OUTBREAK OF TOXIC ANTERIOR SEGMENT SYNDROME AFTER VITREOUS SURGERY

BROTE DE SÍNDROME TÓXICO DEL SEGMENTO ANTERIOR DESPUÉS DE CIRUGÍA VÍTREA

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ABSTRACT

Case report: An outbreak of Toxic Anterior Segment Syndrome after vitreoretinal surgery is reported. Two patients underwent exclusively vitrectomy while the other three patients were operated of vitrectomy and some other anterior segment procedure. Discussion: Toxic Anterior Segment Syndrome is a sterile postoperative inflammation due to any non infectious substance that reaches the anterior segment during surgery. It occurs in outbreaks and while most of the cases have been reported after anterior segment procedures, this case demonstrates that development after vitreoretinal surgery is also a possibility (Arch Soc Esp Oftalmol 2009; 84: 403-406).

Key words: Toxic anterior segment syndrome, vitrectomy.

INTRODUCTION

The Toxic Anterior Segment Syndrome (TASS) is a sterile post-op inflammatory reaction caused by some type of non-infectious substance reaching the anterior pole during surgery and causing toxic damage in the intra-ocular tissue (1,2). It usually occurs in outbreaks and most cases have been described after anterior segment surgery. This paper describes an outbreak of TASS which appeared after vitreoretinal surgery.

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CASE REPORTS

Five patients submitted to vitreous surgery associated in some of the cases to anterior segment procedures and intervened in two consecutive surgical sessions carried out in the same operating room within a four-day period. In the first session 3 patients were intervened, 2 of which developed the syndrome while in the second surgery session the syndrome appeared in all three patients. In the first session, an additional patient was intervened for vitrectomy exhibiting an epiretinal membrane. This patient was not involved in the outbreak even though the same type of balanced saline solution (BSS) and the same cleaning and sterilization systems were utilized. 24 hours post-op, all five cases exhibited anterior chamber inflammatory reactions characterized by intense turbidity of the aqueous humor, fibrin meshes and hypopion. The first two patients were mistakenly diagnosed as infectious endophthalmitis and operated again via vitrectomy, culture sample and intravitreous antibiotics. In both cases the culture was sterile and they are considered TASS for diagnostic purposes, establishing treatment with frequent topical corticoids. The other three cases were initially treated with topical corticoids. In all five patients, the inflammatory reaction disappeared gradually between four and seven days after the operation. One of the vitrectomy cases developed a retinal detachment operated on with good results by means of cerclage, vitrectomy and gaseous exchange. The clinical characteristics of these patients are shown in table I.

Once the TASS diagnostic was established, several measures were taken to eradicate the outbreak. The first was the substitution of the BSS (which was made in the hospital pharmacy) by a commercially available solution. A microbiological analysis of the BSS was made with negative results. The endotoxin levels of the BSS and the tap water utilized for cleaning instruments after the surgery were analyzed. In both cases the analysis gave values considered to be acceptable. Sterile distilled water began to be utilized for the ultrasound procedure instead of tap water. Finally, all the substances which may have being introduced in the eyes during surgery (adrenalin, viscoelastics, cefuroxim) were substituted. In the following surgical sessions, no new cases were detected.

DISCUSSION

The vast majority of TASS outbreaks described to date have emerged after uncomplicated cataract surgery, although some cases had been reported after phakic lens implants (3).

Table I. Patient clinical and intra-characteristics

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Sex</th>
<th>Pre-Op Diagnostic</th>
<th>Intervention</th>
<th>Surgical Session</th>
<th>Intra-Ocular Substances</th>
<th>Use of material resterilized with plasma gas</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>66</td>
<td>M</td>
<td>IOL sub-luxation</td>
<td>Vitrectomy and IOL sutured to iris</td>
<td>1</td>
<td>BSS, cefuroxim</td>
<td>Yes</td>
<td>Retina detachment</td>
</tr>
<tr>
<td>2</td>
<td>56</td>
<td>M</td>
<td>Vitreous hemorrhage and cataracts</td>
<td>Vitrectomy, phakoemulsification and IOL implant</td>
<td>1</td>
<td>BSS, viscoelastic, adrenaline, cefuroxim, bevacizumab</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>75</td>
<td>F</td>
<td>Epiretinal Membrane and Cataracts</td>
<td>Vitrectomy, phakoemulsification and IOL implant</td>
<td>2</td>
<td>BSS, viscoelastic, adrenalin, cefuroxim, triphan blue</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>80</td>
<td>F</td>
<td>Vitreous hemorrhage</td>
<td>Vitrectomy</td>
<td></td>
<td>BSS</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>70</td>
<td>M</td>
<td>Epiretinal membrane</td>
<td>Vitrectomy</td>
<td></td>
<td>BSS, triphan blue</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

IOL: intra-ocular lens, BSS: Balanced saline solution.
The instant outbreak comprises a heterogeneous group of patients of which three were subjected to anterior segment surgery. However, what are they shared in common was a posterior vitrectomy operation.

The causes which account for the TASS outbreak comprise any substance which may be introduced in the eye during surgery (BSS, adrenalin, viscoelastics, anesthetics or antibiotics). It could also be produced by problems related by instrumental cleaning and sterilization systems or by detergent or ethylene oxide waste (4,5). The utilization of tap water for the ultrasound bath could also be an etiology. Tap water contains low levels of gram negative bacteria which can reproduce and originate a sterilization-resistant endotoxin which could ultimately be the cause of the syndrome.

In our case, the factors shared by all five patients and which could explain the outbreak were the utilization of BSS prepared in the hospital pharmacy and the use of plasma gas re-sterilized material previously cleaned in an ultrasound container with tap water. When the outbreak was detected, the BSS was substituted by a commercially available BSS and endotoxin analyses were made for the BSS as well as the tap water. Even though the results did not shed light on the etiology, no new cases have been detected to date. It seems plausible to consider the BSS or the endotoxins formed in the ultrasound bath water as the cause of this TASS outbreak.

The peculiarity of this outbreak is that, even when three of the affected patients were submitted to anterior segment surgery, the common link is the appearance of the outbreak after vitreous surgery. We have not found in the literature the emergence of a TASS outbreak after vitreous surgery, which increases the relevance of this paper. It is difficult to explain the appearance of TASS in patients submitted exclusively to posterior segment operation but it is important to consider this entity in the event of any disproportionate inflammatory reaction of the anterior segment, even more so if its appearance develops in the form of an outbreak. To conclude, we should take into account that a TASS outbreak may appear also after vitreous surgery. Considering this diagnostic possibility instead of infectious endophthalmitis (from which it would be difficult to differentiate) could avoid the application of more aggressive treatments.

REFERENCES