Scattering measurements of a clinical mobile X-ray unit

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ABSTRACT

Radiographs examinations for patients in the intensive therapy unit are performed with a mobile X-ray unit. The aim of the present work is show the scattering of X-rays in three conditions radiographs: anteroposterior (AP), lateral left (LL) and oblique (O) exams. Were used a mobile X-ray, an ionization chamber and a glass phantom filled with water. From the results, shown values lower than 10µGy in distances after 100cm and 0µGy for distances until 200cm, which can show a distance as a kind of radiological protection.

Keywords: scattering, absorbed dose, mobile x-ray, radiation protection

1. INTRODUCTION

Chest radiographs are undergo daily for patient in the intensive care unit with a mobile X-ray unit [1,2]. In this work was shown the absorbed dose scattering from a mobile X-ray unit in conditions of radiographs for AP, LL and O exams.

2. MATERIALS AND METHODS

In this work were used : a 180 cc (RadCal) ionization chamber, model 10x6-180 and an electrometer (RadCal), model Accu-Gold ADDM+, a mobile X-ray unit (Shimadzu), model MobileArt Eco and a glass cylinder filled with water (17cm of diameter and 22cm in height). The

irradiation parameters used were 106kV and 25mAs. Measurements in different distances from phantom were measurement to the possible AP, LL and O exams.

3. RESULTS AND DISCUSSION

For all scattering measurements, obtained in directions of 0º, 90º and 180º relatively to the phantom, were obtained values lower than 10μGy in distances after 100cm and 0μGy for distances until 200cm.

4. CONCLUSION

In this work, scattering measurements were obtained for possible AP, LL and O exams. The result shown values of absorbed dose in different angles was of 0μGy for a 200cm distance, which can infer the guarantees of the radiological protection for any individual who are in distance greater than 200cm from a kind of radiography modality using a mobile X-ray unit[3].

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