

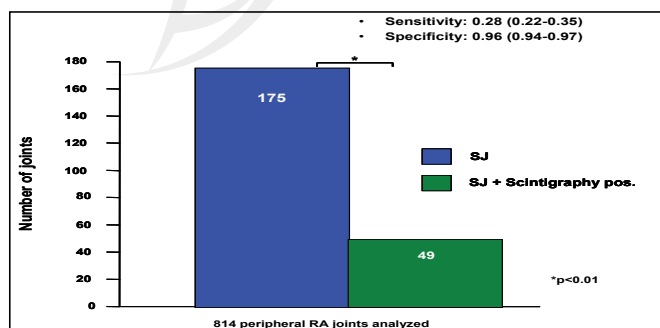
Imaging of the Rheumatic Diseases

Scintigraphy with radiolabeled TNF- α antibodies is a method to detect specific TNF- α expression in inflamed joints [Barrera P et al. *Ann Rheum Dis* 2003]. Josef Hermann, MD, Medical University Graz, Graz, Austria, presented results of a study that evaluated this method as a tool to assess disease activity in patients with rheumatoid arthritis (RA).

In this study, 11 TNF blocker-naive RA patients with a minimum DAS28 score of 5.1 and 2 patients with painful osteoarthritis (OA) received a mean dose of 618 MBq radiolabeled ^{99m}Tc -infliximab intravenously over 15 minutes. Prior to infusion, synovitis was estimated by physical exam and routine blood work, including acute phase reaction, MRI of the hand with clinically more active disease (in 7/11 of the RA patients and both OA patients), and power Doppler sonography of the peripheral joints in all patients. Hand-MRI was scored according to the OMERACT RA-MRI Scoring System.

^{99m}Tc -infliximab uptake was seen in 9 of the 11 RA patients but not in the 2 OA patients. Of the 814 peripheral joints that were evaluated in RA patients, 175 were clinically swollen; 49 joints also were positive on scintigraphy (Figure 1).

Figure 1. ^{99m}Tc -infliximab Uptake in Peripheral RA Joints.



There was a significant correlation ($r=0.70$; $p<0.05$) between the number of swollen joints and the number of joints with ^{99m}Tc -infliximab uptake. ^{99m}Tc -infliximab uptake was strongly correlated with serum CRP levels ($r=0.91$; $p<0.001$) but not with DAS28 score ($r=0.4$; NS). Of the 77 hand joints that were analyzed, 41 were swollen; 40 showed signs of synovitis on MRI. ^{99m}Tc -infliximab uptake was evident in 11 joints, 9 of which showed clinical swelling. There were no adverse events during or after the study.

Prof. Hermann concluded by saying that, "Despite its high specificity, ^{99m}Tc -infliximab scintigraphy has a low

sensitivity to detect RA joint inflammation and cannot be used as an objective tool to calculate the whole burden of inflammation present in this disease."

Marina Backhaus, MD, University Hospital Charité, Berlin, Germany, presented results of a study that evaluated the use of a 7 joint sonographic score (the German US7 Score) in daily rheumatologic practice.

The study enrolled patients with a diagnosis of RA, psoriatic arthritis, or ankylosing spondylitis from 49 rheumatology practices across Germany. Ultrasonography results are analyzed according to a semi-quantitative scoring system (grades 0-3) that is based on 7 joints of the clinically dominant hand and foot (wrist; MCP 2,3; PIP 2,3; MTP 2,5) for the presence of synovitis, tenosynovitis, and bone erosions.

Prof. Backhaus presented results for a subgroup of 121 patients (91% RA, 9% psoriatic arthritis) who had at least 3 visits. Mean age of patients in this subgroup was 55 years, and mean disease duration of 8.3 years. A total of 41% of patients were receiving disease-modifying antirheumatic drugs (DMARDs) alone; 59% was receiving DMARDs + a TNF- α inhibitor or a TNF- α inhibitor alone.

Ultrasonography and disease activity scores at baseline and at 3 and 6 months for all patients in the subgroup are shown in Table 1.

Table 1. Ultrasonography and Disease Activity (n=121).

	Baseline	3 months	6 months
Synovitis sum score by GS-US (max 27)	8.1	6.1**	5.5**
Synovitis sum score by PD-US (max 45)	3.3	2.4	2.0**
Tenosynovitis sum score by GS-US (max 7)	1.3	0.6**	0.6**
Tenosynovitis sum score by PD-US (max 21)	0.8	0.4**	0.2**
Erosions (max 14)	2.6	2.6	2.5
DAS28	5.0	3.6**	3.6**
ESR	30.4	21.9**	21.4**
CRP	22.8	9.7**	8.0**

**= $p<0.01$

Over 6 months, DAS28 scores were reduced by 26%, the German GS-US7 score was reduced by 34%, and the German PD-US7 score was reduced by 40%. Similar reductions in ultrasonography and disease activity scores were seen regardless of treatment regimen. Prof. Backhaus concluded, "The 7 joint sonographic score is a feasible tool for assessing and following patients with arthritides of wrists, hands, and feet in daily rheumatologic practice."