The Importance of Qualitative Vitreous Examination in Patients With Acute Posterior Vitreous Detachment

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Objective: To determine whether patients with acute posterior vitreous detachment with pigmented vitreous granules or hemorrhage have a higher likelihood of retinal tear compared with those with qualitatively normal vitreous examination findings.

Methods: A multicenter cross-sectional study was performed in 3 peripheral ophthalmic clinics. Patients with acute posterior vitreous detachment were examined for the presence or absence of vitreous pigment granules, vitreous hemorrhage, and horseshoe retinal tear.

Results: Fifty-nine consecutive patients with acute posterior vitreous detachment met our eligibility criteria. Eight patients had a retinal tear, and thus its prevalence in our study was almost 14%. Thirteen patients (22%) had a high likelihood because they had evidence of either pigmented vitreous granules or hemorrhage. The prevalence of retinal tear in the setting of acute posterior detachment associated with vitreous hemorrhage alone, pigment alone, or vitreous hemorrhage and pigment was 54%. Patients with posterior vitreous detachment with pigmented vitreous granules or hemorrhage were significantly more likely to have a retinal tear (odds ratio, 32.0; 95% confidence interval, 5.4-497.0). Patients with a retinal tear were 7 times more likely to have pigmented vitreous granules or hemorrhage (LR + ve = 7.4, in which LR + ve indicates positive likelihood ratio; 95% confidence interval, 3.3-16.4).

Conclusion: Patients with posterior vitreous detachment with vitreous pigment granules or hemorrhage are 52 times more likely to have a retinal tear compared with those who have normal findings on qualitative vitreous examination.


ACUTE POSTERIOR vitreous detachment occurs in 63% of patients older than 69 years.1 It is a known risk factor for retinal tear because up to 18% of these patients have evidence of a retinal tear.2 Results of recent studies3,4 conducted in the tertiary care setting demonstrate that patients with abnormal qualitative results of vitreous examination are at higher risk for retinal tear in the setting of acute posterior vitreous detachment. Given that acute posterior vitreous detachment is a common occurrence, and that with our current managed care environment more general ophthalmologists will be screening patients for retinal detachment, we undertook the present study in a secondary care setting to determine whether patients with vitreous cells are at higher risk for retinal detachment in the setting of acute posterior vitreous detachment.

RESULTS

Fifty-nine consecutive patients who met our inclusion criteria were studied. The mean age of our study population was 61.8 years (Table 1); 47% were men, and 30% had greater than 3D of myopia. Of our 59 patients, 8 (14%) had evidence of a retinal tear associated with posterior vitreous detachment (Table 2). Thirteen patients were classified as having a high likelihood for retinal tear because they had either pigment granules or hemorrhage in their vitreous (8 patients had vitreous hemorrhage alone, 2 patients had pigmented vitreous granules alone, and 3 patients had evidence of both) (Table 3). The remaining 46 patients had no evidence of either pigment granules or hemorrhage in their vitreous and, thus, were classified as having a low likelihood for retinal tear.

Seven of 8 patients with posterior vitreous detachment who had a retinal tear had qualitatively abnormal examination findings. If we consider the presence or absence of vitreous pigment granules or hemorrhage to be a diagnostic “test,” our test has a sensitivity of 88% (7/8). Because 45 of 51 patients with posterior vitreous detachment without retinal tear were at low
PATIENTS AND METHODS

A cross-sectional study was performed at 3 secondary referral centers (defined as centers where assessment of a patient with symptoms suggestive of an acute posterior vitreous detachment was conducted by a general ophthalmologist after referral from a primary care physician). The objective of our study was to determine whether patients with acute posterior vitreous detachment, who had either pigmented vitreous granules or vitreous hemorrhage, had a retinal tear more often than those with qualitatively normal findings on vitreous examination.

Study patients consisted of a consecutive series who had symptoms suggestive of acute posterior vitreous detachment. Patients were included in our study if they (1) had new floaters or photopsia for less than 1 week, (2) had clinical confirmation of a posterior vitreous detachment (defined as the presence of a complete Weiss ring), and (3) were older than 18 years and were able to give informed consent. Patients were excluded for the following reasons: (1) the presence of another ocular condition that increased the risk for retinal tear, including proliferative vitreoretinopathy, sickle cell retinopathy, retinopathy of prematurity, and proliferative retinopathy; (2) an inability to completely visualize the peripheral retina; and (3) the presence of conditions other than vitreous detachment that have been associated with either vitreous pigment granules or vitreous hemorrhage, including previous ocular surgery and previous vitreous hemorrhage.

All patients underwent complete dynamic vitreous examination using slitlamp biomicroscopy with and without a 60-diopter (D) lens and peripheral retinal examination with scleral depression and a Goldmann 3-mirror lens to detect the presence of a horseshoe retinal tear. Patients were classified as having a high likelihood for retinal tear if there were pigmented vitreous granules (the Shafer sign) or red blood cells in the vitreous.

Possible confounders, such as the presence or absence of floaters and photopsia and the degree of myopia (greater or less than 3 D), were treated in a dichotomous fashion. The main study variables (likelihood stratification and retinal tear status) are summarized in a contingency table. The effect of likelihood status on the presence or absence of a retinal tear was estimated by an odds ratio. A 95% confidence interval (CI) was calculated around our odds ratio using the logit method. Likelihood ratios were also calculated, as were 95% CIs.

Risk, our diagnostic test has a specificity of 88% (45/51). The positive and negative predictive values of likelihood stratification are 54% (7/13) and 98% (45/46), respectively. All patients with pigmented vitreous granules had a retinal tear, as did 45% (5/11) of patients with vitreous hemorrhage.

Patients with either pigment granules or vitreous hemorrhage were 52 times more likely to have a retinal tear (odds ratio, 52.0; 95% CI, 5.4-497.0). There was no statistically significant difference between likelihood groups with respect to age, sex, presence of floaters or photopsia, or prevalence of myopia greater than 3 D. Our calculation of the odds ratio is robust because its magnitude was minimally altered on sensitivity analyses (Table 4).

The presence of pigment granules or vitreous hemorrhage generated a likelihood ratio of 7.40 (LR + ve = 7.40, in which LR + ve indicates positive likelihood ratio; 95% CI, 3.32-16.40). The absence of these characteristics generated a likelihood ratio of 0.14 (LR − ve = 0.14, in which LR − ve indicates negative likelihood ratio; 95% CI, 0.07-0.30).

COMMENT

The incidence of retinal tear associated with posterior vitreous detachment in our series was almost 14%. Although our prevalence of retinal tear was similar to that noted in other studies, ours is the first study, to our knowledge, to be performed in a secondary care setting as opposed to a tertiary care setting. This is important because prevalence figures derived from the tertiary care setting should tend to overestimate the prevalence of retinal tear in patients with posterior vitreous detachment because these patients represent a selected group of patients.

Patients with high-likelihood characteristics were 52 times more likely to have a retinal tear. This result is sta-
The prevalence of retinal tear in the setting of acute posterior vitreous detachment was almost 14%. The prevalence of retinal tear in the setting of acute posterior vitreous detachment associated with vitreous hemorrhage alone, pigment alone, or vitreous hemorrhage and pigment was 54%. Patients with acute posterior detach-
ment, with the presence of either vitreous pigment granules or vitreous hemorrhage, are 52 times more likely to have a retinal tear compared with those with qualitatively normal findings on vitreous examination.

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REFERENCES


From the Archives of the ARCHIVES

A look at the past . . .

Of the 181 cases of cataract operations done at the N. Y. Eye and Ear Inf. 128 were senile; 10 sclerosed lenses; 16 traumatic; 6 congenital; 7 soft; 14 complicated. Panophthalmitis occurred twice, and intra-ocular hemorrhage three times. Mental disturbance occurred in eight cases, there being a history of previous mental trouble in five. Simple extractions, 70%; with iridectomy, 21.67%; linear with needlings, 3.33%; through a previous coloboma of iris, 5%. Prolapse of iris occurred in 9.43%, on an average, 2.4 days after the operation. The average immediate recorded vision was 25/100+, the average ultimate vision 20/50-. Of ultimate vision, 0.1 in 2.85%; 1/00 in 9.29%. In five cases no vision was looked for.