Concerns About Peer Review Process

I am concerned about the lack of proper scrutiny during the peer review process. Although I exemplify it in one paper in a field in which I have some expertise, I believe that this single case shows severe failure of peer review, and it should not have happened. I refer to the article by Nankivil et al. in the latest edition of IOVS Vol 55 No. 7. There seems to be no evidence of scientific rigor having been applied to the manuscript. Their diagram of specular reflection gives the impression that they are conducting the specular reflection off the lipid layer of the tear film. The purpose of the article was to determine if a saline or a viscoelastic were better for maintaining the corneal hydration during procedures where the eye was held open for considerable time. To this end, these drops were placed in the eyes, effectively destroying the lipid layer and tear film because the eyes were held open for the whole of the procedure. Hence, the specular reflection was presumably off these solutions rather than the lipid layer of the tear film. This does not invalidate the measurement, but it does invalidate the diagram unless the author can truly demonstrate that they continually measured the lipid layer during these 20-minute procedures. Nevertheless, a reviewer should have asked about this.

If it were the case, that the specular reflection was off the lipid layer of the tear film, then proper controls need to be done showing time courses following a blink from the healthy eye. Indeed, controls seem to be a bit of a problem. The authors may well have done controls, but these appear not to have been reported. We have no data on a control eye (i.e., what do the well have done controls, but these appear not to have been reported. We have no data on a control eye (i.e., what do the specular volumes look like on the open eye with no treatment?).

We do not have methodologic controls where the balanced salt solution plus (BSS+) or the viscoelastic was placed on a nonocular substrate (e.g., a glass slide) and the specular reflections taken. Had they been done, it is highly likely that a viscoelastic will dehydrate less quickly than a saline solution due to simple physical chemistry; hence, the role of the eye surface in the process is irrelevant. The paper would then be trivial indicating a physicochemical process and nothing more.

A number of critical terms were not defined. Dehydration rate is not defined and its use alone and in relation to hydration is very confusing. In the abstract, the aim was to measure the dehydration rate of the precorneal tear film. In the results they report in Figure 5, the rate of corneal dehydration using units of inverse seconds (s⁻¹) as the unit. The unit here does not make sense. In Figure 6, tear film evaporation rate with BSS+ is noted with units of inverse seconds. We are not told how they measured the tear film evaporation rate. Considering that they applied drops which displaced the tear film, I do not understand why they are not measuring the evaporation rate of the drops. This type of question should have been asked by the reviewers and answered by the authors. If my speculation is correct, and indeed they were effectively measuring evaporation from the drops, then the title, which includes precorneal tear film stability is very misleading and in fact erroneous.

In terms of the same procedural topic, we are never told the volume of the drops applied, not even if the drops of BSS+ were the same volume as the viscoelastic drops. Again poor peer review process. Figure 2 refers to before hydration and after hydration on the figures and the legend refers to tear film evaporation. Does this mean the corneas were dehydrated before adding the drops, or does it mean that they were lacking a tear film before adding a drop? If the tear film were diminished due to evaporation before adding a drop, then to what degree had the tear film been diminished before the drop had been applied and how did they control for this? If we are looking at tear film evaporation as the figure legend implies, then we really do need to be told something about the drop sizes, otherwise it is likely that we are just seeing evaporation from the drops. A minor point here is that in Figure 5 legend they talk about tear film evaporation rate and the data refer to corneal dehydration, and so it is very difficult to understand what they are talking about. This indicates to me very poor peer review.

With respect to Figure 6, we are not told anything about each of the data points. Was this in one animal, what was the frequency and volume of the drops? The correlation is extraordinarily suspicious. There are no data between 10 and 14 drops. In data that are repeated, there seems to be large variance (seven and nine drops), and in normal scientific viewing of data one would be very skeptical of the 14-drop data point as being an outlier. Remove this point and see what correlation exists or alternatively fill in the gaps between 10 and 14. The reviewing process had failed.

A minor point, which underlies lack of due diligence, is in the methods under “Procedure” points 3 and 4. Apparently the right eye was covered with a patch, a speculum inserted into the left eye and BSS+ was applied to the center of the right eye. Presumably this was in the center of the patch or did they really mean the left eye as I suspect?

Another minor point, there is no comment on animal 5 in Figure 5. Why is this animal so anomalous and what do the error bars mean?

This is very disappointing. To sustain credibility with the general public, government agencies, and commercial companies who financially support us, we all need to reflect on our responsibilities. We need to be value adding to society. As authors, we need to read the manuscript with scrutiny and not allow our names to be put on manuscripts unless we have contributed and have carefully read and accept the details of what is eventually published. In this case, it is remarkable that none of the nine authors picked up the presumed mistake associated with Procedures points 3 and 4, let alone other inconsistencies. As senior authors (leaders of groups), we need to be courteous to the reviewers by making sure that manuscripts by students and postdoctoral fellows are internally scrutinized and that the formal review process is not the first time articles are reviewed. As reviewers, we should not deliberately prevent manuscripts being published because they are simply against our views or treading on our territory. We need to be helpful to our colleagues to enable them to improve the quality of their manuscripts and the science behind them. This takes considerable time, effort, diligence, and often courage by the reviewers. Unless our institutions allow us this time in our workloads, then the standards will drop, which will cascade to drops in funding. We will have no one to blame but ourselves and our laziness.

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References


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