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## LETTER

### Letter to the Editor: Coinfection of Adenovirus with the Members of Herpesviridae in Ophthalmic Pterygium

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Pterygium is a wing-shaped fibrovascular lesion of the ocular surface that can invade the corneal surface reducing the visual acuity. Its pathogenesis has yet to be fully elucidated [1].

Recent evidence on neoplastic changes of limbal stem cells and molecular genetic abnormalities in pterygium suggested that prolonged exposure to ultraviolet (UV) radiation may promote its development. In addition, the presence of oncogenic viruses including Human papillomavirus (HPV), Cytomegalovirus (CMV), Herpes Simplex Virus (HSV) or Epstein-Barr virus (EBV) in pterygium has been reported by several studies, with prevalences ranging from very low to almost 100% of cases, probably, due to sensitivities in the technologies used, and the DNA template sequences used for Polymerase Chain Reaction (PCR) amplification [1, 2].

Although, HPV-induced formation of lesion is mostly supportive by epidemiological studies for an infectious etiology of pterygium but attempts to detect a specific "pterygium virus" have not been successful [3].

In this cross-sectional study, 65 confirmed Adenovirus human biopsy specimens of pterygium and 10 normal conjunctivae were conducted to determine the prevalence of CMV, EBV, HSV-1, HSV-2, Human Herpesvirus 6 (HHV-6) and Varicella Zoster Virus (VZV) (Table 1) [3 - 6].

Tissues from pterygium patients were positive in 8 (12/3%) for CMV, 3 (4/61%) for EBV, 1(1/53%) for HSV-2, 6 (9/23%) for HHV-6 and 1 (1/53%) were positive for VZV. None of the tissues were HSV-1 positive and the viral infection was not detected in any of the negative controls.

The presence of 29/23% herpesviridae family in pterygium, especially unexpected detection of VZV and HHV-6 strongly suggest that limbal stem cells can be considered as one of the sites of the latency of herpesviruses. Although, it seems that other viruses are present, resulting in the disorder which is chronically progressive.

In our previous study, all pterygia samples were positive for Adenoviruses DNA, hypothetically, playing a key role in pterygium, but coinfections Adenovirus with other viruses are reasonable to hypothesize that multiple viral infections might trigger pterygium-specific events with a synergistic action.

However, reported data shows that our studies is the first and only reported case of Adenovirus-induced formation of pterygium and its association with other viruses. More studies on various geographic regions are needed to clarify the role of Adenoviruses in pterygium formation and possible synergistic effect between viruses in the lesion.

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**Table 1. Sequences and positions of primers used for amplification of the viruses.**

Virus	Region	Band size	Method	Sequence (5' to 3')
HHV-6	the U22 open reading frame	99 bp	Real-time PCR	5'- TCGAAATAAGCATTAATAGGCACACT -3' 5'- CGGAGTTAAGGCATTGGTTGA -3'
CMV	major capsid protein (MCP) gene	264bp	PCR	5'-GAGCGCGTCCACAAAAGTCTA-3 5'-GTGATCCGACTGGGCGAAAA-3'
EBV	<i>Epstein-Barr nuclear antigen</i> (EBNA) gene	256 bp	PCR	5'-AGGGATGCCTGGACACAAGA-3' 5'-GCCTCGGTGTGACAGAG-3'
HSV-1	Glycoprotein D gene	296 bp	PCR	5-CGAAGACGTCGGAACAAC-3 5-CGGTGCTCCAGGATAAA-3
HSV-2	Glycoprotein D gene	296 bp	PCR	5-GGACGAGGCCGAAAGCACA-3 5-CGGTGCTCCAGGATAAA-3
VZV	Gene 29	264bp	PCR	5- ACGGGTCTTGCCGAGCTGGT-3 5-AATGCCGTGACCACCAAGTATAAT-3

### CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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