

RADIATION DOSES IN ACUTE STROKE CT PROCEDURES IN SAUDI ARABIA

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Background

The rapid growth of Computed Tomography (CT) technology and the use of CT angiography (CTA) revolutionize the diagnosis of acute stroke and determine the type of treatment appropriate to the patient's situation, despite diagnostic CT associated with the hazard of ionizing radiation, the diagnostic benefits outweigh the damage. CTA is considered the first option for diagnosis of stroke because it provides speed (important for the patient with acute stroke), accuracy, less motion artifact, noninvasiveness, comfort, alternative when MRI is contraindicated and its availability compared to MRI.

Objectives

To evaluate the radiation exposures used in standard CT brain and CT angiography as stroke imaging protocol in our department and compare them to the local and international published data.

Methods

Retrospectively, a radiation exposure data were collected from 20 patients underwent CT head and CTA head and neck for the diagnosis of acute stroke during 6 months in King Fahad Medical City. Siemens 64 slices CT scanner is used.

Results

The mean age was 60.2 ± 18.1 years. The mean patient weight was 76.1 ± 14.3 kg. The tube potential, pitch, slice thickness and rotation time were 120kV, 1.2, 1.5mm and 0.5 seconds respectively. The mean tube current per rotation, number of slices, scan field of view and tube current/second were 242.80 ± 25.83 mA, 255.45 ± 71.62 , 247.96 ± 31.87 cm and 148.25 ± 43.21 mAs respectively. The mean dose length product was 493.75 ± 387.04 mGy cm, Volume CT dose index (CTDI_{vol}) was 12.91 ± 9.74 mGy and the mean effective dose was 2.22 ± 1.74 mSv per procedure.

Conclusion

The effective dose per procedure was comparable to the published effective dose when compared to the previous studies. But further optimization is required to increase the value of the test to suit the risks caused by the radiation. Raising awareness of physician, radiologic technologist and radiologists of radiation risk increase the avoidance of unnecessary exposures, taking into account the quality of the images produced.