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A survey of annual effective and genetically significant dose from conventional X-ray examinations in 10 counties in Khorasan province-Iran

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Abstract

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Background: A study has been conducted to assess two useful radiation protection indices, the annual per-capita effective dose equivalent (AED) and the genetically significant dose (GSD), from conventional diagnostic radiography in 10 counties with more than 1,886,000 inhabitants in Khorasan province in Iran. Materials and methods: The health centre authorities of Khorasan province were asked to record data of their patients (sex, age, weight and height) who had undergone radiography during one month starting October 2002, with the radiography specifications (kVp, mAs, FSD, field size) and conditions of the X-ray machines (filtration, model and performance). Based on the gonad absorbed dose level, the radiography data were first divided into 5 groups. Then, the average gonad and effective dose of the radiography groups were estimated using ODS-60 software, and finally, GSD and AED of each county were calculated. Results: Average number of radiography per thousand inhabitant was 34.5 in this study, which varied from 9.4 (Kashmar) to 109.4 (Ferdos). Number of X-ray units per 1000 population was 0.008. The GSD and AED of inhabitants in 10 counties in Khorasan province is 0.012 and 0.014 mGy/ person respectively. Conclusion: The GSD and AED of 10 counties in Khorasan province were much lower than those in most of other countries, which would have been due to lower number of X-ray units and examinations per 1000 inhabitants. Although this would reduce the risk of radiation absorbed dose from medical diagnostic, but it also showed need to improve and expand the health care facility and services in those cities.

Reaxys Database Information

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Author keywords

Annual effective dose; Conventional diagnostic radiography; Genetically significant dose

Indexed Keywords

EMTREE medical terms: adolescent; adult; age; article; body weight; controlled study; female; filtration; gender; genetic analysis; gonad dose; health care facility; health survey; human; Iran; major clinical study; male; medical record review; population research; radiation absorption; radiation dose; radiation exposure; radiation hazard; radiation protection; radiodiagnosis; risk assessment; risk reduction

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