Radiation doses to patients during contrast examinations of the gastrointestinal tract.

McQuaruz, VZ; Tole, NM

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Abstract:

Radiation doses received by patients undergoing radiological examinations of the gastrointestinal tract have been measured in 405 patients at two major hospitals in Nairobi using thermoluminescent LiF dosimeters. Skin-entry doses were found to be high at one of the facilities (A) and very high at the other (B). Barium meal delivered mean doses of 77 mGy (7.7 rad) and 558 mGy (55.8 rad) at facilities A and B respectively, while the corresponding mean values for barium enema were 93 mGy (9.3 rad) and 712 mGy (71.2 rad). Differences between the two hospital mean doses were highly significant ($p < 0.001$). Doses to the thyroid gland and the gonads were also generally higher than those reported in other similar studies. Poor performance of old and ill-maintained radiological equipment, among other possible factors, is suggested to be the main cause of excessive patient exposure. Radiation risks to patients are considered in the context of such high doses being received by a generally young patient population. The authors suggest that there ought to be limits on the extent to which social and economic considerations in the provision of radiological services should be allowed to compromise sound principles in the radiation protection of the patient. It is recommended that increased efforts be directed at establishing and supporting quality assurance programmes for the performance testing of radiological equipment in Africa.