



Service Priorities and Programmes
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Submitting author: Dr Chi Yan Lee

Post title: Resident, Tuen Mun Hospital,

Patient radiation dose in transarterial hepatic chemoembolization

CY Lee, VYK To, CB Tan

Department of Radiology, Tuen Mun Hospital

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Introduction

The use of interventional procedures is becoming an increasing trend, however, one of the major pitfalls is the radiation risk to the patient. Transarterial hepatic chemoembolization (TACE) is one of the common interventional procedures performed in our department. Monitoring radiation dose especially the skin dose is important as most patients receiving TACE require repeated procedures within a short period of time and the length of the procedure can be prolonged in complicated cases.

Objectives

To review patient radiation dose in transarterial hepatic chemoembolization.

Methodology

Patients with TACE performed were identified using NTW Cluster Radiology Information System with the keyword "TACE" in the field "Examination report", in modality "SPXR" and hospital "TMH", during the period 01/09/2013 to 30/11/2013. All TACE were performed using the Siemens Axiom Artis Imaging System. The dose metrics provided by the equipment were collected from the dose report named "Exam Protocol". These include kerma area product (KAP) in microgray-square meters calculated from the output of the dose measuring device, calculated skin dose with respect to reference conditions measured by the machine in milligrays, and fluoroscopy time in decimal fractions of minutes.

Result

A total of 62 TACE were performed in 44 patients. 7 patients were female, 37 patients were male. The age range was from 46 to 86 years old, with a mean of 63 years old. Among the 62 cases identified, one patient did not perform angiogram nor TACE. Within the remaining 61 cases, 9 did not have the complete exam protocol provided by the equipment. In the remaining 52 TACE, calculated skin dose taken at 75th percentile was 1.73 Gy (range 0.55 - 9.88 Gy), KAP taken at 75th percentile was 402 Gy cm^2 (range 141-1046 Gy cm^2) and fluoroscopy time taken at 75th percentile was 33 min (range 6.0 – 63.2 min). Skin dose and KAP at 75th percentile from our data are comparable with the US standards* while the fluoroscopy time is found to be longer. In terms of total skin dose and KAP, patient radiation dose in transarterial hepatic chemoembolization is generally up to standard in our center. * Miller DL, Kwon D,

Bonavia GH. Reference Levels for Patient Radiation Doses in Interventional Radiology: Proposed Initial Values for U.S. Practice. *Radiology*. 2009 December; 253(3): 753–764.