



Nick Mamalis

Outbreak of TASS baffles American surgeons

By Devon Schuyler

A SUDDEN rash of cases of toxic anterior segment syndrome (TASS) has ophthalmologists in North America scratching their heads. More than 100 centres reported cases of TASS between March and July of this year.

"We've been having a difficult time getting to the bottom of what's going on with this most recent outbreak," said Nick Mamalis MD in an interview with *EuroTimes*.

Dr Mamalis heads the Intermountain Ocular Research Center at the University of Utah School of Medicine, which is devoted to evaluating unexplained cases or postoperative inflammation or endophthalmitis. The culprits are most likely related to instrument cleaning, sterilisation or medication use, however.

Dr Mamalis said that he used to hear from one or two surgeons or surgical centres a week with inquiries about TASS, but he suspected an outbreak when the number became five to 10. This surge led to the formation of an ad hoc task force along with Henry Edelhauser PhD, a TASS expert at Emory University in Atlanta; Walter Hellinger MD, an epidemiologist from the Mayo Clinic in Jacksonville; Arjun Srinivasan MD, a medical epidemiologist at the Centers for Disease Control and Prevention; and company representatives.

An unexplained increase

Centres are reporting anywhere from one to 16 cases, according to Dr Mamalis, but there's no way to know the true incidence of the disease because many cases go unreported, or are undiagnosed. The first few cases that an ophthalmologist or centre sees are often misdiagnosed initially as infectious ophthalmitis. But thanks to greater discussion of the condition in the literature, including a recent review article by Dr Mamalis and colleagues in *The Journal of Cataract and Refractive Surgery* (February 2006;32:324-333), surgeons are "getting much better at recognising TASS".

Dr Mamalis and his colleagues working with the US Center for Disease Control identified an earlier outbreak of TASS in late October and early November 2005. A common factor in these cases was the use of a balanced salt solution manufactured by Cytosol (Endosol and other brands) which was contaminated by endotoxins and was pulled from the market.

Although the researchers do not have a definitive explanation for the most recent outbreak, an analysis of data collected from more than 50 surgeons and surgical centres revealed numerous factors that may be responsible. These include improperly cleaned cannulas, ultrasound handpieces, or irrigation/aspiration tips; failure to rinse enzymes and detergents from instruments

using sterile deionised water; contamination of instruments by endotoxin in ultrasound water baths; and having inadequate time between cases to process and properly clean instruments. Dr Mamalis said that when nurses with TASS expertise are sent to surgical sites, they often report seeing "plugged" instrument tips.

"This tells us that they are not being adequately flushed," he commented.

Other potential culprits include the pre-operative use of nonsteroidal anti-inflammatory drugs, the use of intracameral anaesthetics or antibiotics, and the presence of bisulphite in epinephrine added to balanced salt solution.

Another common factor is the inserter for the intraocular lens which in many cases has not been cleaned because all the residual viscoelastic was not removed. It should be noted that residual viscoelastic can retain detergents which can result in TASS.

"This isn't a product issue at all. The problem seems to be related to some issue of cleaning, and/or additives to irrigating solutions," Dr Edelhauser told *EuroTimes*.

Dr Edelhauser suspects that most cases have been caused by improper cleaning, especially of cannulas, and recommends that surgeons get rid of reusable cannulas.

"And don't reuse disposable cannulas – I've had people do that," he cautioned.

He also recommends that surgeons use new phacoemulsification tubing for each patient, even though such tubing is sold as reusable.

The right steps to take

Dr Mamalis advised ophthalmologists to be alert to the symptoms of TASS after cataract surgery. The condition, which is often painless, is marked by blurry vision 12 to 48 hours after surgery. Clinical findings can include limbus-to-limbus corneal oedema, endothelial damage, inflammation of the anterior segment, fibrin deposits, hypopyon, dilated or irregular pupils, damage to the trabecular meshwork, and secondary glaucoma.

After surgeons are certain that they are dealing with TASS and not infectious endophthalmitis, they should immediately institute hourly treatment with prednisolone acetate (Pred Forte).

"You have to keep a very close eye on these patients. If you see them in the office that morning, you may even want to check them the same day in the afternoon," he said.

The next step is to begin an investigation to try to pin down why TASS occurred, which means talking to the entire surgical team: surgical nurses, operating room technicians, residents, physicians, pharmacists, and those involved with cleaning and sterilising instruments or ordering or

preparing medications. This also means submitting complete data – both a product questionnaire and an instrument re-processing questionnaire – to the Intermountain Ocular Research Center.

Although Dr Mamalis does not know whether there's been a European outbreak, he said he would like to get paperwork from surgeons in Europe who are seeing TASS to determine whether the phenomenon is worldwide.

Dr Mamalis said that he was encouraged to see the number of new cases decrease in early July, and hopes that he and his team will soon solve the mystery.

The precise cause may never be discovered, however, as Dr Edelhauser pointed out.

"You might narrow it down to two or three different areas, but the hospital will change everything at once. So you may never know the answer."

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TASS incidents should be reported to:

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