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## Neuroimaging in Patients with Headache in the Emergency Department. Are we Over-Testing?

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**Background:** Headache is a very common clinical presentation in the Emergency Department (ED). Emergency Physicians must determine which patients need neuroimaging and which can be appropriately deferred and evaluated in the outpatient setting. The American College of Emergency Physicians (ACEP) clinical policy guideline identifies factors in the patient's history and clinical assessment that would favor the use of neuroimaging in ED patients with acute headache<sup>1</sup>. Patients with new headache and new abnormal findings in a neurologic examination, new sudden-onset severe headache and HIV-positive patients with a new type of headache should be considered for an emergent neuroimaging in the ED<sup>1</sup>. Non-contrast CT of the brain is potentially overused in the assessment of ED patients with headache because of its availability, efficiency, non invasive nature of the study, patient expectations, and providers' fear of medicolegal repercussions of missing acute neurological life threatening conditions<sup>2-3</sup>.

**Objective:** The objective of the study was to assess whether emergency physicians are implementing the approved guidelines from ACEP while requesting neuroimaging in the emergency department for patients presenting with acute headache.

**Method:** A retrospective chart review was carried out of all patients older than 16 years presenting to the ED of SKMC hospital with headache without any previous history of intracranial structural anomaly and had neuroimaging done as part of their ED assessment from January to March 2019.

**Results:** A total of 98 charts were reviewed. 70% were females. The average age of patients was 46 years old. Only 1% of the patients had thunderclap headache, 1% had history of altered mental status, 14% had history of trauma and 4% had focal neurological findings on physical examination. 95% of brain CT scans were reported normal. Only 1% of the patients had a clinically significant finding on brain CT. Review of this cohort of patients, only 6% of the patients with headache met the ACEP clinical policy guidelines for emergent and urgent neuroimaging in the ED.

**Conclusion:** This study found that 94% of cases of headache presentation in our ED the neuroimaging was required. Emergency physician in our department requested neuroimaging in 6% of the cases only that was consistent with ACEP guideline.