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Enterovirus D68

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The Virus

Enterovirus D68 (EV68) - "Enterovirus D68: Tidings to the Family Picornaviridae, genus Enterovirus, and species Human enterovirus 1" (Kaida et al., 2011, para. 2). It is a small nonenveloped RNA virus (Jang et al., 2012). EV68 "shares characteristics with rhinoviruses, such as infection of the respiratory tract and acid lability" (Jiang et al., 2012).

Outbreaks

EV68 was first isolated in 1962 in California, where it was associated with bronchiolitis and pneumonia in children (Linsuwanon et al., 2012). EV68 was newly identified from 1962-2007. Since 2008, several outbreaks of EV68 have been identified. The Philippines had an outbreak October 2008 - March 2009, Japan had an outbreak July - October 2010, and the Netherlands experienced an outbreak August-November 2010. The United States has had three prior outbreaks: one in Georgia in September 2009, one in Pennsylvania in September 2009, and one in Arizona August-September 2010 (Imamura et al., 2011).

From mid-August to the present time, the USA has had 186 confirmed cases in 47 states as well as the District of Columbia ("Enterovirus D68 in the USA"). Most of the confirmed cases have been among children. EV68 "has been detected in specimens from 11 paralytic who died" ("Enterovirus D68 in the USA").

Testing

Testing is not done on a routine basis. Nasopharyngeal or oropharyngeal swabs are collected for testing. In Ohio, testing must be approved by the Ohio Department of Health and specimens are sent to the CDC for testing ("Enterovirus D68, 2014"). The CDC has developed a test with just a few days turnaround for results ("Enterovirus D68 in the USA").

Preventing Spread of EV68

Prevention is key to decreasing the spread of EV68. Preventative techniques include good hand washing, not sharing cups and eating utensils, covering coughs and sneezes, regular disinfection of frequently touched objects, and staying home when sick. Avoid touching eyes, nose, and mouth.

Educating Parents

Because of the all media attention, parents may be terrified of the spread of this virus. Teach parents the importance of preventing the spread of all viruses, including EV68, by the aforementioned strategies. Encourage them to teach their children. Parents of asthmatics need to be aware of the spread of the virus due to the risk of exacerbations. The spread of EV68 may also indicate a link between respiratory infections and neurological conditions. Remember, parents know their children better than we do.

References


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Pathophysiology

Several pathogenic viral mechanisms have been identified. They include viral implantation at the portal of entry, local replication, shedding of the virus into the environment (Baron, Forn, & Albrecht, 1996). Viral affinity is determined by cell receptors, "card transcription factors that recognize viral promoters", cell’s ability to support replication of the virus, as well as local temperature and pH (Baron, 1996, para. 3). The primary site of infection of airway viruses is the epithelial cell of the airway (Jacoby, 2004). Airway epithelial cell infection "leads to functional changes that may initiate and stabilize the early inflammatory and immune responses" (Jacoby, 2004, para. 2). The epithelial cells then "release a wide range of inflammatory cytokines" (Jacoby, 2004, para. 2). Marked changes are noted in sensory nerve function, which may contribute to cough and bronchoconstriction. Vagal fibers" (Jacoby, 2004, para. 5).

Transmission

EV68 is spread by coming in contact with an infected person or their secretions, especially respiratory secretions. "[W]hat Families Need to Know," (2014). The virus can also live for some time on inanimate surfaces that have been in contact with secretions. "Separating Fact from Fiction," (2014).

Signs/Symptoms

Typical signs and symptoms include fever, runny nose, cough, sneezing, and body aches; while more severe symptoms include wheezing and dyspnea ("EV68," 2014). Clinical diagnosis consists of asthma exacerbations, pneumonia, and upper respiratory infections (Rahamat Langendoen et al., 2011). EV68 has also been implicated in some neurologic symptoms: "limb weakness or paralysis," "cerebral neural dysfunction and abnormalities" in gray matter of the spine (Wilson & Botelho, 2014, para. 12)." Asthmatics seem to be more severely affected by EV68.

Prevention

Because of the all media attention, parents may be terrified of the spread of all viruses. Teach parents the importance of preventing the spread of all viruses, including EV68, by the aforementioned strategies. Encourage them to teach their children. Parents of asthmatics need to be aware of the spread of the virus due to the risk of exacerbations. The spread of EV68 may also indicate a link between respiratory infections and neurological conditions. Remember, parents know their children better than we do.

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"Enterovirus D68 in the USA" on CDC Picture from "Enterovirus D68 in the USA" on CDC