

AbstractID: 12606 Title: Evaluation of Osteolytic Metastases and Myeloma Multiple skeletal lesions on Digitized Radiographs with Gray Level Parameters

Purpose: To evaluate the diagnostic usefulness of gray level parameters in order to distinguish osteolytic metastases (OL) from multiple myeloma (MM) on digitized radiographs.

Materials and Methods: We digitized 45 OL and 11 MM radiographs corresponding to 56 different patients of both sexes (0.175-mm pixel and 12 bit gray scale levels). The components of the characterization computerized scheme developed by our department were: (1) image enhancement by filtering, (2) region of interest selection, (3) parameters output and (4) data processing to distinguish between bone groups. The parameters derived from digitized radiographs were based on gray level histogram analysis of regions-of-interests. The SDGL parameter corresponds to standard deviation of the gray values used to generate the mean gray value.

Results: The results indicate that there are significant differences ($p < 0.05$) between osteolytic metastases and multiple myeloma skeletal lesions. The SDGL values were: OL= 266 ± 18.76 and MM= 252 ± 12 .

Conclusion: Our results show that the use of gray level parameters quantify OL and MM zones on digitized radiographs. This may be helpful as a complementary method for differential diagnosis.