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Review Article

Sub Macular Hemorrhage in Age Related Macular Degeneration

Emad Selim*

North Cumbria University Hospitals, Cumbria, England

***Corresponding author:** Emad Selim, North Cumbria University Hospitals, Cumbria, England

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Abstract

Age related macular degeneration presents with various forms of central visual loss. In Neovascular macular degeneration visual loss can be rather quick due to the development of intraretinal and/or subretinal fluid. Extreme progression of visual loss can happen with the development of sub macular hemorrhage.

Keywords: sub macular; subretinal; hemorrhage; plasminogen; pneumatic; displacement; vitrectomy; resection

Introduction

Age related macular degeneration (AMD) affects elderly people with the development of a macular choroidal neovascular membranes (CNV). Certain risk facts can predate the appearance of a choroidal neovascular membrane. Patients with CNV already in one eye are at a particularly increased risk of development of CNV and hence neovascular (wet) AMD. The condition is frequently bilateral and leads to loss of central visual loss . Subretinal bleeding can sometimes develop with CNV, in which case surgery may be required [1-3].

Subretinal bleeding can develop between retinal pigment epithelium (RPE) and the neurosensory retina (NSR). A bleed from CNV may spread under the macula (SMH) giving rise to a large central scotoma. SMH if left untreated, can lead to poor prognosis due to iron toxicity, lack of nutrient exchange through the RPE as well as the mechanical shearing of clot retraction .

Causes of Sub Macular Hemorrhage

Although SMH can be idiopathic, it can be caused by other conditions most common of which is AMD. Growth of CNV can lead to SMH such as what happens with angioid streaks, choroidal rupture, pathologic myopia and polypoidal choroidal vasculopathy (PCV). There can be an increased risk of sub macular hemorrhages in patients taking anticoagulants such as sodium warfarin or aspirin. In patient with AMD the risk can be increased if patients are hypertensive [4].

Prognosis of Sub macular haemorrhage

In cases where SMH was caused by AMD, poor visual prognosis at the end of the follow up was reported in up to 80% of eyes affected by the condition . Other conditions causing SMH can have different visual results which in most cases are significantly better than those reported in AMD. In one study, visual acuity improved after SMH caused by choroidal rupture in 100% of eyes and by Best's disease in 90% of eyes. In the Sub macular Surgery Trials Group B, 90% of eyes ended up with vision less that 20/200 2 years following SMH development in AMD with initial visual acuity 20/100 to Perception of light . The thicker the SMH the worse the prognosis due to the development of scar tissue and loss of photoreceptors which can develop as early as within the first 24 hours as demonstrated in animal studies [5-8].

Management Options

Within the first two weeks of SMH, total loss of photoreceptors and outer nucleal layer was reported in animal studies. Therefore, interference if possible, should be carried out within the first two weeks. Ideally SMH can be displaced away from the fovea to be resorbed by performing pars plana vitrectomy, optional subretinal injection of tissue plasminogen activator and manual resection of

the blood clot through a single retinotomy . Patients are normally advised to posture in cases where gas tamponade was used to allow displacement of the remaining sub macular bleeding and to prevent recurrent bleeding. Results for this interference is rather controversial. However, results depend on duration of SMH with tendency to better prognosis if interference within 7 day, SMH not exceeding the arterial arcades and absence of sub-RPE haemorrhage [9,10].

Conclusion

Sub macular haemorrhage is a serious process that can lead to rapid central visual loss in the presence of a choroidal neovascular membrane. Recovery of vision depends on several factors most importantly the original reason for the CNV. Cases where CNV developed as part of AMD usually carry the worst prognosis among all other causes of SMH. Even in AMD related SMH there are further prognostic factors including thickness and duration of the haemorrhage. Those haemorrhage presented more than two weeks prior to an y interference carry the worst prognosis. Interference can be done within the first 7 days with vitrectomy, local resection of the bleed as well as ant CNV and optional injection of tissue plasminogen activator and long acting gas tamponade to prevent recurrence of bleeding. Results of such interference is not promising with eyesight loss still an important factor even in eye that had such interference. However, with the grim outcome after SMH trials at reducing those risks of visual loss are taken.

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