Acute-Onset Floaters and Flashes
Is This Patient at Risk for Retinal Detachment?

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CLINICAL SCENARIO
A 62-year old woman with hypertension but no previous ocular history presents to her family physician with a 1-week history of a large floater in the left eye. She reports “a cloud that moves around her visual field” and says that although she can see well enough to watch television, her vision while wearing her glasses is decreased from normal. On further questioning, she also reports that she experienced a single brief episode of “light flashes” in the left peripheral field while gardening 5 days ago. She had a normal eye examination result from her optometrist 6 months ago, with 20/20 corrected vision in both eyes. Do this patient’s symptoms require an urgent ophthalmology assessment?

WHY IS THIS QUESTION IMPORTANT?
The report of acute-onset floaters and/or flashes in a patient’s field of vision represents a common scenario to primary care physicians. Most cases of acute-onset monocular floaters and/or flashes are ocular in nature and caused by posterior vitreous detachment (PVD). The role of primary care physicians is to make the diagnosis of probable PVD and to identify patients at increased risk of retinal tear and detachment based on history and physical examination to determine the urgency of ophthalmologic assessment.

The objectives of this article are to (1) describe the pathophysiology and clinical spectrum of PVD, retinal tear, and Author Affiliations: Department of Ophthalmology, Queen’s University (Drs Hollands, Brox, Almeida, and Sharma and Mr Johnson), and Unit for Cost-Effective Ocular Health Policy (Dr Sharma), Hotel Dieu Hospital, Kingston, Ontario, Canada; and Durham Department of Veterans Affairs Medical Center and Duke University, Durham, North Carolina (Dr Simel).

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(2) outline a practical primary care approach to the evaluation of patients presenting with new-onset floaters and/or flashes; (3) present an evidence-based review of specific clinical features that can help identify patients with floaters and/or flashes and PVD at increased risk of retinal tear and detachment; and (4) outline a suggested primary care approach to the triaging of patients with floaters and/or flashes for ophthalmologic assessment.

Pathophysiology and Clinical Spectrum of PVD

Posterior vitreous detachment involves separation of the posterior vitreous from the retina as a result of vitreous degeneration and shrinkage (FIGURE 1 and FIGURE 2). This is an age-related event, with prevalence in the general population increasing from 24% in adults aged 50 to 59 years to 87% among those aged 80 to 89 years.\(^1\) Other risk factors for PVD include the presence of myopia, trauma, and intraocular inflammation.\(^2\)

Posterior vitreous detachment may be asymptomatic, but more frequently patients report floaters and/or flashes in the affected eye. Floaters are a sensation of gray or dark spots moving in the visual field caused either by light bending at the interface of fluid pockets in the vitreous jelly or cells located within the vitreous (see video at http://www.jama.com simulating a patient’s
experience of floaters). Floaters may persist for months to years in cases of chronic, uncomplicated PVD and are not a cause for alarm if no recent change in symptoms is reported. Flashes are usually described as monocular, repeated, brief flashes of white light in the peripheral visual field related to traction on the peripheral retina from areas of tightly adherent vitreous jelly.

Although most persons develop PVD at some point in their lives, in the majority of cases it is a benign occurrence without any long-term complications. However, in the acute phase of PVD, as the vitreous shrinks and detaches from the retina, tractional forces may be sufficient to cause a full-thickness tear in the retina. Such tears allow fluid to gain entry to the subretinal space, which can lead to separation of the neurosensory layer of the retina from the underlying retinal pigment epithelium (ie, a retinal detachment). This results in disruption of photoreceptors and eventually precipitates tissue necrosis if left untreated. Approximately 33% to 46% of untreated retinal tears result in retinal detachment.1-5

Retinal detachment occurs with an estimated incidence of 0.8 to 1.8 per 10 000 persons per year6-13 and a prevalence of 0.3%.14 Classic symptoms of a retinal detachment include decreased vision and a progressive monocular visual field defect (“curtain of darkness”). Prompt diagnosis and surgical treatment of retinal detachment can prevent impending vision loss or can restore vision.5

**Primary Care Evaluation of Patients With Acute-Onset Floaters/Flashes**

**Step 1: Elicit the Patient’s History of Visual Symptoms and Assess for Nonocular Causes.** Not all floaters and/or flashes represent ocular problems, and nonocular causes can usually be differentiated by a careful history taking (Box). By far the most common condition mimicking PVD is visual aura associated with migraine, or classic migraine.15 Patients with classic migraine describe an amorphous pattern of lights or jagged lines and colors “marching” through the binocular visual field, sometimes surrounding a central area of visual field loss. Contrary to flashing lights of retinal origin, this phenomenon is bilateral, involves the sensation of colored lights (vs white lights in PVD), and evolves over 5 to 30 minutes before resolving with onset of a headache. The visual aura may occur without headache, representing a so-called acephalgic migraine. In these cases, most patients have a known history of migraine. Patients with visual aura have visual acuity that is normal (20/20) or unchanged and a normal ocular examination result.

Rarely, occipital lobe disorders such as ischemia or infarction, hemorrhage, arteriovenous malformation, seizure disorder, and neoplasm may present with migraine-like symptoms, including headache and/or visual symptoms. However, in these cases there are usually systemic symptoms and signs or other atypical features to suggest a neurological etiology. Postural hypotension can produce brief flashes or dimming of vision in all or part of the binocular visual field, although the diagnosis should be readily apparent from a history of transient visual symptoms accompanying lightheadedness or ataxia precipitated by orthostatic change in posture.

**Step 2: Perform an Eye Examination.** The physical examination for patients with new-onset floaters and/or flashes begins with measurement of best-corrected visual acuity in each eye separately with a Snellen chart (corrected with glasses/contact lenses or pinhole if available). This simple assessment is imperative and often the most informative aspect of the examination because patients with retinal tear or detachment may have decreased visual acuity in the affected eye. Ideally, vision is measured with a calibrated distance vision chart, but vision can also be measured at a reading distance using a near card. If visual acuity is measured at near distance, the examiner must ensure that the patient is using his/her usual near spectacle correction.

Confrontational visual field testing is another key element of the examination because the finding of a monocular visual field defect in the affected eye suggests an area of detached nonseeing retina. To assess for field defects, the examiner has the patient cover one eye and sits adjacent to the patient, face to face, at approximately 1 arm’s length away. The patient is told to focus on the examiner’s nose, and the examiner holds up fingers in each quadrant to grossly test the patient’s visual field in those quadrants using his/her own visual field as a refer-

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Slitlamp biomicroscopy is available in urgent care and emergency department settings and is now considered a basic competency for emergency physicians. The slitlamp examination may reveal vitreous pigment or hemorrhage (Figure 3). Vitreous pigment, also known as "tobacco dust," represents cellular or free melanin in the vitreous, presumably released from the retinal pigment epithelium in association with a full-thickness retinal tear. To diagnose vitreous hemorrhage or pigment accurately, the slitlamp beam is focused behind the crystalline lens into the anterior portion of the vitreous. Having the patient look up, then immediately down, then immediately straight ahead before focusing the light beam on the anterior vitreous improves visualization of vitreous hemorrhage or pigment.

Direct ophthalmoscopy after pharmacological pupil dilation can potentially provide additional information to the generalist physician. There are no absolute contraindications for generalist physicians to use mydriatic agents in patients with possible retinal tears, aside from known allergy to a given drop. A common dilating approach is to use 1 drop of tropicamide, 1.0% (maximum effect in 25 minutes; duration, 3-6 hours) and 1 drop of phenylephrine, 2.5% (maximum effect in 20 minutes; duration, 3 hours) into each eye and wait 30 minutes before examination. Dilating the eyes allows for better visualization of the fundus and may allow a generalist physician to detect an obvious retinal detachment or vitreous hemorrhage. Measurement of intraocular pressure by the generalist physician is not necessary in the evaluation of flashes and floaters.

Step 3: Consider Ocular Causes of Floaters/Flashes and Identify High-Risk Features for Retinal Tear or Detachment. There are a number of ocular conditions aside from PVD that may present with floaters and/or flashes (Box). In general, these conditions are benign and are easily differentiated by history taking (symptoms that occur with oculodigital stimulation or rapid eye movements), are suggested by the patient's ocular history, or are very uncommon. The bottom line is that from the perspective of the primary care physician, once an ocular cause of acute-onset floaters and/or flashes is suspected, in the absence of symptoms such as eye pain or photosensitivity to suggest a rare inflammatory ocular condition (eg, posterior uveitis, which has a prevalence of 0.004%), the presumed diagnosis should be PVD.

A particular concern for generalist physicians is the presence of acute flashes and/or floaters in patients with diabetes. Advanced proliferative diabetic retinopathy can lead to vitreous hemorrhage and, thus, mimic PVD symptoms of new-onset painless floaters. A patient with a long-standing history of diabetes and known severe diabetic retinopathy who reports acute onset of thousands of floaters and monocular vision loss most likely has vitreous hemorrhage related to bleeding from friable new retinal vessels, though PVD with retinal tear cannot be excluded.

When triaging patients with new-onset floaters and/or flashes and a presumed diagnosis of PVD, primary care physicians must first consider and rule out an obvious red flag sign of retinal detachment. The main sign to consider is a progressive monocular visual field defect in the affected eye due to an area of detached nonseeing retina. Confrontational visual field testing may demonstrate this defect, and direct ophthalmoscopy through a dilated pupil may reveal a billowing retinal detachment. A patient with suspected retinal detachment requires emergent ophthalmologic assessment. Failure to elicit a visual field defect through confrontation or to see the retinal detachment with direct ophthalmoscopy does not rule out the process of retinal detachment.

Once an obvious visual field defect is ruled out, the primary care physician must decide on the urgency of an ophthalmologic referral. The role of the ophthalmologist is 2-fold. First, the ophthalmologist can rule out other ocular causes of floaters and/or flashes. Second, the ophthalmologist can perform a comprehensive retinal examination to assess for retinal tears. To help guide primary care physicians in the triaging process, we systematically reviewed the literature to quantify the importance of symptoms and signs in patients with floaters and/or flashes and a diagnosis of PVD that might indicate the presence of retinal tears and increased risk of retinal detachment.

EVIDENCE-BASED REVIEW AND META-ANALYSIS

A detailed description of our methods is in the eAppendix (available at http://www.jama.com). The MEDLINE search identified 193 candidate studies, 12 of which were relevant for the review. The Embase search identified 126 candidate studies; of these, 10 were relevant and all had already been found in the Medline search. Thus, a total of 12 relevant studies were found in the electronic searches. After reviewing citations and references from these studies, we found an additional 5 studies (See eTable 1 for criteria used to grade methodological quality and eTable 2 for an outline of studies used in the review.)

The studies were all performed in ophthalmology clinics. Study populations were primarily patients referred from primary care or optometrists with the exception of 1 study of patients referred from general ophthalmology, 2 studies of nonreferred patients, and 3 studies that did not state the source of patient referral. In all studies, patients had an acute onset of floaters and/or flashes of suspected ocular origin and ophthalmoscopic diagnosis of PVD. Overall, in this setting the summary prevalence for retinal tear complicating PVD is 14% (95% confidence interval [CI], 12%-16%).

The prevalence of retinal tears among patients with flashes but no floaters (prevalence, 13.7%; 95% CI, 11.3%-16.6%) is almost identical to those who present with floaters but no flashes (prevalence, 13.5%; 95% CI, 11.1%-16.2%).
Demographic and Clinical Characteristics

We performed a meta-analysis of the relevant studies to examine demographic and clinical risk factors for the occurrence of retinal tears in patients with floaters and/or flashes and a diagnosis of PVD. A total of 9 studies analyzed sex as a risk factor for retinal tear. Men are slightly more likely to have retinal tears than women (summary likelihood ratio [LR], 1.5; 95% CI, 1.1-2.0). Two studies included data on age and suggest that being older than 60 years, a finding associated with an increased likelihood of an initial PVD, does not increase the likelihood of a retinal tear (summary LR, 0.70-1.3) and that younger adults (<=60 years old) are not appreciably less likely to have a retinal tear (summary LR, 0.78-1.7). Four studies were unable to show an association between myopia and retinal tear (summary LR, 1.2; 95% CI, 0.37-3.9) in the setting of acute PVD.

Historical Features

The review identified 9 studies that related symptoms to the incidence of retinal tears (TABLE 1). The presence of both floaters and flashes, rather than one or the other, is not diagnostically useful in predicting the presence of retinal tears among patients with PVD (LR, 1.2; 95% CI, 1.0-1.3).

One study reported the symptom of subjective vision reduction and found that the presence of subjective vision reduction signifies an increased likelihood of a retinal tear among patients with floaters and/or flashes and a diagnosis of PVD (LR, 5.0; 95% CI, 3.1-8.1). Preservation of the patient’s usual visual acuity decreased the likelihood of a retinal tear (LR, 0.60; 95% CI, 0.49-0.73). Using a baseline prevalence of 14%, subjective vision reduction among patients with flashes or floaters increases the probability of a retinal tear to 45% (95% CI, 34%-57%), while the absence of loss of vi-

Table 1. Association of Historical and Ocular Examination Findings With Retinal Tear in Patients With Acute Posterior Vitreous Detachment

<table>
<thead>
<tr>
<th>Source</th>
<th>Sample Size</th>
<th>Sensitivity, %</th>
<th>Specificity, %</th>
<th>Likelihood Ratio (95% Confidence Interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Floaters and flashes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richardson et al,18 1999</td>
<td>105</td>
<td>64</td>
<td>69</td>
<td>2.1 (1.2-3.5) 0.53 (0.24-1.2)</td>
</tr>
<tr>
<td>Tanner et al,19 2000</td>
<td>200</td>
<td>36</td>
<td>54</td>
<td>0.79 (0.46-1.4) 1.1 (0.85-1.6)</td>
</tr>
<tr>
<td>Brod et al,22 1991</td>
<td>106</td>
<td>63</td>
<td>38</td>
<td>1.0 (0.67-1.5) 0.99 (0.5-2.0)</td>
</tr>
<tr>
<td>Byer,23 1994</td>
<td>350</td>
<td>56</td>
<td>47</td>
<td>1.0 (0.80-1.4) 0.94 (0.67-1.3)</td>
</tr>
<tr>
<td>Hikichi and Trempe,25 1994</td>
<td>489</td>
<td>54</td>
<td>57</td>
<td>1.3 (0.96-1.7) 0.80 (0.59-1.1)</td>
</tr>
<tr>
<td>Boldrey,26 1983</td>
<td>589</td>
<td>52</td>
<td>53</td>
<td>1.1 (0.91-1.4) 0.90 (0.72-1.1)</td>
</tr>
<tr>
<td>Jaffe,27 1968</td>
<td>84</td>
<td>44</td>
<td>60</td>
<td>1.1 (0.51-2.4) 0.93 (0.50-1.7)</td>
</tr>
<tr>
<td>Tabotabo et al,28 1980</td>
<td>100</td>
<td>40</td>
<td>70</td>
<td>1.3 (0.59-3.0) 0.86 (0.51-1.4)</td>
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<tr>
<td>Diamond,29 1992</td>
<td>147</td>
<td>54</td>
<td>64</td>
<td>1.5 (0.99-2.3) 0.72 (0.46-1.1)</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td></td>
<td></td>
<td></td>
<td>1.2 (1.0-1.3) 0.90 (0.79-1.0)</td>
</tr>
<tr>
<td><strong>Subjective vision reduction with floaters and/or flashes</strong></td>
<td>295</td>
<td>45</td>
<td>91</td>
<td>5.0 (3.1-8.1) 0.60 (0.49-0.73)</td>
</tr>
<tr>
<td><strong>Vitreous hemorrhage</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brod et al,22 1991</td>
<td>106</td>
<td>50</td>
<td>71</td>
<td>1.7 (0.96-3.1) 0.70 (0.42-1.2)</td>
</tr>
<tr>
<td>Byer,23 1994</td>
<td>350</td>
<td>20</td>
<td>96</td>
<td>5.5 (2.4-12) 0.83 (0.72-0.96)</td>
</tr>
<tr>
<td>Hikichi and Trempe,25 1994</td>
<td>489</td>
<td>50</td>
<td>98</td>
<td>20 (10-38) 0.51 (0.39-0.68)</td>
</tr>
<tr>
<td>Novak and Welch,26 1984</td>
<td>172</td>
<td>79</td>
<td>96</td>
<td>18 (8.2-39) 0.22 (0.08-0.61)</td>
</tr>
<tr>
<td>Sharma et al,28 1999</td>
<td>59</td>
<td>63</td>
<td>33</td>
<td>5.3 (2.1-13) 0.43 (0.17-1.0)</td>
</tr>
<tr>
<td>Boldrey,26 1983</td>
<td>589</td>
<td>47</td>
<td>99</td>
<td>45 (18-110) 0.54 (0.45-0.64)</td>
</tr>
<tr>
<td>Jaffe,27 1968</td>
<td>84</td>
<td>100</td>
<td>95</td>
<td>16 (6.5-40) 0.05 (0.0-0.79)</td>
</tr>
<tr>
<td>Kanski,28 1975</td>
<td>150</td>
<td>64</td>
<td>78</td>
<td>2.9 (1.8-4.5) 0.47 (0.33-0.65)</td>
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<tr>
<td>Lindner,29 1966</td>
<td>106</td>
<td>88</td>
<td>100</td>
<td>155 (97-2480) 0.15 (0.05-0.46)</td>
</tr>
<tr>
<td>Tabotabo et al,28 1980</td>
<td>100</td>
<td>100</td>
<td>93</td>
<td>13 (6.3-28) 0.05 (0.0-0.74)</td>
</tr>
<tr>
<td>Tasman,29 1968</td>
<td>91</td>
<td>56</td>
<td>94</td>
<td>9.1 (3.2-26) 0.47 (0.23-0.98)</td>
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<tr>
<td><strong>Summary</strong></td>
<td></td>
<td></td>
<td></td>
<td>10 (5.1-20) 0.49 (0.38-0.64)</td>
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<tr>
<td><strong>Vitreous pigment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanner et al,18 2000</td>
<td>200</td>
<td>92</td>
<td>100</td>
<td>318 (20-5081) 0.10 (0.03-0.31)</td>
</tr>
<tr>
<td>Brod et al,22 1991</td>
<td>106</td>
<td>94</td>
<td>100</td>
<td>166 (10-2643) 0.09 (0.02-0.41)</td>
</tr>
<tr>
<td>Sharma et al,26 1999</td>
<td>59</td>
<td>63</td>
<td>100</td>
<td>64 (3.8-1053) 0.39 (0.17-0.89)</td>
</tr>
<tr>
<td>Boldrey,26 1983</td>
<td>589</td>
<td>79</td>
<td>68</td>
<td>2.4 (2.1-2.9) 0.31 (0.22-0.45)</td>
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<tr>
<td><strong>Summary</strong></td>
<td></td>
<td></td>
<td></td>
<td>44 (2.3-852) 0.23 (0.12-0.43)</td>
</tr>
<tr>
<td><strong>Vitreous pigment or vitreous hemorrhage</strong></td>
<td>59</td>
<td>88</td>
<td>88</td>
<td>7.4 (3.4-16) 0.14 (0.02-0.89)</td>
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<tr>
<td><strong>Vitreous pigment and vitreous hemorrhage</strong></td>
<td>59</td>
<td>38</td>
<td>100</td>
<td>40 (2.3-719) 0.62 (0.37-1.0)</td>
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</table>
Floaters and/or flashes with “red flag” sign of acute retinal detachment
Monocular visual field loss (“curtain of darkness”)
New-onset floaters and/or flashes with high-risk features including Subjective or objective visual reduction
Vitreous hemorrhage or vitreous pigment on slitlamp examination
New-onset floaters and/or flashes without high-risk features
Recently diagnosed uncomplicated posterior vitreous detachment with
New shower of floaters
New subjective visual reduction
Stable symptoms of floaters and/or flashes for several weeks to months, not particularly bothersome to the patient and without high-risk features

<table>
<thead>
<tr>
<th>Clinical Scenario</th>
<th>Recommended Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floaters and/or flashes with “red flag” sign of acute retinal detachment</td>
<td>Same-day referral to retinal surgeon as minutes may matter; high risk of having retina detachment</td>
</tr>
<tr>
<td>Monocular visual field loss (“curtain of darkness”)</td>
<td>Same-day referral to ophthalmologist or retinal surgeon for dilated eye examination</td>
</tr>
<tr>
<td>New-onset floaters and/or flashes with high-risk features including Subjective or objective visual reduction</td>
<td>Referral to ophthalmologist for dilated eye examination within 1 to 2 weeks; counsel patient regarding high-risk features that should prompt urgent reassessment</td>
</tr>
<tr>
<td>New-onset floaters and/or flashes without high-risk features</td>
<td>Re-referral to ophthalmologist to rule out new retinal tear or detachment. The ophthalmologist should be contacted to help determine urgency.</td>
</tr>
<tr>
<td>Recently diagnosed uncomplicated posterior vitreous detachment with</td>
<td>elective referral to ophthalmologist; counsel patient regarding high-risk features that should prompt urgent reassessment</td>
</tr>
<tr>
<td>New subjective visual reduction</td>
<td>elective referral to ophthalmologist; counsel patient regarding high-risk features that should prompt urgent reassessment</td>
</tr>
<tr>
<td>Stable symptoms of floaters and/or flashes for several weeks to months, not particularly bothersome to the patient and without high-risk features</td>
<td>elective referral to ophthalmologist; counsel patient regarding high-risk features that should prompt urgent reassessment</td>
</tr>
</tbody>
</table>

**Ocular Examination Findings**

Twelve studies related findings on ocular examination to the presence of a retinal tear and found that 2 findings on slitlamp examination can be very helpful in determining the likelihood that a retinal tear exists (Table 1). The presence of vitreous hemoshrage (summary LR, 10; 95% CI, 5.1-20) or vitreous pigment (“tobacco dust”; summary LR, 44; 95% CI, 2.3-852) are highly suggestive of retinal tear. Using a baseline prevalence of 14%, the presence of vitreous hemorrhage increases the probability of retinal tear to 62% (95% CI, 43%-77%), while the presence of vitreous pigment increases the posttest probability to 88% (95% CI, 27%-97%).

**TRIAGING PATIENTS WITH ACUTE-ONSET FLOATERS/FLASHES AND PRESUMED PVD**

A suggested approach to ophthalmology referral is based on individual risk factors and is outlined in Table 2. Patients with either progressive monocular visual field loss suggestive of acute retinal detachment or high-risk features for retinal tear such as subjective or objective visual reduction or vitreous pigment or hemorrhage on examination require same-day ophthalmology referral. Patients with new-onset floaters and/or flashes or suspected ocular cause but without high-risk features should be evaluated by ophthalmology on a less urgent basis within 1 to 2 weeks and counseled to seek immediate medical attention should they develop monocular visual field defects or decreased vision in the interim.

In the meta-analysis, we also looked at follow-up of patients with acute-onset floaters and/or flashes initially diagnosed as having uncomplicated PVD (ie, without concurrent retinal tear or hole) by an ophthalmologist. Detailed results are available in eTable 3 and eTable 4. In summary, patients recently diagnosed as having uncomplicated PVD have a 6-week incidence of developing retinal tear that is low but not negligible (summary incidence, 3.4%; 95% CI, 1.6%-5.2%), while the point estimate in this case is a powerful result, although the lowest limit of the CI cannot rule out a less powerful LR.

Second, the CIs for some of the clinical risk factors evaluated, particularly vitreous pigment, are wide. The point estimate in this case is a powerful result, although the lowest limit of the CI cannot rule out a less powerful LR.

Third, slitlamp biomicroscopy is required to detect vitreous hemorrhage and vitreous pigment, and many primary care physicians do not have access to this equipment or do not have the expertise to use it well. This element of the examination will be most useful for experienced emergency department physicians.
SCENARIO RESOLUTION

This woman is presenting with classic symptoms of PVD in the left eye. Corrected visual acuity was 20/20 in the right eye and 20/50 in the left eye. Results of pupil examination, confrontation visual fields, and direct ophthalmoscopy with pupillary dilation were normal. The evidence suggests that this patient has a baseline risk of up to 14% for a retinal tear and her report of decreased visual acuity suggests a higher risk (LR 5.0), translating into a posttest probability for retinal tear of up to 45%. The patient was referred and seen that afternoon by an ophthalmologist and a diagnosis was made of PVD and associated retinal tear in the superotemporal peripheral retina of the left eye without evidence of retinal detachment. The patient was referred to a retinal surgeon at a tertiary hospital for definitive management.

CLINICAL BOTTOM LINE

The acute onset of floaters and/or flashes is common in older adults and is usually due to PVD. Although PVD is most often a benign occurrence, a small but significant proportion of patients develop a retinal tear that, if left untreated, can progress to a retinal detachment. As a minimum approach to evaluating these patients, primary care physicians should elicit a history of change in vision or “curtain of darkness,” check actual visual acuity with an eye chart, and assess confrontational visual fields. The evidence suggests that patients with subjective visual loss or vitreous pigment or hemorrhage on slitlamp examination are at increased risk of retinal tear. Patients with monocular visual field defects suggesting retinal detachment or high-risk features for retinal tear should have same-day assessment by an ophthalmologist. Finally, patients with uncomplicated PVD are at a small but significant continued risk (3.4%) of subsequently developing retinal tear and detachment over the weeks after diag-nosis. Available evidence suggests that a new shower of floaters or new onset of subjective visual reduction after initial assessment is a worrisome sign, and we suggest urgent ophthalmology referral.

Author Contributions: Dr Hollands had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Hollands, Johnson, Brox, Almeida, Simel, Sharma.

Acquisition of data: Hollands, Johnson, Almeida.

Analysis and interpretation of data: Hollands, Johnson, Almeida, Simel, Sharma.

Drafting of the manuscript: Hollands, Johnson, Brox, Almeida.

Critical revision of the manuscript for important intellectual content: Hollands, Johnson, Brox, Almeida, Simel, Sharma.

Statistical analysis: Hollands, Johnson, Simel.

Administrative, technical, or material support: Hollands, Simel, Sharma.

Study supervision: Hollands, Brox, Simel, Sharma.

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Additional Information: The eAppendix, eTables 1 through 4, and video simulation of floaters are available online at http://www.jama.com.

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