

# **A Novel Molecular Approach Applied to Enteroviruses Surveillance in Northern Taiwan, 2008-2012**

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## **Background/Objective**

Enteroviruses include over 100 serotypes and usually cause self-limited infections with non-specific symptoms in children, with the exceptions of polioviruses and enterovirus 71 which frequently cause neurologic complications. Therefore, early detection and serotyping of enteroviruses are critical in clinical management and disease surveillance. Traditional methods for detection and serotyping of enteroviruses are virus isolation and immunofluorescence assay, which are time-consuming. In this study, we evaluate a novel molecular test for detection and serotyping of enteroviruses in clinical samples.

## **Method**

Four hundred and thirty one throat swabs were collected from pediatric outpatients with enterovirus-like illnesses (hand-foot-mouth disease, herpangina, and non-specific febrile illness) in northern Taiwan, 2008-2012. Virus isolation was conducted using multiple cell lines and isolated viruses were serotyped using immunofluorescent assay. In the molecular test, a novel Consensus-degenerate hybrid oligonucleotide primers (CODEHOP) platform was used to detect the VP1 genes of enteroviruses. Amplified nucleotides were sequenced for genotyping by phylogenetic analysis.

## **Result**

Among the 431 cases, 207(48.0%) and 247(57.3%) were tested positive by CODEHOP and virus isolation, respectively ( $p < 0.0001$ ,  $\chi^2$  test). Overall, agreement and disagreement proportion between the two tests are 87.5% (377/431) and 12.5% (54/431), respectively ( $p < 0.0001$ , McNemar's test). There were 198 cases positive by both tests, and 188 had agreed serotypes and 10 had disagreed serotypes. Eight of the 10 disagreed cases provided pair sera and five of them showed consistent serotype with the VP1 CODEHOP test.

## **Conclusion**

The VP1 CODEHOP test performed well for detection and serotyping of enteroviruses in clinical specimens and could reduce unnecessary hospitalization cares during enterovirus seasons. In addition, the molecular diagnosis can be used to proved early alarm of EV71 circulation in surveillance systems.