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ABSTRACT

TITLE: Improving accuracy of adenoviral conjunctivitis diagnosis

ABSTRACT BODY:

Purpose: To improve diagnostic accuracy of adenoviral conjunctivitis (Ad-Cs) with a multivariate model using presenting signs and symptoms.

Methods: Patients with acute red eye(s) and presumed Ad-Cs were enrolled at 9 clinics for eligibility in the Reducing Adenoviral Patient Infected Days (RAPID) study. Inclusion criteria were ≥ 18 years old with

symptoms ≤ 4 days. The initial visit included conjunctival swab sample for qPCR Ad-Cs analysis, AdenoPlus point-of-care immunoassay (POCT) (QuickVue Test by Quidel, San Diego, CA) and the following clinical signs and symptoms (Table 1).

Variables were first screened based on the random forest variable importance measures. Penalized logistic regression was used to select a subset of variables that differentiated between Ad-Cs positive and negative patients. "Area under the curve" (AUC) was used to compare the prediction performance of different models.

Results: Of 212 participants, 185 had conjunctival swab samples, POCT and screening examination, of which, 30 tested positive for Ad-Cs by qPCR and 155 tested negative. The POCT had positive and negative predictive values of 50% and 98.5%, respectively. AUC for differentiating between qPCR positive and negative patients was 0.84 for slit lamp and physical exam findings, 0.69 for exposure factors, 0.76 for systemic symptoms, 0.82 for patient-symptoms and 0.87 for POCT. When the POCT was added to slit lamp and physical exam findings, the AUC increased from 0.84 to 0.95.

Conclusions: Although clinical findings such as lid edema, serous discharge, redness, conjunctival follicles and presence of pre-auricular nodes can provide reasonable accuracy in the diagnosis of Ad-Cs, when available, POCT can further improve diagnostic accuracy.

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