a statistically increased steadily. Furthermore, statistically significant difference was found between the positive and control group at 2., and 4. hours images (p=0.015, and p=0.006) .±0.43, 2.05±0.35, 1.90±SD) values were found to be 1.74±Results of the 21 patients, 11 were found to have infection (positive group), whereas 10 had normal (control group) pathologies on histopathology, microbiologic assays, or clinical and imaging follow-up. First, 2., and 4. hours L/NL (mean

Conclusion: Leukocyte scintigraphy has been described as a useful diagnostic tool in the diagnosis of suspicion of bone and soft tissue infection, fever of unknown origin and suspicion of acute appendicitis. Tc-99m HMPAO labeled WBC scintigraphy is a rapid and very accurate method for detecting those pathologies, and it is evaluated visually. Our results showed that WBC scintigraphy might be evaluated semiquantitatively and reliable used for diagnosis of suspected bone and soft tissue infection.

Key words: Bone, soft tissue, infection, Tc-99m HMPAO - labeled white blood cell scintigraphy

Preferred Presentation Type: Poster Presentation

Accuracy of Radioactively Labeled Autologous Leukocytes in Patients with Infected Prosthetic Joints

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Abstract

Objective: A serious complication of joint replacement surgery is infection, which results in prolonged invalidity due to decrease in joint function and hospitalization, often resulting in removal and subsequent re-implantation after lengthy antibiotic therapy. Labeled leukocyte scintigraphy (LS) is considered a valuable tool in preoperative diagnosis of prosthetic joint infections. The aim of this study was to examine imaging of in vitro radioactively labeled autologous leukocytes and bone marrow scans in their accuracy and reliability in detecting infection in patients with prosthetic joints. Furthermore, inflammation markers CRP and WBC count were analyzed for their accuracy in detecting prosthetic joint infection.

Methods: This single center study included all patients suspected of having prosthetic joint infections between January and September 2013 at the Vienna General Hospital. A total of 45 mL blood was drawn from a peripheral vein and leukocytes were radioactively labeled with Tc-99m-HMPAO according to protocol. The labeled leukocytes were then re-injected into a peripheral vein. A whole body scintigraphy and local images were recorded with a double-headed gamma camera four hours after re-injection. Additional local images were taken taken approximately 24 hours following re-injection. In the case of positive LS, bone marrow scintigraphy was conducted 48 hours after re-injection. Local images were recorded 30 minutes after injection of 370 MBq Tc-99m-nanocolloid.

Results: This study included a total of 50 patients. All the patients underwent subsequent bacterial and histological testing via joint aspiration or operation of the joint. The most common joint investigated was knee (27), followed by hip (9), shoulder (2), and elbow (1). Other cases involved the complete femur (6), tibia (2), leg (2), and foot (1). Pathogens isolated from the joints included Staphylococcus epidermidis and Candida albicans. The sensitivity of LS was 63%, specificity 90%, PPV 56% and NPV 93%. Overall accuracy was calculated to be 86%. Pre-diagnostic testing with CRP and WBC was conducted in 43 patients. Mean CRP was 3,9 mg/dl. Thirty-one patients had a CRP-level higher and 12 patients lower than the cut-off. The sensitivity was 57%, specificity 28%, PPV 13%, NPV 77% and accuracy 33%. Lastly, only 3 patients had WBC counts higher than the cut-off. WBC count had a sensitivity of 0%, specificity 92%, PPV 0%, NPV 88% and overall accuracy 82%.

Conclusion: While this study showed that CRP and WBC are not accurate pre-diagnostic markers for prosthetic joint infection, it was able to demonstrate that Tc-99m-HMPAO labeled autologous leukocytes in patients presenting with symptoms of prosthetic joint infection is accurate. LS is a feasible imaging method in patients with infection of prosthetic joints and may also be a helpful tool in other infection scenarios.

Key words: CRP, leukocyte labeling, prosthetic infection, scintigraphy, white blood cell

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