ISSN: 3029-0872

Review Article

Journal of Medical and Clinical Nursing Studies

Significance of Low Dose CT Imaging in Patient with Traumatic Intracranial Hemorrhage

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Received: April 04, 2026; **Accepted:** April 09, 2026; **Published:** Arpil 16, 2026

Keywords: Trauma, Intracranial Hemorrhage, Low-Dose CT, Radiation Dose Reduction, Diagnostic Imaging

Background
The use of ionizing radiation in medical imaging provides substantial benefits; however, concerns about radiation-induced risks remain significant. A considerable proportion of radiation exposure in healthcare arises from unnecessary imaging. In patients with traumatic intracranial hemorrhage (ICH), repeated CT examinations are often necessary for monitoring hematoma progression, which can lead to cumulative radiation exposure [1].

Implementing low-dose CT protocols is crucial to minimize this risk while maintaining diagnostic image quality [2].

Objective
To evaluate the feasibility of using low-dose CT protocols (150–250 mAs) for repeated imaging of traumatic ICH patients and to assess image quality and radiation dose reduction.

Methods
Twelve patients with traumatic ICH were enrolled at Mungunguur Hospital. Each patient underwent an average of four CT scans [3,4].

Standard CT protocols (369 mAs, 120 kV) were compared to low-dose protocols (150– 250 mAs), and the radiation dose (DLP) and diagnostic image quality were analyzed [5].

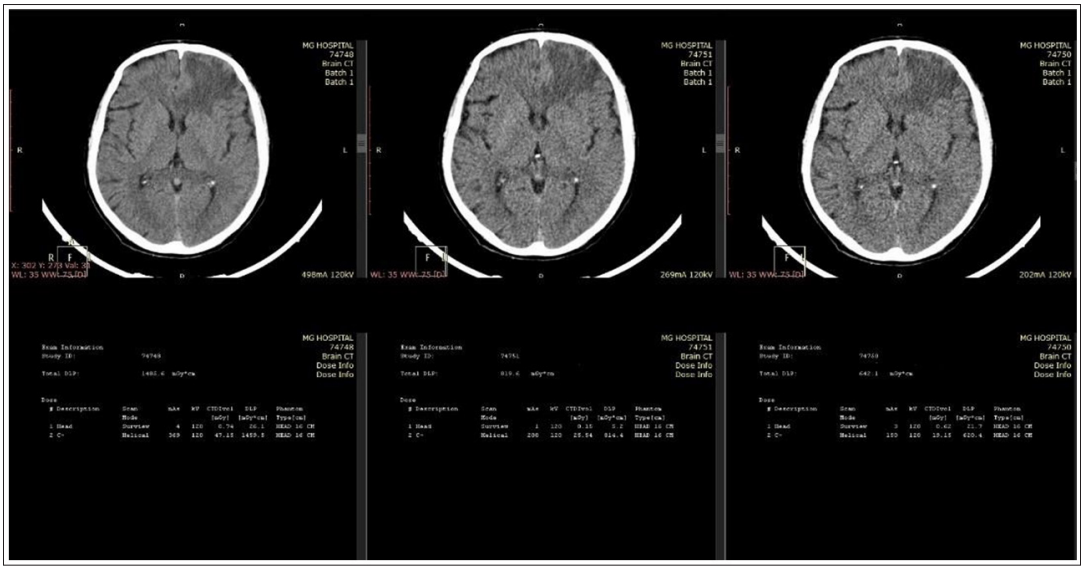

Figure 1: Study Result

Citation: Sugarbaatar Otgontuul, Altantsetseg Bayarmagnai. Significance of Low Dose CT Imaging in Patient with Traumatic Intracranial Hemorrhage. J Med Clin Nurs Stud. 2026. 4(2): 1-2. DOI: doi.org/10.61440/JMCNS.2026.v4.115

Results

The mean DLP for standard head CT scans was 1294 mGy*cm. Using low-dose protocols, the DLP decreased to 490–816 mGy*cm, resulting in a 37–63% reduction in radiation dose. Although image noise slightly increased, the visibility of ICH was maintained at diagnostically acceptable levels.

Figure 1 caption: Comparison of Head CT images acquired with reduced mAs ant the corresponding radiation dose report in a selected patient.

Conclusion

Low-dose CT scanning for traumatic ICH patients provides sufficient diagnostic quality while reducing radiation exposure by up to 63%.

The results support the widespread adoption of low-dose CT protocols in clinical practice to enhance patient safety.

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