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Measles: A Nightmare of 21st Century?

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Measles is a highly contagious acute viral disease that spreads through the air, when an infected person coughs or sneezes. It is so contagious that every person that nine out of ten persons around him or her, will also become infected if they are not protected.

We can see that the disease is rising in most countries and in 2018, in Asia, the most affected place is in Philippines, in Europe we can see that Ukraine is increasing significantly compared to the rest of others European countries and Brazil is the country most affected the in South America region (Figure 1).

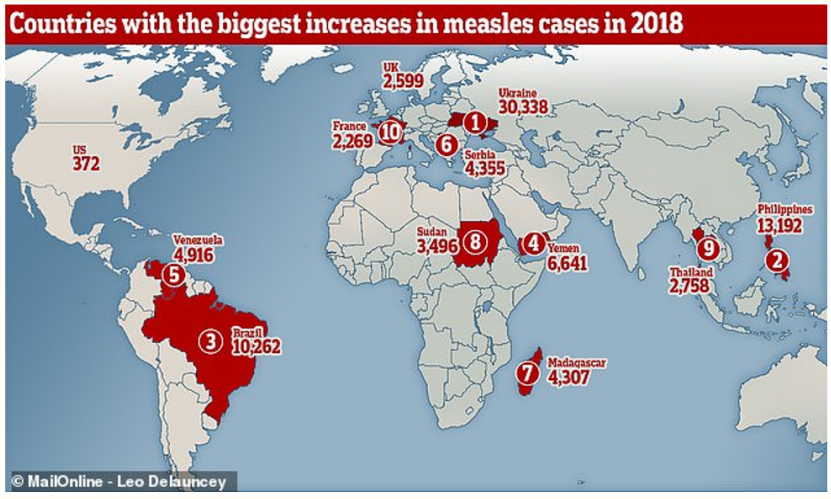

Figure 1: *Most countries affected in 2018.*

Measles virus is an enveloped RNA virus. When someone get the disease, will have a lifelong immunity.

The transmission is done with direct droplets or in rare occasions by airborne spread.

The transmission area can go until 6 feet distance when the patient coughs or sneezes.

Are more frequent in temperate areas with peak in in late winter and spring.

The contagious period is from 4 days before the rash to 4 days after the appearance of the rash.

In immunocompromised patient, will have prolonged excretion of the virus in the respiratory tract.

The incubation can be form 8 - 14 days, up to 21 days from exposure to onset of symptoms.

The clinical manifestations included: fever, coryza, cough, conjunctivitis (some photophobia), stomatitis, pathognomonic enanthema (Koplik spots: tiny white spots with bluish-white centers on a red background found inside the mouth on the inner lining of the cheek), followed by maculopapular rash, from behind the ears, face, spread to trunk and extremities, maculopapular rash that becomes confluent. The rash fade after 5 days and later appear hyperpigmentation and peeling (Figures 2-4).

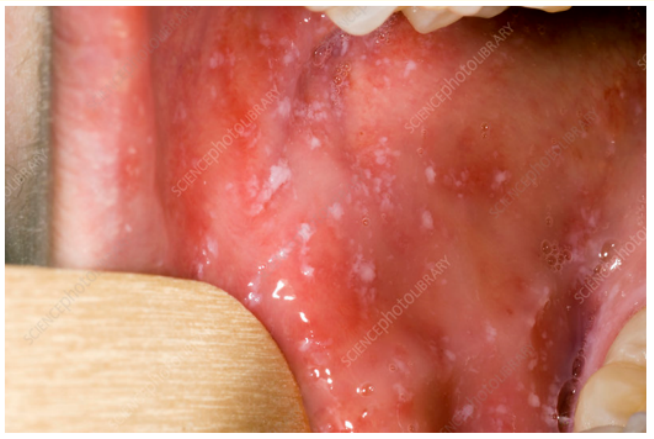

Figure 2: *Koplik spots.*

Figure 3: *Typical measles rash.*

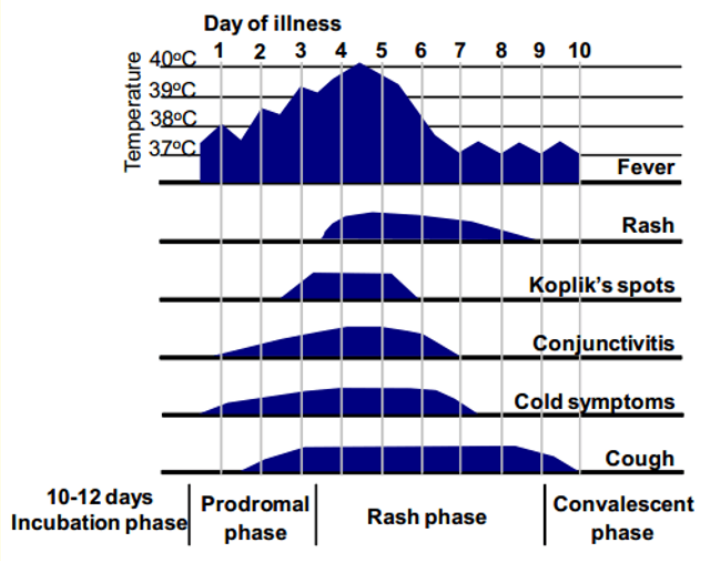

Figure 4: *Natural course of measles.*

The complications are around 7 in 100 cases with clinical measles.

Otitis media, bronchopneumonia, laryngotracheobronchitis, diarrhea is common.

Acute encephalitis is rare, 1:1000. In very rare cases, subacute sclerosing panencephalitis (SSPE), a degenerative central nervous system disease, with behavioural and intellectual deterioration and seizures that occurs 7 - 11 years after wild-type measles virus infection, appear in 4 - 11 per 100,000 measles cases.

There are two mainly diagnostic tests: 1 - Serology test with the determination of IgM antibody. The sensitivity depends on timing of specimen collection and immunization status. In 20% of cases we can find false negative within 72h of rash onset. The IgM is detectable for at least 1m after rash in unimmunized people but absent or transiently positive in immunized patients. 2 - Measles RNA by RT-PCR, collect in throat or nasopharyngeal secretions.

How we manage these patients?

They need to be isolated at home or in a hospital room. It is very important to have a good hydration. The treatment is basically symptomatic. Vitamin A is recommended by WHO, because can appear Vitamin A deficiency for 2 - 4 weeks.

The dose that is used is for 2 days according to the age: 200 000 IU (> 12y), 100,000 IU (6 - 11m) and in patients younger than 6 months, 50,000 IU.

All measles cases need to reported to CDC as soon as possible for contact tracing and also need to inform infection control team of the hospital to avoid spread the disease to the staffs.

What are the control measures?

MMR vaccine is important for all population. In those people that don't remember that have done the vaccine or get clinical measles, is recommended to do the measles vaccine. Infants are protected during the first 6 months of life due to maternal antibodies.

The vaccination program included 2 doses of MMR vaccine, received after 12m of age and the second dose only can be done at least 28 days apart from the first dose.

Even with the 2 doses of vaccine, 3 out of 100 cases, can have measles, but the clinical presentation and the risk of spread to others are much more reduced.

In exposed individuals, and if is not vaccinated, need to receive only 1 dose. The IVIG treatment is indicated in unvaccinated pregnant women, severely immunocompromised hosts, children < 12m infant. Who received IVIG, can only do the first dose of vaccine 6 months later.

In outbreak period, can add another dose at 6 - 11m (usually 9m). After the vaccination schedule is the same, with 2 doses (12 and 18 months).

In conclusion, need to suspect of measles when the patient showed fever >38 ° C, coryza, cough, conjunctivitis with photophobia, generalised rash, start from the head. In this case, we perform Measles IgM and Measles PCR for the diagnosis.

Vaccination is the best way for prevention!

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