Role of SPECT-CT as a diagnostic imaging investigation for symptomatic patients after foot and ankle bony operations

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My disclosure is in the final AOFAS App.

I have no potential conflicts for this presentation to disclose.
Aims and Objectives

- The aim of the study was to evaluate the value of single-photon emission computerized tomography-computed tomography (SPECT-CT) in the assessment of painful foot and ankles after previous bony operation.
Background

Due to the complexity of the bone and joint anatomy of foot and ankle, identifying the source of pain and discomfort can sometimes become a challenging task for clinicians, particularly after a previous operation(s).

Radiograph and SPECT-CT of a patient showing failure of previous operation.
Background

- Accurate diagnosis of the pathology highly depends on precise clinical assessment and imaging investigations.

- A single photon-emission computed tomography images coregistered with CT scan (SPECT-CT) is an imaging modality which combines highly detailed CT images with the functional information from a triple phase radionuclide bone scan.
Materials and Methods

• Retrospective study between 2009 - 2012
• Total of 28 patients have been identified who has been referred to our tertiary F&A Clinic and who underwent diagnostic SPECT-CT imaging for their post-surgical foot and ankle pain
• Previous trauma operations (ORIF) in 10 patients
• Previous elective operation (Osteotomy/fusion) in 18 patients
• M-11 (39.2%)  F-17 (60.7%)
• Mean Age 53.6 (26-82)
Results

SPECT-CT has confirmed diagnosis of

• degenerative changes in adjacent joints in 13 patients (46%)
• Incomplete/partial fusion in 6 patients (21%)
• Non-union/failed fusion in 5 patients (19%)

SPECT-CT images of a patient with failed tarsometatarsal joint fusion
Results

- In this specific group of patients with post surgical Foot & Ankle pain, SPECT-CT accurately identified the underlying pathology causing symptoms in over 85% of patients.

<table>
<thead>
<tr>
<th></th>
<th>Failed fusion / Non-union</th>
<th>Partially united / Incomplete fusion</th>
<th>OA in other joints</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective 18</td>
<td>3</td>
<td>4</td>
<td>9</td>
<td>1 CRPS 1 ?infection</td>
</tr>
<tr>
<td>Trauma 10</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>
Discussion

• There is increasing use of SPECT-CT in diagnosing complex musculoskeletal pathologies including low back pain after lumbar spine fusion, knee pain after TKR and post traumatic wrist pain\textsuperscript{1-3, 5}

• Published studies indicate very high diagnostic value of the SPECT-CT images in specific MSK conditions\textsuperscript{1-6}
Discussion

• SPECT-CT reported by experience radiologist has superior diagnostic value to MRI scan in specific MSK pathologies.4,8

• In our series, SPECT-CT images reported by our experience radiologist (Senior Author) provided excellent supporting information confirming the definitive diagnosis in 24/28 of our patients influencing management plan.
Conclusions

• SPECT-CT is an incredibly useful imaging investigation, which can complement clinical assessment in diagnosing the primary pathology in symptomatic patients after foot and ankle bony operations, which in majority of cases can provide supporting information to confirm the diagnosis.
References


