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The Pink Curtain: Rapid Identification of Retinal Detachment Using Point-of-Care Ultrasound

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A 76-year-old male with known history of hypertension patient presented to the ED with 5 days of new floaters in the right eye followed by sudden visual loss on the day of presentation. He described a "pink curtain" with greenish edges obscuring about 75% of his right visual field. There was no eye pain, redness, discharge, headache, or systemic symptoms. His history was notable for a retinal detachment repair in the other eye 20 years earlier. On exam, right eye visual acuity was markedly reduced (≈6/30) versus 6/6 in the left eye. Pupils were equal and reactive, with no afferent pupillary defect. Extraocular movements were full and there were no external signs of inflammation or infection.

Key Symptoms
New floaters and flashing lights are classic red flags for a posterior segment problem [1]. Patients often report a curtain-like shadow creeping into the visual field as the retina detaches [1]. In this case, the patient's colorful "curtain" and floaters closely match these descriptions. Retinal detachment is typically painless [1]. which aligns with the absence of ocular discomfort.

Examination Findings
The involved eye had severely impaired acuity but normal eye movements and a reactive pupil. No afferent defect was noted, consistent with a peripheral detachment that spared most of the optic nerve fibers. The lack of conjunctival redness or chemosis is also expected, since detachments usually do not produce anterior segment signs. Notably, a history of a prior contralateral detachment is a known risk factor for a new detachment in the fellow eye.

Given the high suspicion for retinal detachment, an urgent point-of-care ocular ultrasound (POCUS) was performed. This uses a high-frequency (5-10 MHz) linear probe over a closed eyelid to image the posterior globe [2]. In a normal eye, the retina appears as a thin, smooth hyperechoic line flat against the back of the eye. In this patient, ultrasound showed a tapered echogenic membrane projecting into the vitreous from the optic disc – a classic sign of retinal detachment (figure 1) [2]. The detached retina was seen as a bright flap, still tethered at the optic nerve head and peripheral retina, floating above the choroid. (By contrast, simple vitreous hemorrhage or vitreous detachment would show only mobile echoes or a free-floating strand without that fixed attachment [3].

Pocus Accuracy
Studies show that emergency physicians using ocular ultrasound can identify retinal detachment with very high sensitivity and specificity. For example, one multicenter study reported approximately 97% sensitivity and 88% specificity for ED POCUS in detecting detachments [2]. another found 91% sensitivity and 96% specificity [4]. This means the bedside ultrasound result is highly reliable in confirming a detachment when present. In our case, the POCUS findings clinched the diagnosis immediately, even before ophthalmoscopic exam.

Because retinal detachment is an ophthalmic emergency, ophthalmology was consulted immediately [4]. The patient was transferred urgently to the nearest tertiary center. The retinal specialist confirmed a large rhegmatogenous detachment involving the macula. The patient underwent prompt surgery the next morning (pars plana vitrectomy with cryotherapy to seal retinal tears). The detached retina was successfully re-attached during this procedure. Postoperatively the patient was discharged the same day with arrangements for follow-up.

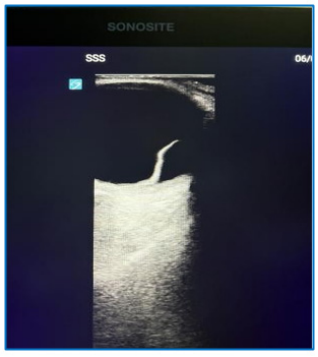

Figure 1

Management
Urgent surgical repair (vitrectomy, scleral buckle or pneumatic retinopexy, often combined with laser or cryotherapy) is the standard of care for rhegmatogenous detachments [5]. In particular, detachments involving the macula threaten central vision and generally warrant surgery as soon as possible [5]. (Studies show macula-on detachments should be repaired emergently to prevent

central vision loss; macula-off detachments may be slightly less urgent but are still repaired promptly to optimize outcomes [5]. Our patient's surgery (vitrectomy and cryopexy) is one of the common definitive treatments and was performed within 24 hours of diagnosis.

Outcome

By the next day, the retina was reattached. The patient was informed of the procedure and discharged with outpatient follow-up in part to monitor the status of the macula and to check for any new tears. He was satisfied with the plan and aware of warning symptoms should they recur.

Discussion

Retinal detachment affects roughly 3–4% of patients with acute ocular complaints in the ED [4]. It is often heralded by flashes, floaters and the classic "curtain" field defect, but clinical exam alone (especially without a dilated ophthalmoscope) can miss subtler cases. Point-of-care ultrasound has become an invaluable adjunct in this setting [2,4]. It is noninvasive and can be done at the bedside, even when the eye cannot be visualized directly (e.g. if the view is hazy). In trained hands, ocular POCUS can rapidly distinguish retinal detachment from other causes like vitreous hemorrhage or posterior vitreous detachment [3]. For example, a vitreous hemorrhage appears on ultrasound as swirling echogenic particles in the vitreous without a fixed membrane [3], whereas a posterior vitreous detachment shows a single tethered strand "swaying seaweed" floating away from the retina [3]. By contrast, a true retinal detachment is seen as a continuous membrane fixed at the optic nerve and peripheral retina, as was observed in this case [2].

Emergency physicians have demonstrated high accuracy with ocular POCUS after appropriate training [4,3]. (In practice, even a brief ultrasound course can teach the key findings.) Nonetheless, ultrasound is adjunctive, not a replacement for ophthalmologic evaluation. Any concerning history or exam should still prompt urgent ophthalmoscopy or imaging, especially if POCUS is equivocal [5].

In summary, this patient's presentation painless visual field loss with floaters strongly suggested a retinal detachment [1]. The ED's use of point-of-care ocular ultrasound confirmed the diagnosis efficiently, enabling a rapid referral for definitive

surgical repair. This timely intervention (vitrectomy and cryotherapy) aligns with current practice and likely maximized his visual prognosis [5]. Overall, this case illustrates how ocular POCUS can bridge the gap between initial examination and specialist care in an ophthalmic emergency [2,4].

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