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ORIGINAL ARTICLE

Scintigraphic Hyperactivity Report in Elbow Joint Area of a Rat

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ABSTRACT

The aim of recent study was to describe the useful of scintigraphic technique in animal studies. In this study, we done bone scintigraphic operations in a rat and measured count of radioisotope accumulation in the elbow joint area and on bone scan images ROIs (Region Of Interest) on both the right and left sides of forelimb area were drawn. Radioisotopes counting changes within the ROI were calculated based on the time. The count of left elbow joint area was 5244 and in right area was 3198 respectively and these counts had different with them. Cause of this hyperactivity was diagnosed inflammatory lesions such as arthritis that was determined septic arthritis subsequent joint fluid aspiration and culture of it.

Key words: Bone, Radioisotope, Rat, Scintigraphy

Introduction

Bone imaging is done with several techniques with each technique having its strength and weaknesses. Radiographs provide better information about structures of bone for clinicians. In some instances for more accurate and informative studies techniques other than radiography can be employed. One of these techniques that is sensitive for the study of bones and its illness is scintigraphy[4,6]. In this study, we have used scintigraphy to study bones of forelimb. So we can apply this information to pathologic conditions. In this method, certain radioisotope after administration or injection into the body, this article will be focusing on the bones of course in pathological areas, attracting more radioisotope material can be visible[4,10]. Suitable radioisotope for bone scintigraphy is ^{99m}Tc- MDP [6,9,10].

Materials and Methods

Radioisotope (^{99m}Tc) has milked from Technetium – Molybdenum generator and then this added to MDP (Methylene diphosphonate) kit. After mixing the kit have ^{99m}Tc –MDP, 2mCi from this material measured by dosimeter machine in insulin syringe and then this injected from tail vein. In the first, animal was anesthetized by the inhalation of chloroform.

After two hours, rat again was anesthetized by the injection of ketamine (100mg /kg) and xylazine (50mg/kg)[3]. Then the animal was positioned on the scan table.

After setting the device bone scintigraphy Phillips machine program in both sides of body were prepared. By focusing of detector in forelimb area, scintigraphic scans were started. Total time of count was 2 minutes and total radioisotope was 500 Kcount.

In this study the quality (visual) and also quantitative evaluating studies were performed by gamma camera program software.

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In this study on bone scan images, ROIs (Region Of Interest) on both the right and left sides of forelimb area were drawn. Radioisotopes counting changes within the ROI were calculated based on the time (Fig.1).

Results and discussion

In scintigraphy, bones can be scanned and this technique manifest the anatomical and physiologic functional and also with this technique able to diagnosis of disease from normal or condition of health states [4,6,7].

Animals can be used such as experimental model in application of diagnostic image special in nuclear medicine. Scintigraphy especial of bone imaging has done in rat [1,2,5].

This survey pointed out that radioisotope without any clinical signs could be used in rat for forelimb bones scintigraphy. Optimal scans of bones after passing of special time and urinary excretion with reduce of activity in soft tissue and background could be obtained. In order to prevent skin contamination and other areas of the body with the radioisotope the animal must be prevented from contacting their own urine and also lead shields used on the injection site. Bony areas are seen as hyperactive areas which can be distinguished easily from soft tissues around bone. Radioisotope uptake is more in same points and less in others which can be seen in the scans.

In this study, as it can be seen from the scan the elbow join area had more activity compared to another side bones. Also it is possible to detect increased uptake of radioisotope in the elbow join area according to abnormalities. In recent study, increased uptake of radioisotope was observed in elbow join area as a focal and circular pattern which may an abnormal finding.

In this study, left forelimb elbow joint area compared with the right of the specific activity was higher. In the left ROI count was 5244 and in the right same area count was 3198(Table1). This is shows an abnormality Situation.

Obtained data are showed in tables 1.

Areas of bone involved in scintigraphy images were seen as hyperactivity areas.

To confirm the involvement of this area, another Gama camera device (ADAC machine) was used after 3 hours later in many views and this scans similar such as previous scans.

Cause of this hyperactivity can be from tumor masses, trauma, fractures, degenerative changes, inflammatory lesions such as arthritis [4,8].

In this case was determined septic arthritis subsequent joint fluid aspiration and culture of it.

Therefore scintigraphic techniques in studies of bone can be done and can particularly useful for the detection of bone disease.

Finally, scintigraphy was a comfortable utility in diagnostic imaging of bones and can be used in this way.

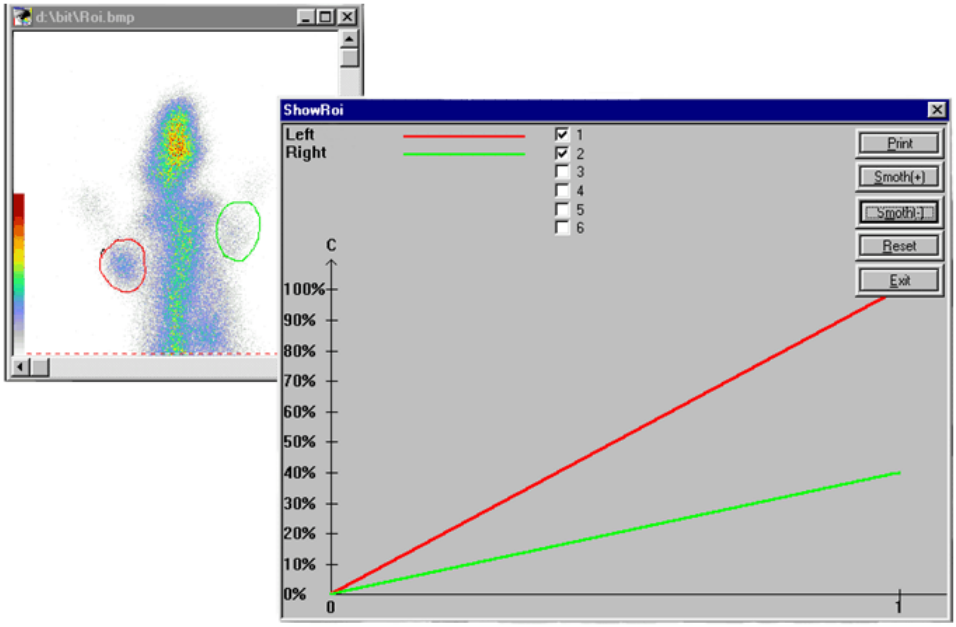

Fig.1: Drawn ROIs on both the right and left sides of elbow forelimb area with count –time curve

Table 1: Counts of radioisotopes in elbow joint area

Counts of radioisotopes	Right	left
	3198	5244

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