

## Toxic Anterior Segment Syndrome in "Amistad Argelia- Cuba" Ophthalmological Hospital in Djelfa

Yisel Núñez Larín\*, Iramis Miranda Hernández, Iván Hernández López, Jesús Rubén Hernández Ramos and Isabel Obret Mendive

*Instituto Cubano de Oftalmología "Ramón Pando Ferrer", La Habana, Cuba*

**\*Corresponding Author:** Yisel Núñez Larín, Instituto Cubano de Oftalmología "Ramón Pando Ferrer", La Habana, Cuba.

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### Abstract

**Objectives:** To describe an outbreak of toxic anterior segment syndrome occurred at the cataract service of "Amistad Argelia-Cuba" ophthalmological hospital in Djelfa in 2015.

**Methods:** A cross-sectional descriptive study was carried out, which included 14 notified cases with diagnosis of toxic anterior segment syndrome, who had been operated on at the cataract service of "Amistad Argelia-Cuba" ophthalmological hospital in Djelfa, in the period of 13<sup>th</sup> to 17<sup>th</sup> April 2015.

**Results:** Phacoemulsification was the most used technique. The prelental membrane was the most frequently found sign, followed by ocular hypertension and corneal edema, respectively. All these cases recovered in 7 days. The common factor found in the 14 confirmed patients were the use for the first time of Viscoelastics HMPM Eye Visc viscoelastic model in our center to perform intraocular surgery in the anterior segment.

**Conclusion:** The coincidence of the introduction of this substance with the onset of outbreak and the lack of new case after its withdrawal has confirmed the suspicion that this is one of the possible causes of the outbreak of the anterior segment toxic syndrome.

**Keywords:** Anterior Segment Toxic Syndrome; Cataract; Phacoemulsification; Viscoelastic

### Introduction

Toxic anterior segment syndrome (TASS) is a sterile postoperative inflammatory reaction caused by some type of non-infectious substance that reaches the intraocular environment during surgery and causes damage to the intraocular tissues [1,2]. It usually occurs in outbreaks and most the cases have been described after surgery of the anterior segment, although the literature includes an outbreak of TASS where 5 cases are described, and with this it has shown that its appearance is possible after vitreous surgery [3,4]. Gram stain and cultures are negative and respond to steroid treatment [2].

Cataract surgery is currently a quick, relatively simple process and, in most cases, with good results [1,2]. However, there are still cases with TASS after the surgical treatment. The most affected structure is usually the corneal endothelium and the clinical features it presents are: corneal edema from limbus to limbus; extensive endothelial damage; anterior segment inflammation; fibrin deposits; increase in inflammatory cells; even hypopion (pus in the anterior chamber between the cornea and the iris); dilated and irregular pupils that

subsequently close and hardly expand, and damage to the trabecular meshwork with an almost constant increase in intraocular pressure. The most frequent symptoms are blurred vision with or without eye pain [2,3,5,6]. Fortunately, severe cases with sequelae are very rare and mild cases improve in a couple of weeks, and often go unnoticed. In the diagnosis, it is important to differentiate it from bacterial endophthalmitis to make a correct therapeutic approach [2,4].

If a TASS is suspected, topical steroid treatment will be instituted as soon as possible; otherwise, the damage may become permanent. Endophthalmitis cannot be ruled out until the response to topical steroids is clear [2,5]. Several causes are described in the appearance of TASS. Among them, the use of solutions for intraocular irrigation with pH, osmolarity and incompatible chemical composition, residues of viscoelastic devices, detergents, bacterial endotoxins, preservatives/vehicles of ocular medications and other impurities in the anterior chamber; the inadequate maintenance of the cleaning in equipment and instruments, the non-cleaning with air of reusable cannulas, the use of less than 120 cc of sterile non-ionized solution for the washing of handpiece and irrigation-aspiration probe, the presence of silicone particles of the cartridge used in the foldable intraocular lens injector, glove powder, the release of cloth lint from the surgical field in isolation; the toxicity of antibiotic use in irrigation solutions or instillation in the anterior chamber, among others, although it is difficult to establish the precise origin [1,2,4].

For the first time using a viscoelastic model Viscoelastics HMPM Eye Visc - a synthetic polymer of dispersive hydroxy propyl methyl cellulose with a molecular weight of 400,000 daltons, not very pseudoplastic, difficult to inject into the anterior chamber, which produces bubbles when injected, with little retrocorneal space formation and very difficult to aspirate - it was suspected that this could be the cause of the coincidence with the period of appearance of the outbreak. In the absence of the necessary means to rule out other causes, such as the analysis of the instruments and the study of the solutions used in the surgery, the medical team agreed to remove the viscoelastic and, once it was discontinued, no new cases appeared. The objective of this work is to describe the outbreak of the toxic syndrome of the anterior segment, which took place in our center.

## Methods

A descriptive, cross-sectional study was conducted in cataract operated patients at the "Amistad Algeria-Cuba" Ophthalmological Hospital, in Djelfa, Algeria, in the period from April 13 to 17, 2015. The sample was made up of 14 patients (eyes) notified (there were more but not notified in epidemiological form) with a diagnosis of toxic syndrome of the anterior segment in the immediate postoperative period of cataract surgery, who met the inclusion criteria: all notified patients who presented Symptoms and Signs of TASS. The variables of this study were the surgical technique, the ophthalmological signs and the time of the resolution period.

For the collection of the information, forms prepared by the Department of Epidemiology of said center were prepared, which facilitated the collection of the data provided by the doctors who had cases of patients with TASS. Descriptive statistics methods such as the calculation of absolute, relative frequencies (%) and standard deviation were used to present the results. The information was obtained from the postoperative evaluations. They were processed in the SPSS system for Windows and presented in the form of tables and figures for better understanding.

## Results

Figure 1 shows the distribution of patients according to surgical technique. The most performed was phacoemulsification in 92.8%.

The inflammatory membrane was the sign that appeared in the total of patients with toxic syndrome of the anterior segment, followed by post-surgical ocular hypertension for 42.86% and corneal edema in 28.57% (Figure 2).

Figure 3 shows the satisfactory evolution in all patients: 5 resolved before 3 days, 7 between 3 and 4 days and 2 in a period of 7 days.

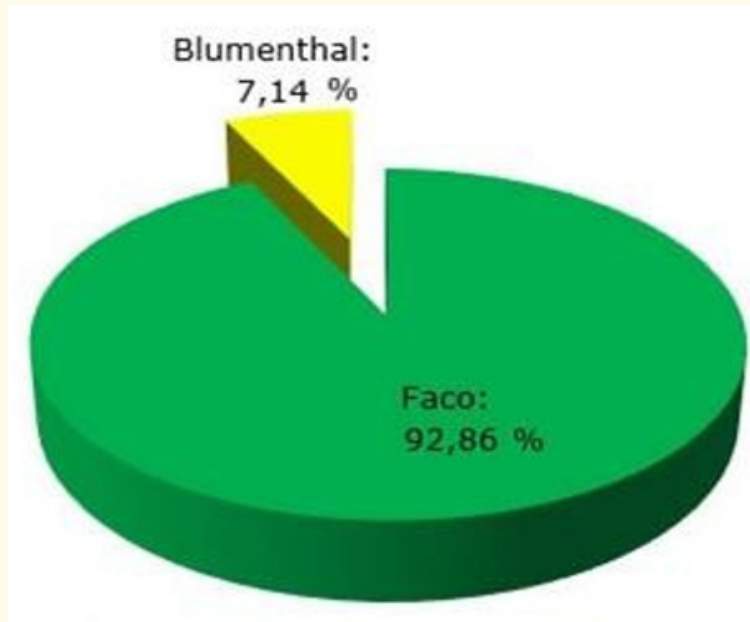


Figure 1: Patients distribution according to the surgical technique.

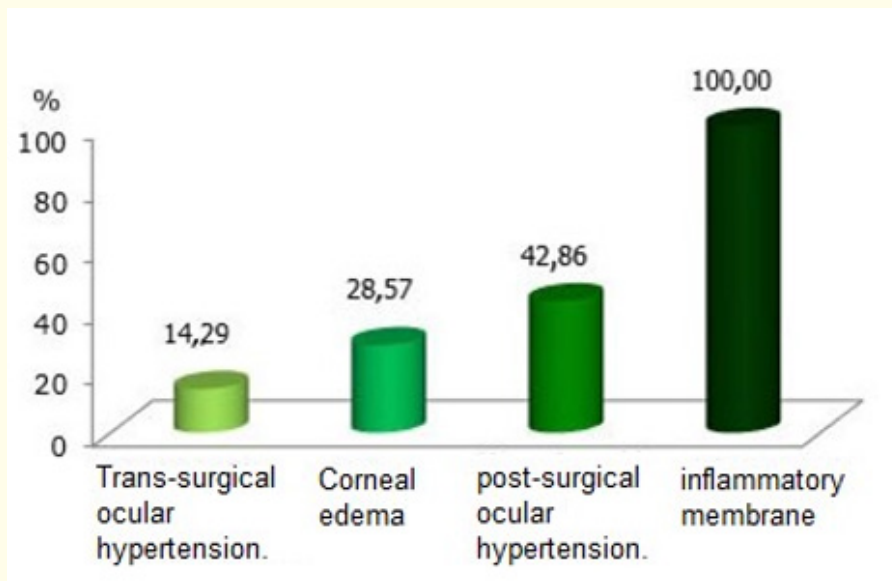
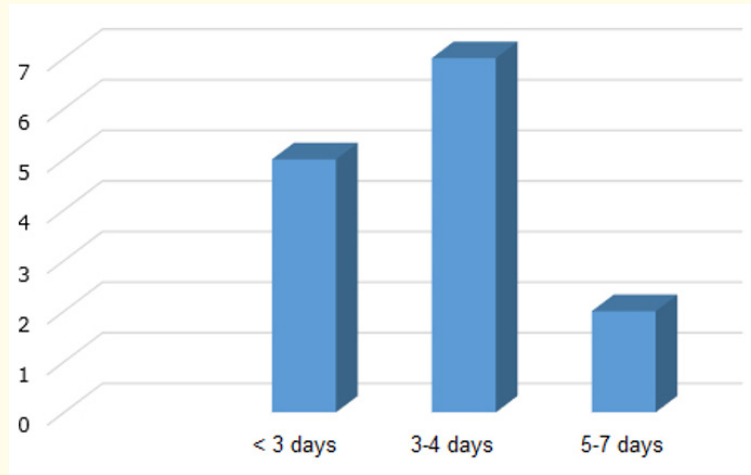


Figure 2: Most frequent signs found.



**Figure 3:** Patient distribution according to resolution period.

### Discussion

All patients presented as classic sign an inflammatory membrane, followed in order of frequency by ocular hypertension (42.86%), who had clinical improvement with topical antihypertensive, and corneal edema (28.57%). Inflammatory signs yielded with topical steroidal treatment. Andonegui and others, as well as Pedroso and Cetinkaya Servet, described in their studies that the pupillary membrane was the most frequent sign in patients with TASS after cataract surgery, followed by cellularity of aqueous humor and hypopyon [1,3,6].

In all cases of our study the symptoms and signs disappeared in a period of up to 7 days. This coincides with the study of Andonegui and others, who reported the disappearance of the inflammatory condition in all their patients between 4 and 7 days. Only two of the patients in this study needed treatment for more than 5 days, due to ocular hypertension, finally treated without any complications or anatomical or functional sequelae, which coincides with most authors, although the literature describes large sequelae in this syndrome, such as Pedroso and Cetinkaya, who described patients who needed trabeculectomy for ocular hypertension [1,6-10].

In the case series presented there was an outbreak of toxic anterior segment syndrome due to the use of a dispersive viscoelastic, according to clinical evidence. The syndrome disappeared when the viscoelastic referred was withdrawn. The coincidence of the introduction of the dispersive viscoelastic with the appearance of the outbreak and the absence of new cases, once removed, confirms the suspicion that this is one of the possible causes of the outbreak of toxic anterior segment syndrome.

### Conflict of Interests

The authors declare that there is no conflict of interest in this article.

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