THE PATHCARE NEWS

Rhinovirus and Enteroviruses: Co-detection in BioFire panel

The genetic similarities between rhinoviruses and enteroviruses may lead to cross amplification in molecular assays. A positive outcome for these targets on the current multiplex assay (BioFire) in use in our laboratory may indicate the presence of either of these viruses or both.

If a positive rhinovirus/enterovirus outcome on the BioFire in conjunction with the clinical picture are inadequate for a diagnosis, further testing may be done to distinguish poliovirus and coxsackievirus. Echoviruses and numbered enteroviruses are not available.

Virus (and samples)	TAT
Coxsackie (SST or CSF)	4-5 days
Polio (SST or stool) Specific forms need to be completed for Polio cases	14 days

Clinical features which may direct a specific diagnosis are as follows:

Rhinovirus:

It is the etiologic agent of most colds, but can infect the lower respiratory tract and cause asthma exacerbations (hospital asthma admissions and asthma related mortality correspond to the rhino-viral peak). Asymptomatic infections are common in older children and adults.

Adults: usually no fever; nasal discharge, nasal obstruction, cough and/or sore or scratchy throat. Symptoms usually resolve in 5-7 days.

Children: may initially have a fever; cough; nasal discharge and obstruction (more frequent than in adults). Symptoms and signs last longer in children; 70% may still have symptoms by day 10.

Enteroviruses:

These are ubiquitous viruses chiefly transmitted through fecal-oral contact. Infectious virus is shed from the upper respiratory tract for 1-3 weeks and from feces for 3-8 weeks. Maximum communicability is in the first 2 weeks after infection.

Polioviruses are the prototypic enterovirus while the non-polio enteroviruses include coxsackieviruses (group A and B), echoviruses and numbered enteroviruses (e.g. EV A71). More than 90% of infections with non-polio enteroviruses are asymptomatic or an undifferentiated febrile illness.

Possible Clinical Features:

Exanthema and enanthems:

Hand, foot and mouth disease (HFM): Mostly children; fever, oral vesicles, peripherally distributed small, tender cutaneous lesions on the hands, feet, buttocks and (less commonly) genitalia. Enterovirus A71 may also involve the CNS (brainstem encephalitis), pulmonary edema and haemorrhage, heart failure. Coxsackie A6 may also cause vesiculobullous lesions with a wider cutaneous distribution.

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Herpangina: The group A coxsackieviruses are the principle cause; vesicular enanthem of tonsillar fauces and soft palate; fever; odynophagia. Mostly children 3-10 years of age. Moslty summer outbreaks.

Maculopapular eruptions: Particularly echovirus, but also other enteroviruses. Mostly non-specific with little distress. Fever for 24-36 hours, followed by discrete, nonpruritic, salmon-pink macules and papules.

Petechiae and purpura: Echovirus 9 and coxsackievirus A9. May be confused with meningococcal disease especially if aseptic meningitis also occurs.

Urticaria-like eruptions: Occasionally seen with coxsackievirus A9.

Central nervous system infections:

Viral (aseptic) meningitis: the most common CNS manifestation. Cause > 90% of cases in infants. Mostly Group B coxsackie- and echoviruses. When including older children and adults, enteroviruses cause > 50% of all cases. Complete recovery may be expected within 3-7 days of onset. May last longer in adults.

Encephalitis: Enterovirus cause about 5% of all cases. Affects all ages. Acute encephalitis may range from mild illness to fatal disease.

Acute paralysis and brainstem encephalitis: Acute flaccid paralysis has been reported with many enterovirus serotypes, including polioviruses, enterovirus D68 and enterovirus A71. Rare cases of brainstem encephalitis with non-cardiogenic pulmonary edema and a rapidly fatal course have been described with enterovirus A71.

Ocular infections:

Acute hemorrhagic conjunctivitis is highly contagious; causes pain, lid edema, subconjunctival haemorrhage. It is self-limited; rarely may cause permanent visual impairment. Mostly caused by enterovirus D70 and coxsackievirus A24; mostly tropical coastal areas. Symptoms peak in 2-3 days, and resolve in 10 days.

Pleurodynia:

Acute illness with fever and paroxysmal spasms of the chest and abdominal muscles. Mostly during the summer among adolescents and adults. The most important cause is group B coxsackievirus. May also be caused by echoviruses and group A coxsackievirus. Illness usually lasts for 4-6 days. Children have milder disease than adults.

Myopericarditis:

Severity may range from asymptomatic disease to fulminant disease with intractable heart failure and death. Group B coxsackieviruses are most frequently implicated.

Respiratory disease:

A wide spectrum of respiratory illness may be seen. Both upper and lower respiratory tract may be implicated. Sore throat, cough, and/or coryza, bronchiolitis, pneumonia, respiratory failure, wheezing, dyspnea, hypoxia, perihilar infiltrates, children with asthma are disproportionately affected. Acute noncardiogenic pulmonary edema may be associated with severe enterovirus A71 encephalitis.

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