DETECTION OF ABSCESSES WITH ^{51}Cr-LABELED LEUKOCYTES

Our laboratory recently reported its experience with a technique for concentrating in a short time leukocytes which by all measurable parameters are physiologically intact (*1*). With a consistent reproducible ^{51}Cr tag, our original purpose was to apply this technique to the detection and delineation of abscesses, such as has been reported by Winkelman (*2*) and Deysine (*3*).

We created experimental properitoneal abscesses in rabbits by the implantation of pellets containing large numbers of E. coli and Staph aureus organisms. Twenty-five to 50 μCi of ^{51}Cr were tagged to isolated 10^8 WBC and injected into an ear vein. Images were performed at varying intervals from 15 min to 4 days. In eight rabbits so treated, we were unable to visualize the clinically obvious abscess satisfactorily by rectilinear scanning or by Anger camera scintigraphy.

In all our images the majority of radioactivity was present within the reticuloendothelial system. Liver, spleen, and bone marrow images were distinct. In addition, we have been consistently impressed by a high degree of activity in the lungs. Microscopic examination of our white cell preparations gave no indication that the white cell concentrates would be treated as microemboli.

Although we previously judged that a minimum of 3–5 μCi of ^{51}Cr should be concentrated in a lesion before detection, it is evident that the reticuloendothelial activity of labeled leukocytes clearly exceeds the activity within the experimentally produced abscess.

Despite extensive characterization of a ^{51}Cr label of an excellent white cell concentration, we have been unable to confirm the results of Winkelman and Deysine in the clinical definition of abscesses.

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SAFETY OF ^{169}Yb-DTPA IN CISTERNOGRAPHY

Barbizet, et al (*1*) have questioned the safety of ^{169}Yb-DTPA as a cisternographic agent and have suggested that for 500 μCi of ^{169}Yb-DTPA administered intrathecally, the radiation dose to the central nervous system (CNS) may be as high as 750 rads. Since no quantitative data are offered by the authors, it is very difficult to ascertain the basis for their conclusions which appear to be founded on subjective interpretations of images and it is equally difficult to determine how this type of data could be applied to dosimetry calculations. DeLand (*2*) demonstrated the distribution and quantity of residual ^{169}Yb-DTPA following intrathecal administration. From data based on total-body imaging with computer analysis of distribution there was less than 4% retention within the CNS 14 days after administration. The retention of ^{169}Yb-DTPA in dogs was found to correlate very closely with the excretion rates of ^{169}Yb-DTPA in man previously published by Wagner, et al (*3*) and with data obtained in this laboratory. Residual activity, most of which is fixed to brain tissue, does remain within the central nervous system. The quantity, however, is extremely small (*2*). The retention of $^{169}YbCl_3$ (fixed to CNS tissue) is extremely high (*2*) and the possibility that the material used by Barbizet, et al contained $^{169}YbCl_3$ must be considered. Our studies have indicated that Yb-DTPA is rapidly absorbed throughout the central nervous system so that even in cases of CNS block, retention should not be a serious problem.

To document the long-term elimination of ^{169}Yb-DTPA in cisternography, we quantitatively restudied five patients who had been injected from 9 to 87 days before this examination (Table 1). All counting was performed for 5 min with a gamma camera (Nuclear-