DETERMINATION OF URINARY CALCULI COMPOSITION USING DUAL ENERGY CT

Wan Irfan W Mustapha[1*], Ahmad Razali Md Ralib[1], Mohd Nazli Kamarulzaman[1], Razman Mohd Rus[1]

[1]International Islamic University Malaysia (IIUM), Malaysia

*Corresponding Author's email: drwanirfan@iium.edu.my

ABSTRACT

To assess the incidence of the various types of urinary calculi composition using dual energy CT . This study aims to determine the urinary calculi size, location, characteristics, and the radiation exposure for DECT KUB. It is a cross-sectional study performed from June 2018 until December 2019 at the Department of Radiology HTAA. A total of 170 patients were selected using a purposive sampling method. The research featured 67% of males and 33% of females. Among the patients, 131 were Malays, 32 were Chinese, and 7 were Indians. The mean age was about 54.5. A total of 44 (26%) of urinary calculi was in the form of uric acid. Out of the 126, (74%) were non-uric acid type; calcium oxalate and calcium hydroxyapatite formed 78 (46%), and cystine constituted the remaining 48 (28%) of the urinary calculi. Most of the urinary calculi, with a total of 71 (42%), were less than 5 mm in size, and 77 (45%) were located in the lower pole of the kidney. The mean average of radiation exposure for DECT KUB was 11.5 mGy. DECT KUB is not only highly sensitive and specific for urinary calculi diagnosis, but it can also characterize the urinary calculi chemical composition. This method could assist in medical intervention of urinary calculi (uric acid) that could be treated medically and may not require any surgery.

Keywords: dual energy CT, urinary calculi