Methods for grading severity of ocular involvement in patients with mucous membrane pemphigoid

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Background

- Mucous membrane pemphigoid with ocular involvement (OcMMP) is a bilateral sight-threatening disease, estimated to occur in 64-89% of MMP patients, usually between ages of 30-90 with female predominance.¹
- Ocular involvement is thought to be due to the various biochemical and ultrastructural similarities common to the skin and cornea, which are both embryonically derived from the surface ectoderm.²
- OcMMP is characterised by ocular surface disease (OSD). Typically, cicatrising conjunctivitis with subepithelial fibrosis (Fig. 1) that progresses to symblephara formation, fornix foreshortening, corneal neovascularisation (Fig. 2), and ulceration.
- Scarring can also cause destruction of goblet cells, lacrimal gland ductules, and meibomian gland orifices leading to severe dry eye disease.³

Materials & Methods

The literature search was performed using three online databases: MEDLINE, EMBASE and Scopus. The following search terms were used: ['Pemphigoid, Benign Mucous Membrane'] in different combinations with ['clinical assessment tool', 'conjunctiva', 'cornea', 'disease severity', 'disease scoring', 'eye disease', 'fornix', 'grading', 'ocular', 'progression', 'staging system']. Articles of all languages were included using translations.

Results & Discussion

- Traditional methods focused on grading OcMMP severity using specific damage-based clinical parameters.
- Newer methods aimed to overcome identified difficulties by offering novel measuring techniques.
- Custom-designed fornix measurement tools have also been introduced (Fig. 3). However, these tools focused on limited parameters i.e. disease activity was inferred purely from shifts between assessments.
- Significant variation would also occur when trying to measure the surface area of the conjunctiva's 3-D structure and when exposing the conjunctiva due to distortion, lid laxity, and severely fibrosed fornixes.

- In 2017, international ophthalmic experts completed a Delphi Consultation and noted the incongruences of existing OSD scoring methods.⁴ They highlighted the importance of delineating clinical findings into 'activity' and 'damage' categories by creating the first universal 'toolbox' of parameters.
- This distinction can also be increasingly seen in the dermatological literature.
- Scoring activity as a separate entity, which can be reversed by treatment, would allow better appreciation of current severity and monitoring to prevent progression to permanent damage.

Table 1. Existing grading systems for OcMMP.

Grade	Characteristics
Foster (1986)	
I	Subconjunctival scarring and fibrosis.
II	Fornix foreshortening (any degree).
III	Presence of symblepharon, and degree.
IV	Ankyloblepharon, frozen globe.
Mondino & Brown (1987)	
I	0-25% loss of inferior fornix depth
II	25-50% loss of inferior fornix depth
III	50-75% loss of inferior fornix depth
IV	75-100% loss of inferior fornix depth
Tauber (1992) – subdivisions of Foster II and III into a-d corresponding to Mondino and Brown.	
II a-d	% loss of inferior fornix depth
III a-d	% horizontal involvement of symblephara
Rowsey (2004) - total of 3 measurements of the distance from the inferior limbus to the posterior edge of the retracted lower eyelid (5, 6, and 7 o'clock).	
35-45mm	<25% conjunctival loss
24-34mm	25-50% conjunctival loss
12-23mm	50-75% conjunctival loss
0-11mm	>75% conjunctival loss
Reeves (2012)	
Vertical grade: Distance from inferior limbus to start of fibrosis at 6 o'clock.	
Horizontal grade: % involvement of bulbar conjunctiva width 2mm above level of fibrosis, between the inner aspect of the nasal and lateral edges of the inferior posterior lid margin.	
a	<25% conjunctival loss
b	25-50% conjunctival loss
c	50-75% conjunctival loss
d	>75% conjunctival loss

Conclusions

- To the best of our knowledge, there is no recognised comprehensive method of staging and scoring the spectrum of complications in OcMMP.
- Incorporating activity and damage into future validated scoring tools would facilitate more comprehensive assessments and allow for evaluation of intervention outcomes in clinical trials, longitudinal monitoring of progression, and formulation of treatment plans.
- With the multidisciplinary nature of care for OcMMP patients, a standardised method could provide much needed commonality among clinicians.

Literature Cited

Table 1. Adapted from: Sobolewska B, Deuter C, Zierhut M. Current medical treatment of ocular mucous membrane pemphigoid. *Ocul Surf.* 2013;11:259-266.

Fig 3. Source: Khan IJ, Ghauri AJ, Hodson J, et al. Defining the limits of normal conjunctival fornix anatomy in a healthy south asian population. *Ophthalmology.* 2014;121(2):492-497.

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Acknowledgements

Thank you Dr. Revathi (DOS J: <http://dx.doi.org/10.7869/djo.2013.7>) for Fig 1. & 2. Supported by the UNSW Independent Learning Program. **Correspondence:** please address to brendon-lee@live.com.au & d.murrell@unsw.edu.au.