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CLINICAL INFORMATION

Treatment of patients with painful blind eye using stellate ganglion block

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Abstract

Background and objectives: management of pain in painful blind eyes is still a challenge. Corticosteroids and hypotensive agents, as well as evisceration and enucleation, are some of the strategies employed so far that are not always effective and, depending on the strategy, cause a deep emotional shock to the patient. Given these issues, the aim of this case report is to demonstrate a new and viable option for the management of such pain by treating the painful blind eye with the stellate ganglion block technique, a procedure that has never been described in the literature for this purpose.

Case report: six patients with painful blind eye, all caused by glaucoma, were treated; in these patients, VAS (visual analogue scale for pain assessment, in which 0 is the absence of pain and 10 is the worst pain ever experienced) ranged from 7 to 10. We opted for weekly sessions of stellate ganglion block with 4 mL of bupivacaine (0.5%) without vasoconstrictor and clonidine 1 mcg/kg. Four patients had excellent results at VAS, ranging between 0 and 3, and two remained asymptomatic (VAS=0), without the need for additional medication. The other two used gabapentin 300 mg every 12 h.

Conclusion: currently, there are several therapeutic options for the treatment of painful blind eye, among which stand out the retrobulbar blocks with chlorpromazine, alcohol and phenol. However, an effective strategy with low rate of serious complications, which is non-mutilating and improves the quality of life of the patient, is essential. Then, stellate ganglion block arises as a demonstrably viable and promising option to meet this demand.

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PALAVRAS-CHAVE

Dor ocular;
Manejo da dor;
Bloqueio nervoso

Tratamento de pacientes portadores de olho cego doloroso por meio de bloqueio de gânglio estrelado**Resumo**

Justificativa e objetivos: O manejo da dor em olhos cegos dolorosos ainda é um desafio. Corticosteroides e hipotensores, bem como evisceração e enucleação, são algumas das estratégias até então empregadas, nem sempre eficazes e que, a depender da estratégia, causam um profundo abalo emocional no paciente. Dadas essas questões, o objetivo deste relato de caso é demonstrar uma nova e viável opção para o manejo desse tipo de dor por meio do tratamento do olho cego doloroso com bloqueios de gânglio cervicotorácico, técnica nunca descrita na literatura para esse fim.

Relato de caso: Foram tratados seis pacientes portadores de olho cego doloroso, todos por glaucoma, nos quais a EVA (escala visual analógica para avaliação da dor em que 0 é ausência de dor e 10 é a maior dor já experimentada) variava de 7 a 10. Optou-se por sessões semanais de bloqueio de gânglio cervicotorácico com 4 mL de bupivacaína (0,5%) sem vasoconstritor e clonidina 1 mcg/Kg. Quatro pacientes apresentaram excelente resultado EVA, com variação entre 0 e 3, e dois permaneceram assintomáticos (EVA = 0), sem necessidade de medicação suplementar. Os outros dois usaram gabapentina 300 mg de 12 em 12 horas.

Conclusão: Atualmente, várias são as opções terapêuticas para o tratamento do olho cego doloroso, entre as quais se destacam os bloqueios retrobulbares com clorpromazina, álcool e fenol. No entanto, uma estratégia eficaz, com pequeno índice de complicações graves, não mutilante e que melhore a qualidade de vida do paciente é imprescindível. O bloqueio do gânglio cervicotorácico surge, pois, como uma opção comprovadamente viável e promissora para atender a essa demanda.

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Introduction

Management of pain in painful blind eyes is still a challenge and represents one of the most frustrating problems in ophthalmology. For years, numerous therapeutic strategies were tempted, with the aim to relieve ocular pain symptoms. Corticosteroids, hypotensive drugs and therapeutic contact lenses have proved useful in some cases. Evisceration and enucleation¹ tend to be proposed in more treatment-resistant cases. However, these latter options are responsible for a deep emotional shock to the patient, and with respect to the evisceration, it does not always promote full pain relief. Retrobulbar injections with neurolytic agents and chlorpromazine constitute the most widespread therapeutic strategies,² but often cause significant complications, such as permanent paralysis of ocular muscles, retrobulbar haemorrhage, optic nerve atrophy and perforation of the globe. The case report in question concerns the choice of a new therapeutic strategy for the treatment of painful blind eye, where the stellate ganglion blockade was used – a technique not described in the literature for this purpose.

Case report

The subjects were six patients with painful blind eye caused by glaucoma, in whom the treatment with topical agents and special contact lenses introduced by ophthalmology did not succeed. Initial evaluation of these patients showed that the self-described pain intensity ranged from 7 to 10 in VAS (visual analogue scale), which significantly compromised their daily activities. A course of six weekly sessions of cervicotoracic (stellate) ganglion block with 4 mL of 0.5% bupivacaine without vasoconstrictor and clonidine 1 mcgKg⁻¹ was proposed. These sessions were performed in the surgical suite, with blocking by paratracheal route.

Results

A year has passed since the beginning of treatment until ambulatory discharge. Four patients showed excellent response to treatment; two of them remained completely asymptomatic, with no need for additional medication, and two remained with residual pain self-characterized as VAS 3. These latter patients continued treatment with gabapentin 300 mg every 12 h. With respect to the other two patients, one of them abandoned the clinic after the blocks and the other presented major depression concomitant to her eye pain, and was found drunk in two of the consultations, factors that greatly compromised her treatment. At that time, the patient was medicated with carbamazepine 200 mg every 8 h, morphine sulphate 10 mg every 4 h, sertraline 150 mg once daily and nortriptyline 75 mg once a day.

Discussion

According to Bonica,³ ophthalmic pain is characterized by its intensity and ability to generate anxiety. Second only to fear of death, the fear of blindness involves a great emotional charge to the patient and to his/her doctor. Thus, adequate attention should be given to eye pain, not only for patient comfort, but also for prevention and treatment of those patients with narrow-angle glaucoma, in which the extent of structural and functional damage is closely related to the duration of the pain crisis. Glaucoma can be characterized as an optic neuropathy associated with a typical optic nerve damage.⁴ Then, the possibility arises that part of the blind glaucomatous eye pain might be explained by this optic neuropathy and by the structural damage responsible for neuropathic pain.^{5,6} This hypothesis – that the pain in blind and glaucomatous eyes could be of neuropathic origin – was first approached by Kavaliteratos⁷ in a case report in which a patient with that condition was treated with gabapentin, with excellent response.

Neuropathic pain and sympathetic nervous system

Studies show that allodynia and hyperalgesia appear to involve both the central and the peripheral nervous system. Neuropathic pain of peripheral tissues is generated or maintained exclusively by sensory nerves, or by aberrant actions of the sympathetic nervous system in sensory nerves.⁸

It is already known that peripheral nerve injuries provide plastic changes, both of primary afferent neurons and sympathetic postganglionic neurons, depending on the type (partial or total) of injury. This neuronal plasticity is characterized by degenerative and regenerative changes and by rearrangements culminating in biochemical links among primary afferent and postganglionic sympathetic neurons, as well as in collateral links in the dorsal root ganglion by intact neurons. These links are responsible for the activation of primary afferent neurons by the sympathetic nervous system, in which the likely mediator is norepinephrine.⁹

Thus, one can infer that part of the eye pain has as its maintainer the sympathetic nervous system, though this is not its primary cause. The pain maintained by the sympathetic nervous system is characterized by a burning sensation, allodynia, and cold and touch hyperalgesia,¹⁰ symptoms presented by patients treated in the present case report. Numbness and hyperesthesia are common and there may be swelling and other signs of autonomic dysfunction.

Strategies for eye pain treatment

Through the years various strategies have been developed for the treatment of ocular pain. Gruter in 1918 described his experience with retrobulbar injections of alcohol.^{11,12} After this investigator, several others described their experiences, some also with the use of phenol replacing alcohol. Both are neurolytic agents still used, but which have been abandoned in some centres as they have limited analgesic effect (around three months) and their use may cause significant complications, such as retrobulbar haemorrhage, permanent paralysis of eye muscles and permanent ptosis.

Currently the most widespread technique has been the use of retrobulbar injections of chlorpromazine,¹³ first suggested in 1980 by Fiore and in 1989 by Bastrikof, with reported pain relief in 84% of patients in the studies.¹⁴ However, this is a technique with limited duration, around six months. In addition, there are reports of block technique failure, as well as significant side effects such as oedema, ptosis, sterile orbital cellulitis, transient limitation of extraocular movements, retrobulbar haemorrhage and corneal epithelial injury, among others.

Enucleation and evisceration are also options for the cases in which pain is debilitating and does not respond to any of the mentioned treatments. Especially in cases of eye disfiguration, evisceration and enucleation end up being the treatments of choice.¹⁵ It should be borne in mind the deep emotional harm that occurs in patients who undergo this technique, especially in cases where the eye, although painful, was looking good. In addition, there is the fact that enucleation is not always effective, because the ciliary nerves may remain intact and thus convey a residual pain.

Stellate ganglion block

Usually, the stellate ganglion is formed by the fusion of the inferior cervical and first thoracic ganglia, being responsible for most of the sympathetic innervation of the head, neck and arm. Its block has been described as therapeutic for various disorders. There are reports of treatment for glaucoma and facial pain with the use of this type of block.^{6,16,17} The treatment of orofacial pain with stellate ganglion block has been well reported in the literature, with

respect to the well-known involvement of the sympathetic nervous system in this type of pain.¹⁸ In 1953, Miller showed that the blocking of this ganglion alters the intraocular pressure in glaucomatous eyes.¹⁹ However, the treatment of painful post-glaucoma blind eye with stellate ganglion block has never been described in the literature.

Conclusion

The treatment of painful blind eyes is controversial and poorly addressed in the literature. Among the various therapeutic options, stellate ganglion block can be a viable and promising proposal.

Conflicts of interest

The authors declare no conflicts of interest.

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