

V33 THERAPEUTICAL EFFECTS ON BLOOD-FLOW IN THREE-PHASE BONE SCANNING IN PRIMARY MALIGNANT TUMORS AND ACUTE OSTEOMYELITIS

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In the studies where the bone scan was limited only to the late static image, the main disadvantage was its nonspecificity. With three-phase bone scan the number of false positive findings was reduced by some peculiar diseases; for instance, acute hematogenous osteomyelitis. It is well known that various diseases, such as nonunion of the fracture, some surgical interventions, avascular necrosis... can imitate acute osteomyelitis on the static image. These diseases can only be differentiated from inflammation by blood-flow. Therefore, in all patients with the diagnosis of primary bone disease tumor, inflammation, trauma, aseptic necrosis... three-phase bone scintigraphy is performed. Here, only the patients with acute osteomyelitis and primary malignant bone tumors will be presented: the basic scintigram was done before the therapy started, and the second one as a part of the follow-up - in some patients during the therapy and in some after its ending. We noticed that the most reliable part of three-phase bone scan responding to the therapy is angioscintigraphy (blood-flow) and in some cases early static (blood-pool) image. These two phases, especially the first one, are in good correlation with the clinic, in contrast to the third phase which is delayed.

From the presented cases it could be concluded that in acute osteomyelitis and primary malignant tumors, blood-flow and blood-pool images are unavoidable phases of the bone scanning when we want to correctly evaluate the effects of the therapy.



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V34 SPECT SCINTIGRAPHY WITH HDP AND Mab BW 250/183 OF LOOSENED HIP ENDOPROTHESIS

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Main problem of the loosened hip endoprosthesis is in distinguishing between the aseptic and septic loosening of endoprosthesis.

The study involved 27 pts with a loosened hip; 15 pts with aseptic and 12 pts with septic loosening. The patients were injected 550-770 MBq Tc-99m-HDP and underwent SPECT scintigraphy of the hips to repeat then the examination with only 370 MBq Tc-99m-Mab Bw 230/183. HDP application evidenced positive accumulation at the endoprosthesis in all patients with a loosened hip while Mab Bw 250/183 only in the patients with septic loosening.

Conclusion: SPECT scintigraphy of hip endoprosthesis with HDP and Mab BW 250/183 allows differential diagnosing between septic and aseptic hip loosening and hereby a correct therapeutical approach.



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V35 ULTRASOUND IN PATIENTS TREATED FOR SARCOMA BY RADIOTHERAPY

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When treating patients by radiotherapy for sarcoma it is very important to establish the exact borders and the depth of extension of the tumor. Fifteen patients were examined by ultrasound (US) prior to radiotherapy, the depth of the tumor was established and its borders were marked on the skin. In the middle of the treatment the US examination was repeated and when there was tumor involution, new tumor borders were marked on the skin. At the end of the therapy US guided aspiration cytology was done at various sites of tumor seen on US. If cytology was still positive boosting radiotherapy dose was given on residual tumor, which was again marked on US examination. If cytology was negative despite residual tumor mass, no further irradiation was applied and the patient was just followed up. All patients were followed up on a regular basis and ultrasound guided aspiration cytology was done repeatedly.

In this way, it was possible to maximally reduce the field of irradiation, determine the exact spot for maximum dose and depth of irradiation, and to obtain good results with minimum damage to the surrounding tissues.



V36 EFFECTS OF IONIZING RADIATION ON GASTROINTESTINAL FUNCTION

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The aim of this project is to investigate the effects of ionizing radiation (<10 Gy) on several parameters of gastrointestinal function: - (a) regulatory peptides; (b) pancreatic and biliary secretions and (c) electrolyte and lipid transport using both gamma alone (cobalt-60) and a mixture of gamma/neutron (γ/N Silène reactor) in two animal models, the rat and pig.

Preliminary data in rats following gamma irradiation (2-8 Gy) show that plasma neurotensin, gastrin releasing peptide and substance P are increased in a dose dependent manner most markedly between two and four days after exposure. In another study in rats using mixed γ/N (2-4 Gy: γ/N 1:1) intestinal transepithelial resistance was reduced with a concomitant increase in short circuit current up to two days after irradiation. Intestinal brush border marker enzyme activities (sucrase and leucine amino-peptidase) were also reduced. Such differences were more marked and persisted longer after γ/N irradiation (2-4 Gy: γ/N =0.2). Following the latter type of irradiation (4Gy) plasma cholesterol increased as well as the cholesterol/phospholipid ratio. Analysis of cholesterol distribution in lipoprotein fractions revealed a large increase in cholesterol carried by High Density Lipoprotein-1 (HDL1).

In the pig following either type of irradiation the volumes of both pancreatic and biliary secretions were reduced. Further analysis of pancreatic secretion showed a marked decrease in the quantity of chymotrypsinogen, phospholipase and lipase as well as a decrease in chymotrypsin and elastase activities (after γ alone, 6 & 8Gy). Irradiation of pigs with either γ (6 Gy) alone or γ/N (6 Gy: γ/N 1:1) resulted in a marked decrease in both brush border (sucrase: leucine aminopeptidase) and basolateral (sodium pump; adenylate cyclase) enzyme activities. Vasoactive intestinal peptide (VIP) stimulated adenylate cyclase was markedly attenuated and in addition specific VIP binding was modified as shown by a reduction in receptor affinity.

The significance of these data will be discussed along with how such result may be of importance vis à vis new therapeutic strategies or indeed new biological markers of radiation-induced gastrointestinal dysfunction.



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