A Survey of Patient Dose in Barium Enema Examination in a Hong Kong Public Hospital

SK Yu, 1 CM Kung, 2 YK Cheung, 2 CF Ip, 2 TL Chan, 2 E Tsui 2
1 Medical Physics Division, 2 Department of Diagnostic Radiology, Tuen Mun Hospital, Hong Kong

Objectives: To determine the total dose-area product values for barium enema examinations; to determine the major dose contributor and to propose methods for reduction of patient dose without affecting the diagnostic values of the examination; and to compare the results with dose reference levels reported in the literature.

Materials and Methods: Radiation dose was measured in 33 patients involved in a pilot study. Radiography was found to be the major contributor to the patient dose during an average of 6.8 ± 2.4 radiographs per patient. In order to reduce patient dose, the screen-film combination was replaced with a faster and higher contrast combination. A survey of 422 barium enema examinations was then performed to evaluate the effect on dose reduction.

Results: Using the fast screen-film combination, the average radiographic dose-area product was significantly reduced (p<0.001). The observed mean dose-area product was 1711 ± 1360 cGycm² and the estimated effective dose was 4.96 ± 3.94 mSv.

Conclusions: The dose-area product value obtained with the fast screen-film combination is comparable to values reported by other researchers and complies with the dose reference levels proposed from relevant surveys in the United Kingdom and the Netherlands. (J HK Coll Radiol 2001;4:146-149)

Key words: Barium enema, Patient dose, Survey