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The Yield of Neuroimaging in Patients Presenting to the Emergency Department with Isolated Neuro-ophthalmological Complaints

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Background: Neuro-ophthalmological emergencies require prompt assessment and management to avoid vision or life-threatening sequelae. The decision to perform a neuroimaging procedure is currently based on the clinical judgement of the medical team, without defined indications. This study aims to identify presenting symptoms and physical exam findings associated with relative positive findings on neuroimaging studies,

Methods: This study was conducted by reviewing the electronic medical records of patients presenting to the Emergency Department (ED) with isolated neuro-ophthalmologic complaints between January 1, 2013 and September 30 2019. We collected data on the clinical presentation, neuroimaging procedures and results, consults, and diagnoses.

Results: We reviewed the charts of 211 patients of whom 50.7% were females and had a mean age of 41.2 \pm 21.4 years. Most presented with unilateral eye complaints (53.6%), and the most common symptoms were blurred vision (77.3%) and headaches (42.2%). A total of 126 imaging procedures were performed of which 74.6% were normal, while 25.4% showed relevant abnormal findings. Complaining of blurry vision ($p=0.038$) or visual field changes ($p=0.014$) at presentation were associated with having positive findings on imaging. Physical exam findings of a visual field defect ($p=0.016$), abnormal pupil reactivity ($p=0.028$), afferent pupillary defect ($p=0.018$), or abnormal optic disc exam ($p=0.009$) were also associated with positive findings on imaging.

Conclusion: Neuroimaging is more likely to yield positive findings in patients presenting to the ED with blurred vision or changes in visual field and in those found to have visual field irregularities, afferent pupillary defects or abnormal optic discs on physical exam. These findings - when combined with the proper clinical setting - should lower the threshold to proceed with neuroimaging in the emergency department. Based on our results, larger-scale studies might lead to a well-structured algorithm to be followed by ED physicians in decision making.

Keywords: Neuroophthalmology; Neuroimaging; Emergency Department; Yield of Imaging; Emergency Predictors

Biography

Dalia El Hadi is a Post Graduate Research Fellow in Ophthalmology at the American University of Beirut Medical Center (AUBMC). She completed an intern year in Internal Medicine (Preliminary Track) in AUBMC. She holds a medical degree (2020) from the AUBMC and a Bachelor in Science degree (2016) in Biology with a minor in Chemistry with high distinction from the Lebanese American University (LAU).

She is currently involved in multiple retrospective and prospective studies in Neuro-ophthalmology as well as Pediatric Ophthalmology.

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