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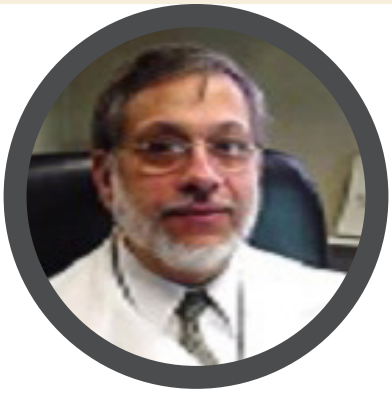
LABELLED LEUKOCYTE/BONE MARROW IMAGING FOR DIAGNOSING INFECTION OF RECENTLY IMPLANTED LOWER EXTREMITY ARTHROPLASTIES



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Diagnosing lower extremity prosthetic joint infection during the first year after implantation, when up to two thirds of these infections occur, is challenging. Pain usually is present, fever is variable. Leucocytosis is a poor predictor of infection. C-reactive protein remains elevated for up to three weeks. Erythrocyte sedimentation rate can remain elevated for up to one year. Joint aspiration with culture, the definitive preoperative diagnostic procedure, is specific, sensitivity is variable. Plain radiographs lack sensitivity and specificity. Data on radionuclide imaging during the early postoperative period are limited. The bone scan can exclude infection. It is a good rule out test, but cannot rule in infection. ^{67}Ga accumulates in normally healing surgical incisions and in aseptic inflammation. With an overall accuracy of 60%-80%, there is little role for this radiopharmaceutical in prosthetic joint infection. Data about diagnosing prosthetic joint infection with ^{18}F-FDG in the early post-operative period are scant; uptake of this radiopharmaceutical in a variety of postoperative settings for variable time periods, however, is well known. ^{111}In labelled leukocytes do not accumulate in normally healing surgical wounds and combined with bone marrow imaging is about 90% accurate for diagnosing prosthetic joint infection. We reviewed combined labelled leukocyte/marrow imaging performed on 40 lower extremity arthroplasties implanted within one year before imaging, including 15 implanted within 3 months prior to imaging. Imaging results were compared to final diagnoses, which were surgically, microbiologically and histopathologically confirmed. 28/40 arthroplasties were infected including 10/15 imaged within three months after implantation. Sensitivity, specificity and accuracy were 96%, 92%, 95% respectively for all 40 arthroplasties and 100%, 80%, 93% respectively for 15 arthroplasties imaged within 3 months after implantation. Results are comparable to those reported for diagnosing prosthetic joint infection in general and indicate that during the first year after implantation, when evolving postoperative changes can confound diagnostic test results, labelled leukocyte/marrow imaging accurately diagnoses lower extremity prosthetic joint infection.

Biography

Christopher J Palestro has pioneered the use of combined labelled leukocyte/bone marrow imaging for diagnosing osteomyelitis. He has authored or co-authored more than 150 peer reviewed articles, nearly 100 book chapters and review articles. He serves on the Editorial Boards of Radiology, *Journal of Nuclear Medicine and Quarterly Journal of Nuclear Medicine* and *Molecular Imaging*. He is Co-chair of the Society of Nuclear Medicine and Molecular Imaging's Working Group for the Tc-99m and In-111 Labeled Leukocyte Procedure Standards/Guidelines and Chair of the Appropriate Use Criteria Committee for Inflammation and Infection. He is a Former Chair of the American Board of Nuclear Medicine. In 2013, he received the Presidential Distinguished Educator Award from the Society of Nuclear Medicine and Molecular Imaging. In 2017, he was elected as Fellow of the Society of Nuclear Medicine and Molecular Imaging, one of that organization's most prestigious awards.

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