

## Comment on amniotic membrane covering promotes healing of cornea epithelium and improves visual acuity after debridement for fungal keratitis

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**Dear Editor,**

We congratulate Zeng *et al* [1] for their study entitled "Amniotic membrane covering promotes healing of cornea epithelium and improves visual acuity after debridement for fungal keratitis". The authors endeavored to present an alternative method for ophthalmologists in the treatment of a challenging case. We would like to express our reservations and ask for the attitudes of the authors about using amniotic membrane in the acute phase of fungal keratitis.

The defense mechanism against fungal infections of cornea and lungs mainly depends on neutrophils [2]. More than 90% of the cellular infiltrates in fungus-infected human corneas are reported to be constituted by these cells [3]. Reactive oxygen species and proteolytic enzymes released upon the infected tissues play the most critical role in the course of anti-infective process. Besides that, the balance between the host oxidant and the fungal anti-oxidant substances has lately

been discussed to be targeted for diminishing hyphal survival [2]. It has been proved that amniotic membrane promotes epithelial healing and controls myofibroblastic transformation and metalloproteinase expression which is critical for maintaining structural integrity and clarity of the cornea. However; amniotic membrane may suppress immunologic response by absorbing live inflammatory cells into its stroma and lead them to apoptosis [4]. Besides that, Lockington *et al* [5] have recently revealed that amniotic membrane can scavenge reactive oxygen species from its environment in an *in vitro* pilot study.

We think that antioxidant and anti-inflammatory features of amniotic membrane may be objectionable in the acute phase of fungal keratitis in which fungicidal activity is crucial. We suppose that amniotic membrane covering should be delayed until the infection is limited, or the risk of corneal perforation becomes prominent. We will be pleased to hear from the authors about their attitudes on this subject.

### ACKNOWLEDGEMENTS

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**Author Reply to the Letter**

**Dear Editor,**

We are happy to know that Dr. Ahmet *et al* are interested in our new published work.

As they had pointed out, reduction of oxidant substances and neutrophils by amniotic membrane may harm the defense mechanism of cornea, and promote the proliferation of fungus, that's why most of the eye doctors refuse the idea of covering the cornea lesion surface before they are sure that active infection of fungus has been totally controlled, we also hold such a principle.

The use of amniotic membrane in this paper is after debridement of the infectious lesion, we did such kind of surgery in a way different from the previously reported ones,

we sacrificed some relatively healthy cornea tissue in order to eliminate the fungus as clean as possible, thus the use of amniotic membrane could promote the healing of cornea epithelium and suppress the scar formation, without fearing that they promote the growth of fungus, this is the key point, which is important for the success of cornea healing. Unfortunately, not all of the cases could be controlled, because some types of fungus like *Aspergillus* growth in the vertical direction, thus could not be eliminated even we cut the cornea very deep. In such cases, a penetration keratoplasty are difficult to avoid (cases 9, 16 and 19). In fact, all of our cases received surgery because the infection could not be limited with medicine.

**Gui-Gang Li**