

Management of Painful Blind Eye in Africa: A Review

Abstract

Background: Painful blind eye conditions in Africa constitute a compelling area of concern within public health, presenting substantial complexities for healthcare systems and the individuals afflicted. This comprehensive review delves into recent research and advancements concerning the management of these conditions across the African region. Drawing upon contemporary studies and data, we scrutinise the multifaceted aspects, including prevalence rates, causative factors, and regional variations. **Objective:** To review existing articles on the current state of the management of blind painful eye conditions in Africa. **Materials and Methods:** Articles regarding the subject were obtained from Google Scholar, AJOL, and PubMed using the keywords, painful, blind eye (PBE), Africa. **Results:** Forty-four relevant articles were reviewed. They were further categorized into epidemiology, management approaches and challenges to management. **Conclusion:** The management of the PBE poses a huge challenge and can either be medical or surgical. Collaborative efforts should be targeted at preventing the causes of a PBE. As the burden of painful blind eye conditions continues to exert a profound impact across Africa, this article underscores the pressing need for collaborative efforts involving governments, non-governmental organisations, and international entities. By prioritising awareness and enhancing healthcare accessibility, we collectively strive towards the alleviation of suffering and the prevention of avoidable visual impairment in this region.

Keywords: Africa, blind eye, enucleation, evisceration, painful

Introduction

The painful blind eye (PBE) is defined as a terminal condition where vision is unsalvageable and there is poorly responsive ocular discomfort.^[1] It results from any disease that causes blindness or a phthisical (shrunken, blind eye) globe.^[2] The loss of vision is usually absolute, with minimal or no light perception, though certain patients have a visual acuity of hand movement, with no expectation of recovering vision, associated with chronic pain and discomfort for at least 4 weeks.^[2,3] Painful blind eye conditions in Africa significantly impact the quality of life and well-being of affected individuals, their families, and communities.^[4-6] These conditions can arise due to various aetiologies, including infective corneal ulcers with their sequelae, uveitis, physical or chemical eye trauma, intractable glaucoma (especially neovascular glaucoma), chronic retinal detachment, intraocular tumours and complicated cataracts, among others.^[2,7,8] The management of these conditions encompasses various medications/

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procedures and can be daunting both for the patient and the ophthalmologist. It presents unique challenges in the African context due to limited resources, and cultural beliefs including the use of traditional eye medications (TEMs) before presentation to the hospital. This article aims to review existing articles on the current state of the management of blind painful eye conditions in Africa.

Materials and Methods

We conducted a literature search on Google Scholar, Pubmed, and AJOL using the keywords: “painful,” “blind eye,” “Africa,” “evisceration,” and “enucleation.”

Epidemiology

The prevalence of painful blind eye conditions in Africa varies across different regions and is influenced by socio-economic factors, access to healthcare, and local environmental conditions. For every ten people with blindness, one has a painful blind eye.^[2] Abraham *et al.*^[9] in their article on the epidemiology of eye injuries in rural Tanzania showed that 14% of those who

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presented at the eye clinic had painful blind eyes. Ubah *et al.*^[10] in Nigeria, reported that 5.6% of patients that presented to their clinic had PBEs.

In Cairo, Egypt, the most common reason for the removal of the eyeball was a painful blind eye resulting from glaucoma.^[11] In North-eastern Ghana, Gyasi *et al.* reported that PBE accounted for 6.8% of the indications for destructive eye surgeries.^[12] In the Gambia, Dawodu and Faal reported that 5.8% of patients who underwent destructive eye surgeries had PBE.^[13]

Painful blind eye accounted for 9.5% of the indications for eye removal in a study in Calabar, Nigeria.^[14] A similar figure was reported in the study by Enock *et al.*^[15] in Irrua. Olatunji *et al.*^[16] reported that 3.0% of surgically removed eyes in North-Central Nigeria while Okoye *et al.*^[17] showed that 5.6% of blind eyes in a ten-year period were painful blind eyes in Southeastern Nigeria.

Management approaches

The management of a PBE can be quite daunting. Advancements in eye care technologies have led to improved management strategies for painful blind eye conditions in Africa. The primary aim of therapy is to reduce pain and improve the patient's comfort.

Medical management

Medical management aims to mitigate inflammation, reduce intraocular pressure (IOP), alleviate ciliary body spasms, and address ocular surface symptoms using eye drops, some oral medications and therapeutic contact lenses. The conventional approach involves using the minimum number of medications necessary to achieve a pain-free eye, thereby limiting adverse effects and costs while promoting treatment adherence.^[2,18]

In many cases of PBE, individuals present with noticeable ocular surface symptoms. In such situations, lubricating eye drops or gels are typically employed. Denser formulations offer the advantage of a longer duration of action with fewer applications for PBE patients. Furthermore, it is advisable to opt for preservative-free eye drops to reduce the risk of adverse reactions associated with these additives.

Steroidal anti-inflammatory and cycloplegic eye drops are particularly valuable, as inflammation is strongly linked to the pathophysiology of PBE, especially when it is secondary to uveitis or ocular ischaemia. These are typically administered one to four times daily. When comparing non-steroidal anti-inflammatory eye drops (NSAIDs) to corticosteroids, the latter is often preferred, as PBE may be more susceptible to the adverse effects associated with NSAIDs, such as corneal melting/ulceration, and severe keratopathy.^[19] A common approach is to combine topical prednisolone with a cycloplegic agent, such as atropine 1%, administered twice daily, to stabilise the blood-aqueous barrier and provide additional relief from

ciliary spasms. Furthermore, in cases of PBE secondary to glaucoma, steroids in combination with cycloplegic agents and pressure-lowering eye drops are frequently employed. While most patients may initially be prescribed three or four antiglaucoma eye drops daily, with minimal reduction in IOP, a discreet approach is recommended, limiting the prescription to at least two classes of aqueous-suppressant antiglaucoma eye drops.^[18] This approach avoids both local and systemic adverse effects, as there is no established target for IOP, and the primary goal is symptom control.^[18]

In situations where patients experience corneal distress, such as PBE after multiple failed corneal transplants or bullous keratopathy in a PBE, a combination of steroids and lubricants along with therapeutic contact lenses is often employed.^[20] It is essential to consider the risk of ocular infection in these patients with corneal decompensation, particularly when therapeutic contact lenses are used. If a corneal infection is observed, steroid eye drops should be discontinued and reintroduced cautiously once the active infection is under control. Topical hypertonic saline solutions are beneficial when attempting to address corneal oedema.

Oral analgesics including NSAIDs or paracetamol and neuropathic pain medication (e.g., amitriptyline or gabapentin) have also been used to ameliorate pain.^[21] The choice of medical therapy largely depends on the patient's response and surgeon preference.

Surgical/laser management

These are usually performed in conjunction with medical therapy or in many cases where medical therapy fails.

Retrobulbar injections of neurolytic agents such as absolute alcohol or chlorpromazine have been found to be helpful in the management of PBE.^[22,23] This injection infiltrates and destroys the long and short ciliary nerves. This approach provides temporary relief, necessitating the need for repeated injections. Neurolytic agents, mainly due to their limited analgesic effect of approximately 3–6 months (the effects of chlorpromazine can last up to a year) and side effects, have largely fallen out of favour among ophthalmologists. The adverse effects include transient lid oedema, retrobulbar haemorrhage, sterile orbital cellulitis, risk of block technique failure, temporary and permanent restrictive strabismus, phthisis bulbi as well as the development of permanent ptosis. Galindo-Ferreiro *et al.*^[24] reported that the efficacy of retrobulbar alcohol and chlorpromazine for the treatment of painful, blind eyes, were comparable.

Transcleral or endocyclophotocoagulation (CPC) is another procedure that can be carried out in the management of PBE especially those who are resistant to maximum medical glaucoma therapy.^[25] It uses the principle of cyclodestruction. Modern CPC treatment involves the application of a diode laser (810 nm wavelength) with either

a transscleral or with an endoscopic probe, to the ciliary body. The diode laser is preferred over other wavelengths since the melanin in the ciliary epithelium better absorbs this wavelength than others and therefore causes more targeted destruction with less inflammation. Micropulse laser is fast gaining popularity as a safer option.^[26] CPC is advantageous because it avoids incisional surgery and can be performed in the office setting with local anaesthesia as the procedure is quite painful. The cost and availability of this procedure might be an issue in Africa. The studies on the use of CPC in Africa are few, and have varied methodologies with use even in seeing eyes but largely reported favourable reduction in the intraocular pressures.^[27-31]

Ultrasonic cycloplasty (UCP) and cyclocryotherapy (CCT) are procedures that use high-intensity focussed ultrasound and freezing, respectively, to destroy the ciliary body (coagulative necrosis) thereby reducing the intraocular pressure and resultant pain.^[32] They have both been found to be effective in significantly reducing intraocular pressures in PBE due to neovascular glaucoma however, UCP was reported to have a higher safety profile compared to CCT. No studies were found on their use in Africa.

Evisceration (removal of the intraocular contents while leaving the sclera, behind) and enucleation (complete removal of the eyeball) are the final alternatives that can grant definitive relief from a PBE.^[33] A prosthetic eye is subsequently inserted to improve cosmesis. Oronsaye and Kayoma^[34] reported three cases of evisceration following spontaneous globe rupture in patients with painful blind eyes from glaucoma. Complications include sunken superior fornix, lower eyelid laxity, ectropion, ptosis, socket contraction, conjunctival cyst formation, implant migration, and late extrusion of the implant among others.^[35]

In a retrospective review of 99 painful blind eyes by Idowu *et al.*,^[36] 39% of eyes were pain-controlled with topical therapy alone (cycloplegics, steroids, antiglaucoma), 75% of eyes were pain-controlled with “minimally invasive interventions” (laser cyclophotocoagulation, retrobulbar injection), and 100% of eyes were pain-controlled with evisceration or enucleation.

Challenges in management

Managing painful blind eye conditions in Africa faces several hurdles. These include limited awareness of eye health, inadequately trained personnel especially in rural areas, insufficient medical facilities/equipment, the high cost of treatment and the use of TEMs. Eye care services are often concentrated in urban areas, leaving rural populations underserved.^[37] The scarcity of specialised eye care professionals and a lack of equipment for diagnosis and treatment further compound the problem, leading to delayed interventions and preventable visual impairment.^[38] Additionally, cultural beliefs and stigmas associated with blindness may lead to delays in seeking

medical attention, further complicating the management process.^[39]

Traditional medicine plays a significant role in the management of eye conditions in Africa.^[40,41] Herbal remedies, eye drops, and local healing practices are often employed, particularly in rural areas where access to modern healthcare is limited. Harmful TEMs include alcohol-based concoctions, breast milk, leaf extracts, human urine, cattle dung, etc.^[40,41] These medications usually cause serious ocular morbidity and have been found to be responsible for about 8%–10% of painful corneal blindness in Africa and hence is not a recommended form of management.^[42-44] A study done by Dawodu and Faal^[13] in the Gambia reported that 80% of patients who went on to have evisceration/enucleation gave a history of having used TEMs before presenting to the hospital.

Conclusion

Painful blind eye conditions in Africa significantly affect the quality of life of individuals diagnosed with them. Prevention of the causes of PBE is key. The management of PBE can be challenging, and the treatment strategies range from topical medications to laser/ultrasonic procedures and finally, destructive ocular surgeries. The choice of treatment falls to the patient and ophthalmologist based on which adequately addresses the pain. Addressing the challenges associated with management requires a multifaceted approach, encompassing improved awareness, strengthened healthcare infrastructure and affordable treatments.

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Conflicts of interest

There are no conflicts of interest.

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