

Optic nerve head drusen: a case of false-positive papilledema discovered by ocular ultrasound in the emergency department

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Abstract

Case report A 15-year-old female presented to the emergency department (ED) from her optometrist's office for further evaluation of reported papilledema. The patient was otherwise asymptomatic. A CT scan was performed in the ED which showed calcification of the optic nerve. A bedside ultrasound was also performed which confirmed the presence of optic nerve calcification in both eyes. The patient was discharged with a diagnosis of optic nerve head drusen and instructed to follow-up with her ophthalmologist for continued monitoring of the drusen.

Discussion Optic nerve drusen are generally benign lesions associated with pseudopapilledema which may be associated with peripheral field visual defects. Management for this condition in most cases consists of routine ophthalmologic monitoring. There is no definitive treatment for this entity.

Keywords Ultrasound · Optic nerve head drusen · Optic disc · Papilledema

Case report

A 15-year-old Caucasian female presented to our emergency department (ED) with a chief complaint of papilledema. The patient was seen by her optometrist for her annual check-up just prior to her arrival in our ED, and during her eye examination, she was told that she had papilledema in both

eyes. She was subsequently sent to our ED for further evaluation of this abnormality. The patient did complain of intermittent headaches for the past 4 months, although denied visual changes. She had no significant past medical history, was taking no medications, had no known allergies, and denied tobacco, alcohol, or illicit drug use.

Physical examination revealed a well-developed teenage female in no acute distress. The patient was non-obese, afebrile, and normotensive. Her fundoscopic ophthalmologic examination revealed small optic cups with disc blurring bilaterally consistent with papilledema. Pupils were equally round and reactive to light. Extraocular eye movements were intact. Her eyes were non-injected and anicteric. Visual acuity was 20/30 on the left and 20/40 on the right with corrected lenses. Remainder of the physical examination was unremarkable.

A bedside ED ultrasound was next performed to further evaluate the patient's papilledema. The scan was performed by the author using a Zonare ultrasound machine with a multi-frequency L8–3 linear probe. The ultrasound images below identified a distinct calcification attached to the optic nerve in both eyes (Figs. 1, 2).

A non-contrasted head CT scan was subsequently performed with one image shown below. This image demonstrated a 1–2 mm indeterminate calcification in the posterior aspect of only the right globe (Fig. 3).

Discussion

Papilledema can represent an acute, severe, and life-threatening disease. When presented with this physical examination finding in the ED, it is not to be taken lightly. However, the exact etiology should be elicited to determine the cause of the optic nerve swelling and its subsequent treatment.

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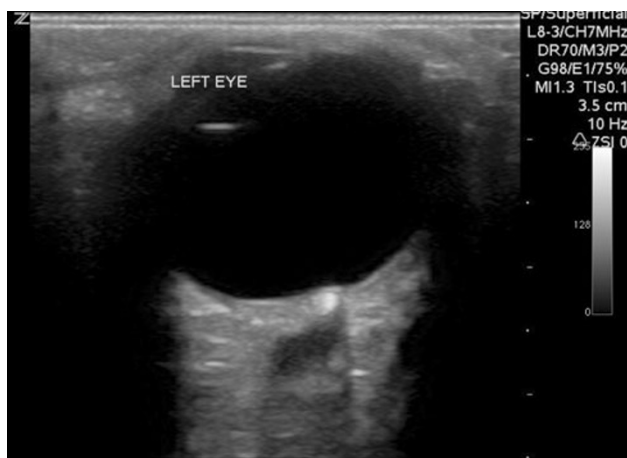


Fig. 1 US image of optic nerve drusen left eye



Fig. 2 US image of optic nerve drusen right eye

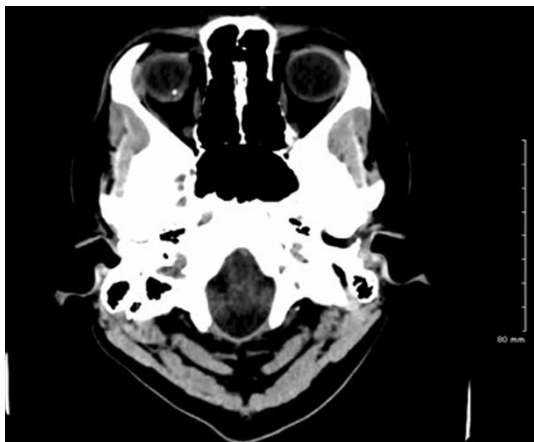


Fig. 3 CT scan demonstrating calcified optic nerve head drusen in the right eye

The initial differential diagnosis of a patient with papilledema includes etiologies from either increased intracranial pressure or from optic disc swelling. Increased pressure

could result from a space-occupying lesion (e.g. brain tumor, abscess), idiopathic intracranial hypertension, subdural hematoma, meningitis, cerebral edema from trauma, or hydrocephalus. Optic disc swelling itself can cause papilledema from optic neuritis, uveitis, or even be mimicked with such conditions as scleritis or congenital lesions.

Optic nerve head drusen is a calcified lesion that is congenital, originating as a mucoprotein matrix that progressively calcifies over time on the optic nerve itself. The prevalence of drusen is estimated around 0.34%, but is around 3.4% in individuals with affected family members [1]. Drusen themselves are generally considered benign. However, there are some associated complications, the most common being peripheral visual field defects occurring in approximately 75% of patients [2]. Central retinal artery occlusion, central vision loss, and anterior ischemic optic neuropathy are also rare potential complications [3]. Certain conditions have been associated with optic nerve drusen, including retinitis pigmentosa, angioid streaks, and Usher's syndrome [4].

There is no definitive treatment for this disorder. However, affected patients should be followed by an ophthalmologist for serial visual field examinations, optic nerve fiber analysis, and repeat intraocular pressure checks. If visual field loss occurs in the presence of drusen, medication to lower the intraocular pressure should be considered [5]. Laser photocoagulation should only be considered in those cases where central visual acuity is threatened [5].

Optic nerve head drusen clinically manifests as pseudo-papilledema secondary to the calcified lesion elevating a portion of the nerve head and thus mimicking papilledema on fundoscopic examination. Traditionally, drusen is diagnosed with B mode ultrasonography [6], which is easily obtained in the ED.

The sonographic differential diagnosis of echogenic structures at the optic disc includes tumors, such as retinoblastoma, retinal detachment, and posterior vitreous hemorrhage.

Conflict of interest None.

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