

Understanding the resurgence and control of measles in Brazil

Measles is a highly transmissible disease caused by RNA virus, Morbillivirus gender, and Paramyxoviridae family. An individual infected with measles can transmit the disease to 12-18 individuals. Other characteristic of measles is the period of long transmissibility of the virus: six days before the exanthema to four days after the appearance.⁽¹⁾ The measles was controlled in Latin America and Brazil, which received the certification of eradication in 2016. However, we lost the certification in the end of 2018 due to the advance of outbreaks that have been occurring to the present date.^(2,3)

Measles is a potentially severe disease that causes fever, coryza, conjunctivities, and red rash on the body that starts in retroauricular region and spread along the face, trunk and limbs, the so called craniocaudal distribution. Classic injuries of Koplik that are injuries measuring 2 to 3mm of diameter, discretely elevated, white with erythematous base, located in internal region of oral mucous, in the high of second higher molar, are observed in some cases, mainly before exanthema, which disappear within 48 hours.

Measles have the ability to immune response for other diseases. Therefore, this disease can evolve with bacterial infection complications such as ear infections and pneumonia, especially among children younger than 5 years of age who are malnourished, and immunosuppressed.

Measles in children with vitamin A deficiency associated with malnutrition has more severe evolution and can cause blindness. Another rare chronic complication (incidence among 4 to 11 cases by 100,000 people) is image result for subacute sclerosing panencephalitis, a degenerative disease that affects children and young adults and is caused by persistent infection of encephalous virus as consequent chronic immunological response.⁽¹⁾

Measles infection during pregnancy is associated with increase of complications risk, including miscarriage, premature birth, neonatal disease, low birth weight, and maternal death. Although studies are not conclusive regarding the teratogenic effect of measles virus. Importantly, pregnant women must not be vaccinated because vaccines are composed of live attenuated microorganisms. The same approach should be taken for immunosuppressed individuals, the prevention of infection in pregnant women must be done using post-exposure prophylaxis with intravenous immunoglobulin.

What have caused measles resurgence in Brazil? Notified cases of measles worldwide have growth by 300% within the first three months of 2019

in comparison with same period of 2018. The World Health Organization alerted that until the end of March 2019, 170 countries have notified 112,163 cases of measles.⁽²⁾

The genotype that is involved in outbreak in Brazil is the D8, the same that disseminated in Europe and Venezuela, Colombia, and other Latin America countries.

The virus has entered in Brazil carried by tourists and susceptible migrants who developed the disease. Subsequently, Brazilian authorities learned that a lower vaccination covering existed, less than 95%, initially in North region of the country. After, be introduced and disseminated to an more crowded areas such as southeast region, with greater impact in the large city of Sao Paulo. Although vaccination covering for measles that existed in city of Sao Paulo, around 90%, this covering was not enough to prevent the disease to spread. Currently, measles was disseminated to a number of Brazilian states. And until October 2019, we notified 49,613 suspected cases of measles in Brazil. Of these, we confirmed 10,429 (21.0%) cases. And, of these, 8,235 (79.0%) by laboratory criteria and 2,194 (21.0%) by clinical epidemiological criteria.⁽³⁾ Vaccine coverage higher than 95% are the most efficient way of maintaining the population free of measles, the so-called herd immunity, therefore, preventing the virus circulation, in case of introduction of any case.

Vaccination against measles is safety and it is the most efficient way to prevent the disease. Unfortunately, we had anti-vaccine groups worldwide, and some religious communities have spread mistaken information. The diffuse of fake news about vaccines in social medial, such as those related to vaccine as cause of severe adverse reactions, had influenced a number of people to not vaccinate their children and themselves, therefore, increasing the number of susceptibilities, and enabling the resurgence of already eliminated diseases.

The current schedule of vaccination of the Ministry of Health in Brazil includes two doses of vaccines for measles associated with protection of other virus. The first dose of viral triple vaccine covers measles, mumps, and rubella. Health professionals must take two doses of vaccine, in case they have taken the vaccine after 12 months of age, and keep they must keep their immunization record updated.

Entities in municipalities, states, and federal public health have performed actions to prioritize the transmission chain, applying blockage vaccination in hospital, schools, institutions and within community. The blocker vaccination is a strategy that has been efficient. In Hospital Sao Paulo, Unifesp (HSP-Unifesp), in June 20, 2019 we identified a medical student from 6th grade, who was doing his internship at HSP-Unifesp, with suspicion of measles (which was confirmed, posteriorly). After notification of the case, the hospital started a vaccination campaign to immunize (blockage) professionals, starting with those who had close contact with the student.

In 4 days, the hospital applied 1,250 doses of the vaccine. No case of measles was notified among students and professionals of the hospital within the following 30 days. This was not an isolated experience, blocking vaccination in suspicion of measles case, was used in other institutions as a successful strategy.

Measles needs to be compulsory notified and it must be notified in case of suspicion to enable time for appropriate blocking measures.

Few measles cases have end-up in hospitalization, and so far, the disease has shown lower severe evaluation than we known from the past. Another factor is that we have seen individuals with measles who have taken 2 doses of vaccine in childhood, but developed the disease, and some of them, also, with positive IgG for measles in infection suspicion, which is indication of previous exposition to the vaccine virus or to the wild virus. Although these cases were minor, it is possible that level of antibody reduces as time pass or by immunological response to genotype D8 to be less efficient, in addition to genetic factors, however, only hypothesis can explain the clinical situations that we are facing in this outbreak.⁽⁴⁾

Other concern is intra-hospitalar transmission. All hospitalized patient with measles must be placed in quarantine and maintained in standard precautions and aerosol. The patient should receive, during emergency care, a surgical mask to avoid dispersion of droplets and health professional must be using a PFF2 mask (facial protection type II – N95) during the entire care.⁽⁵⁾

Of note is that a number of infectious diseases that resurged recently, change its natural history, both in clinical and in epidemiological chain. Current diagnostic and technical resources is able to provide better information about the pathogenesis and measures of control, such as yellow fever, toxoplasmosis, viral hepatitis and, more recently, measles. This situation should be taken as an opportunities to conduct further studies and teach about infectious diseases.

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