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## BONE SCINTIGRAPHY AFTER TOTAL KNEE REPLACEMENT.

T.Oohashi, S.Oomori, S.Katsumata, M.Okui, M.Inokuchi, T.Betto (Orthopedics), F.Hattori, S.Hayashi, M.Inako (Radiology). Kanagawa Prefectural Atsugi Hospital, Atsugi.

Seventeen total replaced knee joints in 12 patients with rheumatoid arthritis were analyzed quantitatively for compatibility using Tc-99m Methylene Diphosphonate (MDP) bone scintigram for 6 months to 5 years and 8 months, with a mean follow up period of 2 years and 4 months after operation. The distal end of the femur and proximal end of the tibia were chosen for ROI from posterior view dot scans of patients with total knee replacement, and the ratio of uptake in regions of these ROIs was obtained as compared with the uptake of the femur shaft region and the distal portion of the tibia, respectively. Significantly increased uptake was observed in regions of those ROIs with definite cold spot in the replaced knee joint immediately after operation, and these high uptake regions were found to decrease gradually with time. However, an abnormal high uptake region have been detected for a long period after surgery in patients with increasing knee pain or with an unsatisfactory congruence between prosthesis and bone in the total knee replacement.

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## POST-SYNOVECTOMY JOINT SCINTIGRAPHY.

S.Omori, S.Katsumata, M.Okui, M.Inokuchi, T.Betto, T.Ohashi, H.Hattori, S.Hayashi, and M.Inako. Kanagawa Prefectural Atsugi Hospital, Kanagawa.

It was previously reported that joint scintigraphy with showing increased uptake of tracer material in an inflammatory joint was of use in postoperatively determining local synovial membrane activity and evaluating the therapeutic effect. Joint scintigraphy was performed on patients with rheumatoid arthritis before and after total knee replacement and synovectomy. Seventeen joints were involved in 12 patients, and the periods of observation ranged from 5 years and 8 months to 6 months, averaging 2 years and 2 months. Before surgery all patients had a marked swelling and intense pain in their knee joints, and scintigraphy showed increased uptake of radioactivity in the joints involved. Post-operative scintigraphy no longer showed any increased uptake of radioactivity.

During follow-up scintigraphy revealed an abnormal uptake of radioactivity in some cases. This fact, coupled with clinical findings, suggested activity of regenerated synovial membrane.

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COMPARISON OF In-111 LEUKOCYTE SCINTIGRAPHY AND Tc-99m JOINT SCINTIGRAPHY IN RHEUMATOID ARTHRITIS. K.Uno, K.Imazeki, H.Katsurai, K.Saegusa, N.Arimizu, S.Uematsu, T.Suguro, S.Inoue and K.Nohira. Chiba University School of Medicine and Chiba Rehabilitation Center, Chiba.

This study was undertaken to evaluate the use of In-111-labeled leukocyte scintigraphy (In-WBC) compared with Tc-99m pertechnetate ( $TcO_4^-$ ) in patients with rheumatoid arthritis (RA). Knee and wrist joints were evaluated by the accumulation of both In-WBC and  $TcO_4^-$  in these joints. Posterior and anterior images of each patient were taken at 15min. after administration of 1-3mCi of  $TcO_4^-$  i.v. This was followed by administration of 0.3-0.5mCi of In-oxine or tropolon labeled WBC without plasma. Imaging of In-WBC were performed at 24 hrs. with a scintillation camera fitted with a medium-energy, parallel-hole collimator and with use of dual 20% spectrometer setting over both photopeaks of In-111. Spill over of Tc-99m activity was a small percentage of In-111 counts on lesions. The results indicated a correlation with the clinical assessment of pain and swelling and joint uptake ratio was obtained between In-WBC and  $TcO_4^-$ . In-WBC was not significantly different from Tc-99m for detection of inflammatory joints in RA. However we observed a discrepancy between In-WBC and  $TcO_4^-$  uptake in some cases. That is, there was no evidence of accumulation in In-WBC but  $TcO_4^-$  showed enhanced uptake in patients with suspected osteoarthritic changes without synovitis.