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Opinion

COVID-19 Infection in Children; Non-Respiratory Manifestations: Editorial

Hilal Al Hashami*

Pediatrics Infectious Diseases, Lean Healthcare Certification, Royal Hospital, Muscat, Oman

***Corresponding Author**: Hilal Al Hashami, Pediatrics Infectious Diseases, Lean Healthcare Certification, Royal Hospital, Muscat, Oman.

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By the end of December 2019; an emerging novel coronavirus causing unexplained pneumonia was recognized in Wuhan city Hubei Province, China. This novel coronavirus is named internationally as COVID-19 [1].

Out of 9692 confirmed cases (by 30th of January 2020); 28 cases were children cases under 18 years of age [2]. and 2% out of 72,314 reported cases were children as of February 11th, 2020 [3]. Infants of less than one year of age have also been reported [4].

Children acquired novel coronavirus infection through close contact with infected cases [5]. The most common manifestation of COVID-19 infection in children is respiratory symptoms [6]. COVID-19 can also present with non- respiratory symptoms such as gastrointestinal symptoms like: poor feeding and diarrhea. CNS symptoms such as headache. Other reported manifestations include fatigue and cyanosis [7]. Pharyngeal edema has been reported as a manifestation of this infection in children as well [8]. Radiological changes in chest CT scan of asymptomatic children have been reported [9]. Infected neonates may present with fever and vomiting [10]. Wenhao Zhou., *et al.* reported feeding intolerance and cyanosis as presenting symptoms of COVID-19 infection in neonates [11].

Children with their mild manifestations or even being asymptomatic play a major role in spreading the infection to adult's population [12]. This potential role of spreading the infection among household contacts of children become more significant with the evidence of prolonged gastrointestinal shedding of the virus especially in non-toilet trained infants [13].

One of the largest retrospective studies that looked into the epidemiological characteristics of COVID-19 infection in children conducted by Dong Y., *et al.* and his team, in their study, out of 2143 Pediatric Patients:43.4% were girls, more than 90% of studied children had no symptoms, infants less than one year of age are more susceptible to severe and critical infection 10.6% of studied children with decrease in infection severity in older children [14]. The exact reason behind mild illness caused by COVID-19 in children is not yet known. It has been observed that countries which implemented BCG vaccine in the national vaccination program affected less compared to the countries who have no universal BCG vaccination [15]. With this observational correlation we may anticipate severe COVID-19 infection in children from the countries with no universal BCG vaccination policies compared to the data from China.

Although novel corona virus in children causes mild symptoms; it is very important to recognize signs of critical cases such as: ((1. Dyspnea: respiratory rate > 50 times/min for 2 - 12 months old; > 40 times/min for 1 - 5 years old; > 30 times/min in patients over 5 years old (after ruling out the effects of fever and crying); 2. Persistent high fever for 3 - 5 days; 3. Poor mental response, lethargy, disturbance of consciousness, and other changes of consciousness; 4. Abnormally increased enzymatic indexes, such as myocardial enzymes, liver enzymes, lactate dehydrogenase; 5. Unexplainable metabolic acidosis; 6. Chest imaging findings indicating bilateral or multi-lobe infiltration, pleural effusion, or rapid progression of conditions during a very short period; 7. Infants younger than 3 months; 8. Extra-pulmonary complications; 9. Coinfection with other viruses and/or bacteria)) [16].

Children continue to shed the virus after infection up to 12 days in their nasopharyngeal swab [17]. Viral shedding of COVID-19 in stool is been reported [18], but the risk of fecal-oral transmission has not been documented so far [19].

With current COVID-19 pandemic; most countries implemented social distancing polices and home confinement in order to control the spread of the virus which have a major impact on children both physical and psychological effects. Parents play an important role in alleviating these effects on their children [20].

This report highlights the non- respiratory manifestations of COVID-19 infection in children and the importance of early clinical suspicion to screen and investigate them as most infected children will be either asymptomatic or have atypical presentations.

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