AbstractID: 1508 Title: Characterization of Osteoblastic Metastases from Digitalized Radiographs

Bones are composed of two types of tissue: the cortical serves as a protective covering which surrounds the trabecular occupied by bone marrow. The ratio of cortical and trabecular bone combination varies throught the skeleton. The distribution of skeletal metastases is closely related to the distribution of the red marrow, trabecular bone, in adults. Osteoblastic metastases produces new bone formation, so the typical radiological imaging is an increase of bone density. The goal of this work was to develop an image procedure, from digital radiographs, in order to enhance the diagnosis and evolution study of osteoblastic skeletal metastases under medical treatment. For this purpose, we characterized the healthy bone, according its histological classification, and osteoblastic metastases. We digitized 120 healthy bone and 30 osteoblastic metastases radiographs of different patients of both sexes (grey scale 8 bits, .*bmp format). The images were processed with a lowpass filter (size 3x3 and coefficients equal to 1) and measured their brightness. We calculated the mean value of grey level (MGL: 0-255) and the standard deviation of an area of interest selected by studying an histogram. The results indicate that there are significant differences ($p<0.05$) between the cortical and trabecular tissues but not between the anatomical localization. We can determine a reference MGL values of healthy bone (CO=216.41±14.24, TR=174.895± 14.18). The MGL of osteoblastic metastases is 208±14.16. The methodology shows a hepful method for radiological exploration.