Case Report

Macular Hole Formation Secondary to Panretinal Photocoagulation in Proliferative Sickle Cell Retinopathy

Philip Lieu1*, Joseph Boss2 and Asheesh Tewari2

1University of Michigan, Kellogg Eye Center, Ann Arbor, MI, USA
2Kresge Eye Institute, Wayne State University School of Medicine. Detroit, MI, USA

Abstract

Sickle cell retinopathy typically involves the peripheral retina and is associated with significant peripheral ischemia. We present a case of macular hole formation after panretinal photocoagulation for proliferative sickle cell retinopathy. Fibrovascular proliferation with epiretinal membrane formation and tangential tissue contraction following peripheral laser photocoagulation is the presumed etiology of macular hole formation in this patient.

Introduction

Sickle cell retinopathy develops from an occlusive ischemic vasculopathy secondary to abnormal red blood cell morphology. Neovascularization of the peripheral retina can progress to fibrovascular proliferation with subsequent tractional and rhegmatogenous retinal detachments without timely treatment [1]. While most sickle cell retinopathy involves the peripheral retina outside of the posterior pole, macular pathology leading to central vision loss can also rarely be seen [2-4].

Case Report

A 39 year-old woman with sickle cell SC disease presented with a chief complaint of blurry vision in the right eye for five days’ duration. She had signs of grade 3 proliferative sickle cell retinopathy in both eyes with active peripheral neovascularization anterior to the equator. There was acute pre-retinal hemorrhage in the right eye (Grade 4), and a classic broad temporal sea-fan of neovascularization in the left eye (Grade 3). Presenting Snellen visual acuity was 20/40 in the right eye and 20/20 in the left eye. The macula was noted to be flat in both eyes with no evidence of macular pathology (Figure 1). The patient was treated with peripheral scatter (Panretinal) photocoagulation in both eyes corresponding to the near circumferential ischemic peripheral retina. She was subsequently lost to follow up for nearly a year.

Ten months after bilateral panretinal photocoagulation treatment, the patient returned with complaints of one day’s duration of decreased vision in the right eye. Her presenting visual acuity was 20/200 in the right eye. On exam, we noted a full-thickness macular hole in the symptomatic eye. Optical coherence tomography confirmed the presence of a full-thickness, stage 2 macular hole (Figure 2). Surgical options were discussed with the patient, but she elected observation.

Discussion

Although sickle cell retinopathy is traditionally thought of as an occlusive peripheral retinal disease, coexisting macular pathology such as epiretinal membrane and macular capillary non perfusion.
can also lead to significant vision loss. Rare cases of foveal pathology, including macular hole formation, have been reported [2-4]. Overall idiopathic macular hole formation has a prevalence ranging from 0.02% to 0.8%, however the rate of macular hole formation in sickle cell retinopathy is unclear [5]. This case describes macular hole formation following panretinal (scatter) photocoagulation for proliferative sickle cell retinopathy. Tangential and vitreomacular traction are the presume vector forces responsible for idiopathic macular hole formation. The formation of a macular hole following panretinal photocoagulation in this patient suggests an increase in tangential traction, possibly secondary to progressive contraction of the cortical vitreous and internal limiting membrane. Treatment options described previously for macular hole in patients with proliferative sickle cell retinopathy include vitrectomy with peeling of epiretinal membranes, if present, and internal limiting membrane peel [3]. Improved visual acuity postoperatively has been reported in sickle cell retinopathy patients presenting with macular hole [6]. Although care must be taken during intraocular surgery in sickle cell patients due to their increased risk of ischemia in response to elevated intraocular pressure, decreased local pH, and decreased intravascular volume, postoperative recovery of functional vision can be substantial [7]. After an extensive discussion of the risks and benefits of surgery for this patient, she declined any intervention.

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References