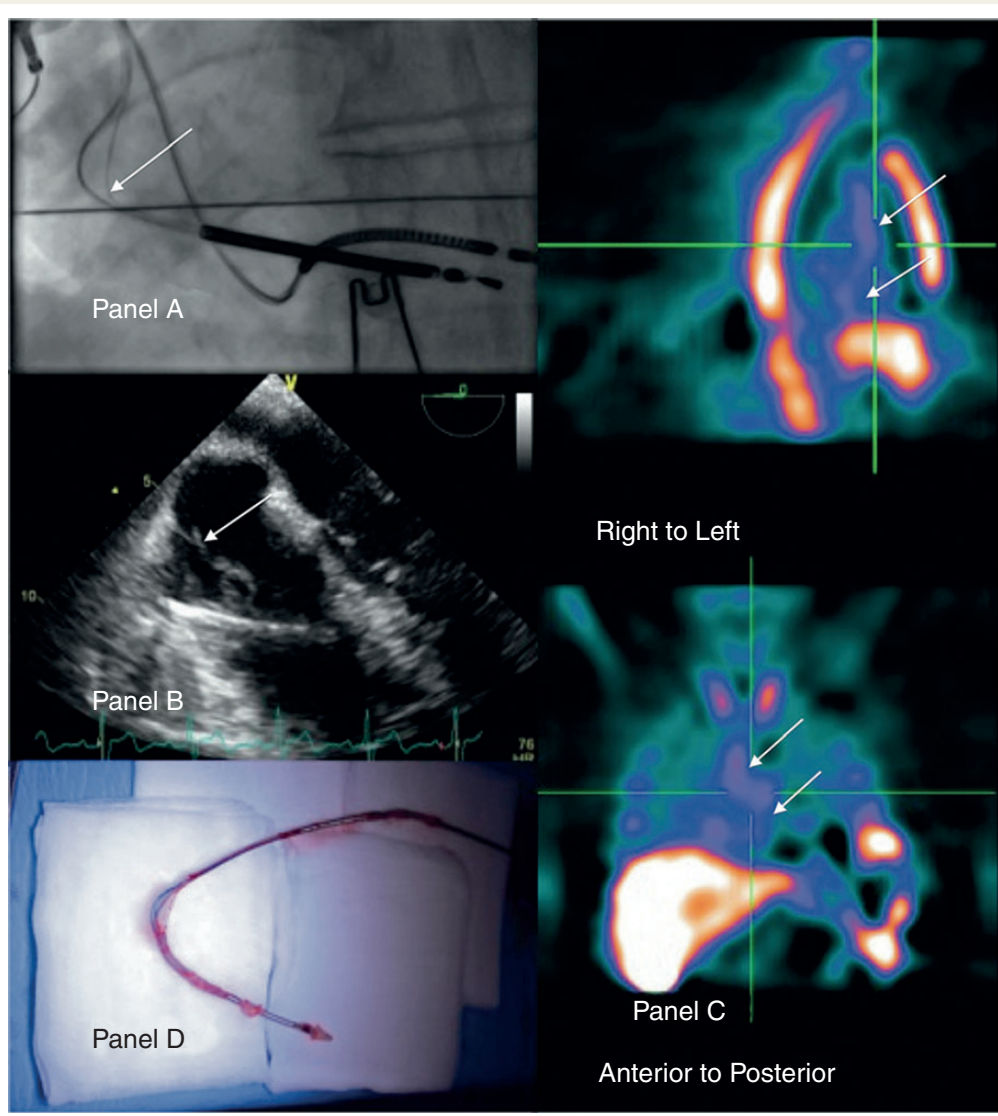


Figure 1 (A) TEE showing hyperechogenic swelling of one lead, with a questionable filiform lead-associated image (arrow). (B) Labelled leucocyte scintigraphy with acquisition at 4 h, with ^{99m}Tc-HMPAO-leucocytes, focused on chest. Captation of labelled leucocytes is observed along the plausible intrathoracic course of the ICD shock lead, centered by green lines. This behaviour is consistent with an inflammatory-infective process localized to this site.

In the case of externalized coils of a Riata implantable cardioverter-defibrillator (ICD) lead,¹ the role of transoesophageal echocardiography (TEE), usually pivotal for the diagnosis of PM/ICD lead-related endocarditis, may be limited as externalization itself can conceal very small vegetations and lead to a delayed diagnosis. In these situations, as in cases of occult bacteraemia, our experience indicates that the use of leucocyte-labelled scintigraphy (LLS) may be helpful in detecting abnormal accumulation of white blood cells,² thereby allowing the precise diagnosis of endocarditis and strengthening the indication for a complete lead extraction.

A 65-year-old male patient was evaluated in 2006 for a Brugada type 1 electrocardiogram pattern, syncope, and inducible sustained ventricular arrhythmias in electrophysiological study. He underwent a single-chamber ICD implantation with a St Jude Medical Atlas+VR V-193 defibrillator and a RIATA 1570 lead.

In December 2012, inappropriate antitachy pacing bursts with a concomitant progressive reduction of lead impedance were evident, so the patient was admitted for fluoroscopic examination of the lead that disclosed externalization of the conductor cables distally to superior vena cava coil, at the passage across the tricuspid valve (Figure 1A, arrow). After discussing with the patient the different therapeutic options, due to the well-known difficulty and risk of the extraction of externalized Riata leads,³ the addition of a new shock lead was preferred, with concomitant generator replacement. During the hospital stay, the patient suffered from septic fever with chills, although no signs of infection could be observed at the generator pocket. Blood cultures disclosed a multidrug-resistant *Staphylococcus epidermidis* strain. A TEE showed a small filiform lead-associated image that was not clearly distinguishable from the externalized conductors of the RIATA lead (Figure 1B, arrow). Labelled leucocyte scintigraphy was performed, which showed abnormal captation of labelled leucocytes along the plausible intrathoracic course of the ICD shock lead (Figure 1C, right to left and anterior to posterior views, arrows. Findings at 4 h).

This evidence strengthened the need for total lead extraction, although risky and difficult, done on March 2013 without complications. Bacteriological examination of fragments of the extracted lead (Figure 1D) grew a methicillin-resistant *S. epidermidis* strain, the same observed in blood cultures.

In cases of lead infection associated with externalized coils, TEE, which is usually a cornerstone for diagnosis of endocarditis, has a low specificity. The exteriorized coils may generate questionable images that can delay the correct diagnosis. In equivocal cases, the repetition of TEE may reveal changes of the intracardiac masses, and LLS may show abnormal captation, thereby leading to a correct diagnosis. As with all infected leads, total device extraction is mandatory, even with an increased difficulty due to externalized conductors.

Conflicts of interest: none declared.

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