MALIGNANT HYPERTENSION WITH PAPILLEDEMA

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CASE REPORT

A previously healthy 18-year-old woman presented to the Emergency Department complaining of bilateral reduction in visual acuity associated with headaches over 4 days. Neurological assessment was normal except for bilateral reduced vision to counting fingers in both eyes with sluggish pupil reactivity. The pupil size was 4 mm bilaterally. Funduscopic examination revealed blurring of both optic disc margins, congestion of the retinal veins, peripapillary flame-shaped hemorrhages, and multiple cotton-wool spots. The left eye also had macular exudates in the form of a star around the fovea (Figures 1, 2). Blood pressure readings taken a few times in the sitting position on both arms ranged from 210/130 mm Hg to 220/140 mm Hg. An urgent head computed tomography scan was normal. Further work-up revealed that the patient had renal disease, with an elevated serum creatinine level of 15 mg/dL and a raised blood urea nitrogen level of 62 mg/dL. Urinalysis had proteinuria and microscopic hematuria. Ultrasound of the abdomen revealed bilateral shrunken kidneys, and renal biopsy confirmed presence of glomerulonephritis. The patient was treated with isosorbide dinitrate for the hypertension as well as hemodialysis for the acute renal failure from glomerulonephritis. Malignant hypertension is a sudden and rapid development of extremely high blood pressure associated with papilledema (1). Acute kidney injuries from intrinsic diseases such as glomerulonephritis may lead to this condition (2). Common causes of death in malignant hypertension are cardiac failure, cerebrovascular accidents, and renal failure (3). As in this case, the hypertension may be unknown to the patient and the eye examination may yield the first clue to this potentially fatal disease. It is imperative for emergency physicians to recognize this emergency. Besides measuring the blood pressure, funduscopic examination to look

DISCUSSION

This patient had malignant hypertension with papilledema and macula exudates secondary to acute renal

Figure 1. Fundus photograph of the right eye showing optic disc swelling (arrow 1) with engorged retinal veins (arrow 2) and multiple cotton-wool spots around the disc (arrow 3).
for papilledema and hypertensive retinopathy is one of the fastest routes to establish the diagnosis of malignant hypertension.

The retina is one of the target organs damaged by sustained hypertension. Subjected to excessively high blood pressure over prolonged time, the small retinal microvasculature is damaged, thickened, and leaking (4). Arteriosclerotic changes of these microvasculature lead to focal closure of vessel lumens that gives rise to microinfarcts (cotton-wool spots) and superficial hemorrhages, often flame-shaped. In advanced cases, there will be a macular star (ring of exudates from the disc to the macula) and optic disc edema or swelling (4). The mechanism behind this phenomenon is poorly understood, but it may be related to a hypertension-related increase in intracranial pressure, and hence is considered true papilledema. The visual acuity loss in these patients is typically due to macular involvement, as seen in this case.

Using a direct ophthalmoscope, the signs of papilledema that can be seen include venous engorgement (usually the first signs), loss of venous pulsation, hemorrhages over or adjacent to optic disc, blurring and elevation of optic margins, and Paton lines (radial retinal lines cascading from the optic disc) (5). The papilledema develops within days to weeks of elevated blood pressure and resolves within weeks to months of blood pressure normalization. Presence of papilledema and macular exudates are unique features in malignant hypertension that could alert physicians to this medical emergency.

REFERENCES


Figure 2. Fundus photograph of the left eye showing optic disc swelling (arrow 1) with flame shaped hemorrhages (arrow 2) and prominent macula exudates (arrow 3).