Incidental Findings on Preoperative Computed Tomography for Nonsyndromic Single Suture Craniosynostosis

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Abstract:

BACKGROUND AND PURPOSE: While the diagnosis of nonsyndromic single suture craniosynostosis (NSSC) can usually be made by clinical examination, computed tomography (CT) is still common for preoperative evaluation. This practice has been questioned in light of recent studies that document a small, but measurable, increased risk of malignancy from CT-associated radiation exposure. The purpose of this study was to examine whether preoperative CT for patients with NSSC provided any clinically important information beyond confirmation of craniosynostosis.

METHODS: We performed a retrospective analysis of all patients with NSSC undergoing cranial vault remodeling at our center from 3/99-3/11. Only patients with complete preoperative CT scans available for review were included. Staff pediatric neurosurgeons, blinded to patient
diagnosis and official radiology report, analyzed the CT images and documented site of synostosis and any other findings.

RESULTS: Of 231 patients, 80 met inclusion criteria. Sites of synostosis included: sagittal (51 patients), coronal (17 patients), metopic (11 patients), and frontosphenoidal (1 patient). Clinical diagnosis correlated with radiographic site of fusion in all patients except the patient with frontosphenoidal synostosis. Incidental findings were documented in over 50% of patients including: prominent extra-axial CSF (n=36 patients; 45%); ventriculomegaly (n=5; 6.25%); choroid fissure cyst (n=2) cavum septum pellucidum (n=2), Chiari malformation (n=1), and prominent perivascular space (clinically non-significant finding, n=1). Incidental findings required additional follow up or management in 5 patients (6.25%).

CONCLUSIONS: Our findings support the use of preoperative imaging in this population to identify intracranial anomalies that cannot be discerned by clinical exam. While many findings were not clinically important, some required additional attention.

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