Reduction of Adenoviral Conjunctivitis: Prevalence of Polymerase Chain Reaction (PCR) Confirmed Adenovirus Among Patients Presenting With Acute Conjunctivitis

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Introduction

The Reducing Adenoviral Patient Infected Days (RAPID) is a double-masked randomized pilot trial investigating the efficacy of a one-time administration of 5% ophthalmic Povidone-Iodine (PVP-I 5%; betadine) for the treatment of qPCR confirmed adenoviral conjunctivitis.

- This contagious eye disease makes up a substantial percent of visits to primary care, urgent care, and eye practitioners alike1-2.
- Prevalence of PCR confirmed adenovirus in cases of acute conjunctivitis within the United States has ranged from 8% to 62%3-6.
- Breakdown by location and season are rarely provided, however understanding these trends is important in the accurate diagnosis and treatment of the disease.

The RAPID group documents the prevalence of PCR confirmed adenoviral conjunctivitis by location and season, and reviews the literature regarding adenoviral prevalence in the United States.

Methods

- From October 2015 to March 2018, eight centers in seven geographically diverse regions in the United States screened patients presenting with clinical signs of acute conjunctivitis for eligibility in the RAPID pilot study.
- Patients > 18 years of age with symptom onset ≤4 days prior to presentation were screened; all were included in analysis regardless of eligibility for randomization.
- Tear samples were collected from the first affected eye and evaluated by qPCR.

Results

- In total, 25/154 (16.2%) of patients screened were qPCR positive for adenoviral conjunctivitis.
- 11.3% (6/53) Winter, 27.0% (10/37) Spring, 23.8% (5/21) Summer, and 9.3% (4/42) Fall.
- In 4 prior reports, the prevalence’s of PCR confirmed adenovirus in the USA were found to be: 62.0% (31/50); July-October; Philadelphia, PA4.
- 27.2% (34/125); 24 months duration; 8 ophthalmology practices/centers within the USA5.
- 6.1% (44/722); 36 months duration; Baltimore, MD6.
- 21.7% (10/46); June-September; Rochester, MN6.
- Overall qPCR determined prevalence across 5 USA studies including RAPID was 15.7% (144/917).

References

5. Sambursky RF; Ferman M; Cohen EI. The prevalence of adenoviral conjunctivitis at the Wilmer Eye Hospital Emergency Room. Ophthalmology. 2007 May;78(5):136-9.

Discussion

Adenoviral conjunctivitis has been reported as one of the leading causes of acute conjunctivitis. Our study, as well as a review of the literature reveals the following:

- The prevalence of PCR confirmed adenovirus in patients presenting with acute conjunctivitis in the United States has been shown to be lower than previously reported.
  - At 8 sites nationwide, RAPID prevalence was 16.2%.
  - Meta-analysis prevalence was 15.7% (139/917).
- The prevalence of PCR confirmed adenovirus varies considerably by season and clinic location.
  - Highest prevalence was in spring, however considerable variation was seen year-to-year.
- Greatest number of cases of acute conjunctivitis occurred in winter, however a lower proportion of patients were adenovirus positive by qPCR.

Understanding the prevalence of adenoviral conjunctivitis both in relation to season and location is important in the accurate diagnosis and treatment of the condition. The RAPID group welcomes further investigation into the prevalence of adenoviral conjunctivitis across optometric, ophthalmologic, and all other types of healthcare practices within the United States.

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Clinical Trial Registration: https://clinicaltrials.gov/ct2/show/NCT02472223