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Evaluation of the collimation in Paediatric Ward Radiography

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Introduction

Infants have a higher sensitivity to radiation and a longer life expectancy than adults, special alert should be made during the paediatric radiography. Erroneous X-ray examination should be avoided and tight collimation should be encouraged, so as to maintain a good quality image and reducing the unnecessary irradiation of body part.

Objectives

The purpose of this study was to audit the radiation collimation in Paediatric ward radiography performed in daily routine practice in Dept. of Radiology (Kwong Wah Hospital). It acts as a reference study for the Quality Improvement Project in Paediatric Ward Radiography.

Methodology

Paediatric portable chest or abdominal radiographs from 1st of Feb 2012 to the end of Feb 2012 were selected in this study. Images were reviewed via GE PACS by means of resetting the images' collimation back to original pre-processing format. It involved 13 radiographers which is 29% out of 46 radiographers in the department. During the captioned period, a total 127 cases of chest radiograph and a total of 58 cases of abdominal radiograph were retrospectively reviewed. Both female and male baby were included in this study. The total number of case for retrospectively review were 121 chest cases and 58 abdominal cases. Equipments: Agfa NX system and GE PACS

Result

Totally, 25 cases of chest radiographs and 58 cases of abdominal radiographs was analysed. Tight collimation refers to collimation made to requested region of interest only. 48 chest radiographs (39.6%) showed tight collimation, 14 cases (11.57%) showed collimation including half of the abdomen and 59 cases (48.93%) showed collimation including whole abdomen. For abdominal cases, 13 radiographs (22.4%) showed tight collimation, 14 radiographs (24%) showed collimation including half of the chest and 31 abdominal cases (53.4%) showed collimation including whole chest. In both chest and abdominal radiographs, all together only 61 cases (34%) showed

tight collimation, 28 cases (15.6%) with minimal collimation (half of the chest or half of the abdomen) and 86 cases (48%) presented with no intentional collimation. In this study, under our existing practice, only 34 % of cases showed tight collimation and the rest of them showed minimal or no intentional coning. It implied that alert and reminder should be given to radiographers so as to reduce unnecessary irradiation of body part thus the patient radiation dose. The collimation at the target brings about a genuine dose reduction and also produces better image quality by reducing the scatter radiation. Collimation at the target is the most radiation protection for patient and staffs personnel, because it narrows the irradiating area that the radiation can strike. Staffs should be reminded about the importance of collimation.