

Pediatric Trauma at Berkshire Medical Center: Retrospective study on protocol-based use of CT-scans

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BACKGROUND

Injury is the leading cause of death and disability among children aged 0-18, making this the most serious public health problem in this population (1).

Computed tomography (CT) scan aid in rapid/accurate assessment of pediatric trauma patients. There is concern as the pediatric population have increased risk of radiation induced malignancy and dysfunction. Epidemiologic evidence has shown radiation exposure is associated with an increased risk of malignancies including leukemia, brain tumors and solid organ malignancies as well as other adverse health outcomes such as thyroid dysfunction and detrimental effects on reproductive health (2,3).

Judicious use of imaging tools is critical on pediatric trauma assessment. Validated protocols and guidelines should be followed in the decision-making process.

This study aims to establish the relationship between CT-scans performed and documented indications at Berkshire Medical Center.

METHODS & RESULTS

Retrospective study, August 2021-2023.

Pediatric trauma base, ages 0-15.

Demographic and clinical data collected

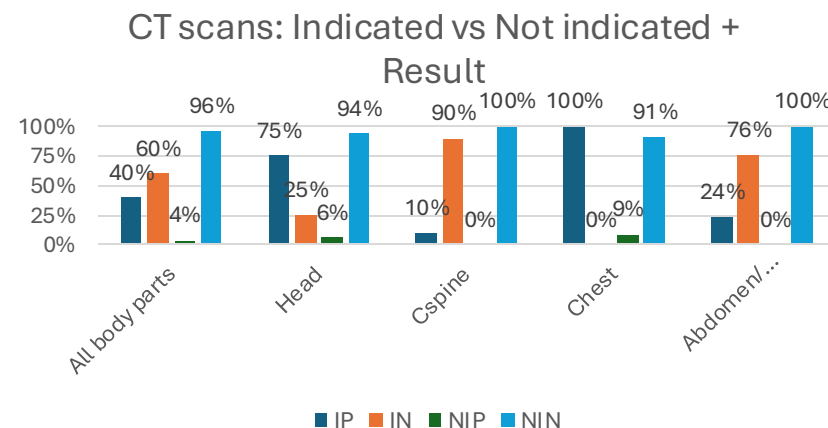
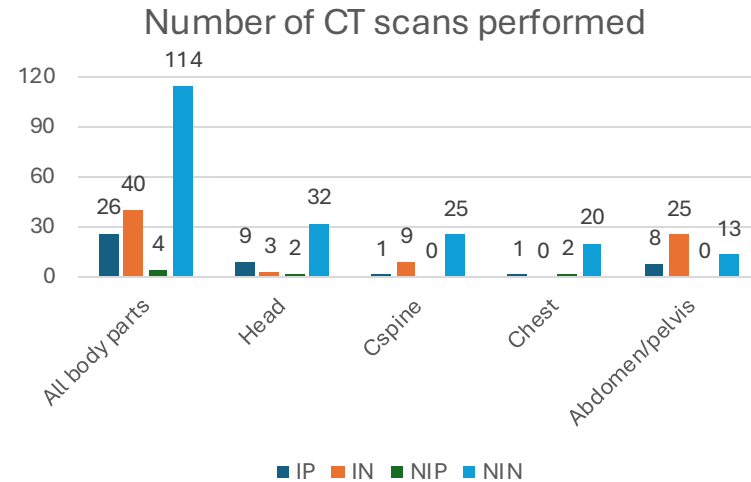
(primary/secondary survey findings, CT-scans per body part and findings).

4 categories created (*indicated positive/negative, non-indicated*

positive/negative).

FISHER EXACT test. Alpha 0.05.

79 patient (male 51, female 27), 56 patients scanned, 184 scans performed.



DISCUSSION

- In all body parts, statistical significance given by Δ between IP (40%) and NIP (4%). **The positive result of indicated CT-scans is statistically greater the positive results of non-indicated CT-scans.**
- More relevant, 96% of all non-indicated CT-scans have a negative result. **Direct correlation between non-indicated scans and a negative result.**
- Abdomen and pelvis CT-scans 72% are indicated regardless of the result. **Better performance on following protocol-based criteria.**
- On head CT-scans, statistical significance given by Δ between IP (75%) and NIP (6%). **Patients with potential head injuries adequately identified and scanned based on protocol-based criteria.**
- On head, 94% of non-indicated CT-scans have a negative result. **Area for improvement.**
- On C-spine and Chest, lack of statistical significance probably explained by the small numbers used for analysis.
- Overall, the percentage of non-indicated CT-scans with a negative result among the four groups is >90%.**
- Overall data shows that pediatric trauma patients with lesions are being identified and appropriately diagnosed.**
- There is opportunity for improvement to avoid ionizing radiation exposure of the pediatric trauma population at BMC.

REFERENCES

- (1) Unintentional injury deaths in children and youth. Journal of Safety Research, 2021.
- (2) Management of Pediatric trauma. Pediatric, 2016.
- (3) The use of CT in pediatrics. JAMA Pediatrics, 2013.