

The impact of the import of Ubiquicidin-^{99m}TcTechnetium scan in the management of bone infections in Nigeria.



Temitope O Alonge¹, Olumayowa U Kolade², Emeka C Elumelu¹
¹Department of Orthopaedics and Trauma, University College Hospital, Ibadan, Nigeria.
²Department of Nuclear Medicine, University College Hospital, Ibadan, Nigeria.



Background

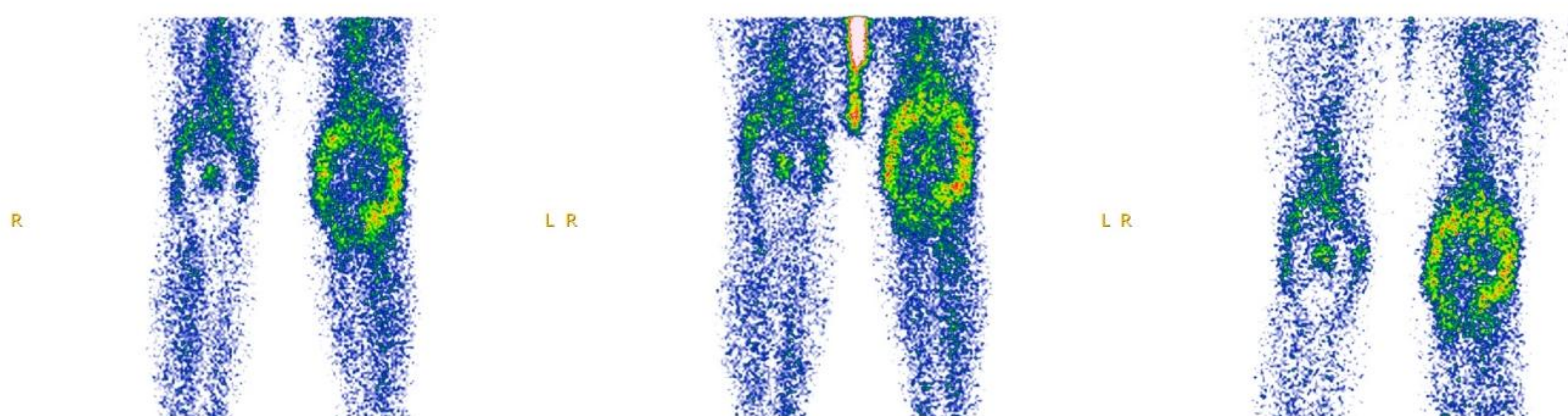
Osteomyelitis and prosthetic joint infection are difficult to diagnose, as clinical findings and conventional imaging often cannot distinguish infection from sterile inflammation. Ubiquicidin (29-41)-^{99m}TcTechnetium scintigraphy, a bacterial infection-specific radiotracer that binds bacterial membrane, was introduced in the University College Hospital, Ibadan, Nigeria in October 2024 to enable non-invasive but definitive confirmation of musculoskeletal infection.

Aims

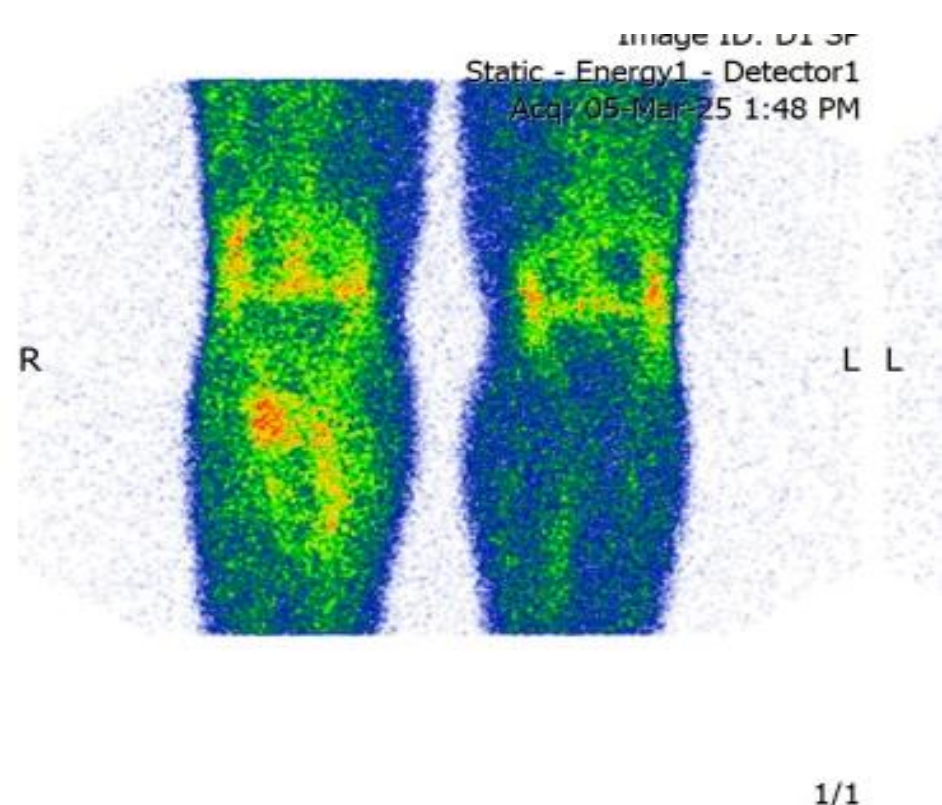
To assess the impact of Ubiquicidin-^{99m}TcTechnetium scan as a veritable tool in definitive diagnosis of osteomyelitis.

Methods

Suspected cases of osteomyelitis and prosthetic joint infections presenting to the Musculoskeletal Infection Unit of the Orthopaedics Department of the University College Hospital, Ibadan since October 2024 when this imaging modality became available in the Nuclear Medicine Department of the Hospital were referred to have the investigation as confirmation of their diagnosis.



Left Prosthetic infection following bilateral Total Knee Arthroplasty



Fracture Related Infection 20years after ORIF for Right Tibia Fracture

Results

In all the ten (10) patients who could afford the cost of the investigation, the scan demonstrated an increase uptake of the radiotracer in the presence of bacterial-induced bone and prosthetic infection save for a false negative at a site of chronic osteomyelitis (ipsilateral tibia) in the patient with recurrent right hip prosthetic infection.

Conclusion

Ubiquicidin (29-41), a cationic peptide, binds to bacterial cell membranes via electrostatic interaction, aiding detection of osteomyelitis and prosthetic joint infection. In Nigeria, Ubiquicidin-^{99m}Tc scanning has helped differentiate bacterial induced soft-tissue infection from osteomyelitis and confirm prosthetic joint infection versus sterile inflammation. Although sensitivity is reported at 92-100%, this case series showed a false-negative tibial scan, likely due to biofilm formation in the chronic osteomyelitic focus.

Selected References

1. Alonge TO, Ogunlade SO, Omololu AB, Fashina AN, Oluwatosin A. Management of chronic osteomyelitis in a developing country using ceftriaxone-PMMA beads: an initial study. *Int J Clin Pract.* 2002;56(3):181-183.
2. Assadi M, Vahdat K, Nabipour I, Sehhat MR, Hadavand F, Javadi H, Tavakoli A, Saberifard J, Kalantarhormozi MR, Zakani A, Eftekhari M. Diagnostic value of ^{99m}Tc-ubiquicidin scintigraphy for osteomyelitis and comparisons with ^{99m}Tc-methylene diphosphonate scintigraphy and magnetic resonance imaging. *Nucl Med Commun.* 2011;32(8):716-723.
3. Beiki D, Yousefi G, Fallahi B, Tahmasebi MN, Gholamrezanezhad A, Fard-Esfahani A, Erfani M, Eftekhari M. ^{99m}Tc-Ubiquicidin [29-41], a promising radiopharmaceutical to differentiate orthopedic implant infections from sterile inflammation. *Iran J Pharm Res.* 2013;12(2):347-353.

