

# Measles: The Clinical Picture

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## Definition

An infectious exanthematous disease caused by a specific virus.

## Epidemiology

Since the 1960s, the incidence of measles has been declining among young children in countries with high immunization rates (Europe, U.S.). However, in 1989 and 1990, an increase was observed in the U.S. among infants too young to be immunized. Apparently their mothers had never contracted wild measles, and diaplacental protection of the infant is minimal even when the mother has been immunized.

In developing countries, epidemics continue to appear with high rates of mortality due to vaccine shortages and the fact that malnourished children develop inadequate immune defenses. The number of stillbirths and miscarriages, but not the rate of birth defects, is also increased by measles in pregnant women.

## Etiology

Measles are caused by RNA-containing viruses belonging to the paramyxoviruses, genus *Morbillivirus*. Transmission occurs through droplets (airborne infection) via the upper respiratory mucosa and the skin. Since measles are highly contagious, 90% of non-immunized people who come into contact with the virus contract the disease. An initial phase of viremia occurs three to four days after the viruses penetrate the mucosae. The morbilliviruses then multiply in the respiratory tract and reticuloendothelial system leading to a second phase of viremia between days 5 and 11 after contact.

In this second phase of viremia the disease is highly infectious, so children who

are still asymptomatic or have atypical symptoms nonetheless transmit the disease.

## Symptoms

In measles, the course of the fever is characterized by an asymmetrical curve with two peaks. After an incubation period of 9-12 days, the prodromal stage appears with moderate fever, catarrhal symptoms, cough, and conjunctivitis. At this stage diagnosis is limited to confirming the presence of a viral infection.

Measles are confirmed by the appearance of Koplik's spots, small white dots surrounded by a red zone on the oral mucosa opposite the premolars. These are little mucosal necroses that typically cannot be rubbed off.

The fever falls after the prodromal stage but rises again between days 12 and 15, when it is significantly higher (39-40° C, 102-104° F) than the first time. At the same time, the typical exanthem appears (exanthematous stage), first behind the ears, then spreading to the hairline, forehead, and neck, and finally to the trunk, arms, and legs. The individual maculopapular spots are about 5 mm in diameter and are initially light red. Later, they become dark red and merge. Palms and soles remain free of spots.

As the exanthem spreads, the fever rises, and the patient suffers from a nagging cough and acute conjunctivitis accompanied by tiny corneal necroses that cause a high degree of photosensitivity. The patient's general condition worsens; appetite disappears and there is a strong sensation of thirst.

After three days, if the illness runs its course without complications, the rash begins to recede, the fever falls, and the patient's general condition improves. Some

brownish spots, remnants of the exanthem, can persist for a short time, and the skin may peel superficially.

## Complications

*Rubeolar interstitial pneumonia*, which appears during the acute phase of the illness, is a serious complication and the leading cause of death from measles in developing nations.

Much to be feared is *rubeolar encephalitis*, which develops during or shortly after the exanthematous stage in 0.05-0.4% of measles patients. The course of this encephalitis is characterized by high fever, generalized convulsions, and long periods of unconsciousness leading to coma. It causes death in 10% of its victims. One quarter of the survivors suffer severe consequences, including neurological damage such as spastic paralysis. Two thirds of the patients survive the encephalitis without long-term consequences but suffer long delays in learning to stand and walk.

Early complications also include *rubeolar croup* (> 1%) with dyspnea, stridor, and a barking cough. The little patients are extremely restless and anxious. Symptoms may worsen rapidly, leading to asphyxiation, and deaths have been known to occur if help is not immediate. The consequences of *bacterial superinfections* include otitis media and eye and skin infections. Immune defenses are always weakened in cases of measles, facilitating the growth of bacteria.

There are also delayed complications associated with the measles virus. It is one of the slow viruses that cause persistent CNS infections and can lead to "subacute sclerosing panencephalitis" (SSPE) five to seven years after a case of measles. This illness causes serious symptoms, including coma and convulsions, and has a high rate of mortality.

### Differential Diagnosis

Koplik's spots occur only in measles, although little white necroses also occur on the oral mucosa in common colds. In cases of thrush, white spots also appear on the oral mucosa, but not on a reddened background. Distinguishing the second phase of the illness from rubella, scarlatina, and erythema infectiosum is not difficult because of the typical large, confluent spots.

### Prophylaxis

Preventing exposure is virtually impossible because of the ubiquitous nature of measles. In pediatrics, the usual prophylaxis consists of two immunizations with live vaccine, one at 15 months and the second at age six. In a certain percentage of those receiving the vaccine, no immune protection occurs; the failure may be due to inadequate immunizing capability of the vaccine, improper storage, or faulty injection technique. It is often impossible to effectively immunize infants under the age of one year because maternal passive antibodies are still present in their blood.

Immunization may cause encephalitis in 1 out of 1,000,000 children receiving the vaccine. Convulsions occur in 0.2-1,900 out of 1,000,000 and cause death in 0.2-3 out of 1,000,000. The incidence of subacute sclerosing panencephalitis after immunization is estimated at 0.5-1 in 1,000,000.<sup>1</sup>

### Therapy

*Conventional therapy:* It is not possible to treat the cause of measles, since no spe-

cific virustatic agents exist. Bed rest is helpful, and fever can be lowered with acetaminophen and plenty of fluids. Many children become sensitive to light and appreciate having the room darkened. Antibiotics are indicated if—and only if—a bacterial superinfection occurs.

*Antihomotoxic therapy:* Viburcol® suppositories have proved helpful for restlessness and fever. These suppositories have a mild sedative effect which is completely adequate in most cases. To stimulate the immune system and treat the lymph system, the antihomotoxic preparation Lymphomyosot® is administered in the form of drops or tablets. As a general therapy for viral infections, Engystol® tablets or ampules are used. Bryaconeel is recommended for neuralgia. Its components (Bryonia, Aconitum, and Phosphorus) are very effective, especially in extremely acute inflammatory illnesses.

If a young patient is suffering from dyspnea, preparations of Tartephedreel (drops) or Drosera-Homaccord® (drops) can be used. For blocked nasal respiration and middle ear inflammation, which occurs relatively often in measles, Echinacea compositum® S (ampules) and Euphorbium compositum® S nasal spray can be used.

The diluent in ampules of homeopathic preparations is physiological saline solution, so there is no problem in administering the contents orally, which is advantageous when dealing with children. The contents of the ampule are added to a glass of water and sipped slowly, maximizing contact with the oral mucosa.

After the acute phase has receded, the use of Morbillinum-Injeel®, the appropri-

ate nosode preparation, should be considered. It is recommended especially in cases of protracted convalescence.

*Homeopathy:* Single remedies for fever are Belladonna 6X and Ferrum phosphoricum 12X. Pulsatilla 6X and Euphrasia 4X are effective against conjunctivitis, dry cough, and catarrhal symptoms. Rubeolar croup responds to Spongia 3X, bronchitis to Stricta pulmonaria 3X, Ammonium carbonicum 6X, Bryonia 4X, Drosera 6X, Heparis sulfuris 6X, and Rumex crispus 6X. Symptoms of otitis media improve under treatment with Pulsatilla 6X, Belladonna 6X, and Chamomilla 12X.

*Phytotherapy:* Antitussives (Drosera herba, Hederae helices folium, Thymi herba) are helpful for dry cough. Salicis cortex can be used for fever; Tiliae flos and Sambuci flos are diaphoretics.

If introduced soon enough, probiotic supplementation that supports beneficial symbionts can make colonization by parasitic bacteria more difficult and reduce the severity of the illness by stimulating endogenous immune defenses.

### Reference

1. Ada GL. Vakzine gegen Viren. *Annales Nestle*. 1991; 49:129-40.

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