

VARIOLA (Smallpox)

Infectious and Tropical Pediatric Division
Department of Child Health
Medical Faculty, University of Sumatera Utara

Definition : Smallpox was an acute exanthematous viral infection having a 2-4 day febrile prodrome followed by a characteristic rash.

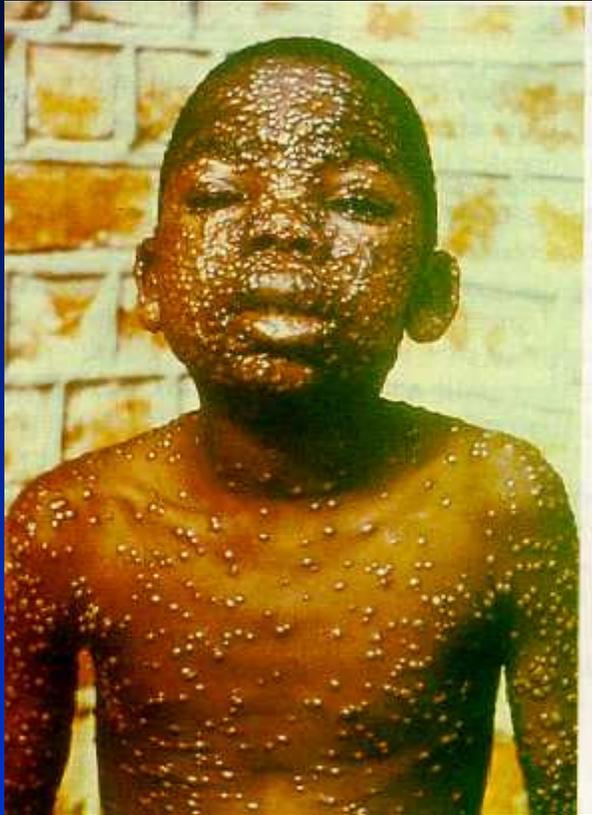
Variola major → most severe form of variola, with death occurring in about 20% of patients.

Variola minor → CFR < 2%

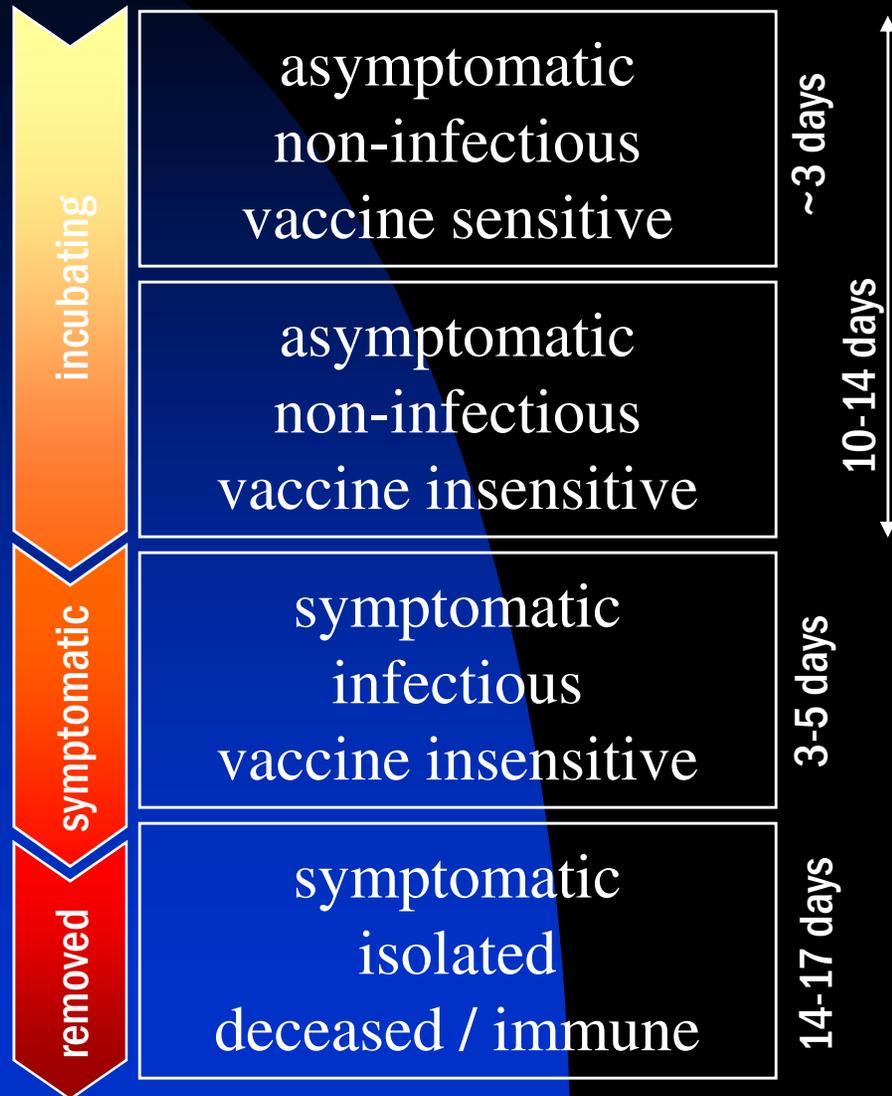
Etiology : variola virus → orthopoxvirus, DNA-DS

Pathogenesis : after entering the oropharynx or nasopharynx, the virus multiplied in lymphoid tissue of the upper respiratory tract for about 2 days. This was followed by a 2 day viremia and then a 4 to 14 day latent period. Smallpox virus attacked most organ, but had particularly affinity for the skin.

Transmission : direct contact, and droplet



stages of smallpox infection



- vaccine only effective < 3 days after initial infection
- vaccine complications $\sim 3/10^6$ (death in 40% of such cases)
- early detection & isolation are most important for treatment
- aches, fever, rash, pustular
- spread by inhalation
- 1g smallpox can infect ~ 100 people via aerosol
- no cure
- mortality rate 30%

Clinical manifestations :

The incubation period : 10-12 (7-17 days), fever (39-41°C) and severe headache, backache, and malaise occurred during the prodrome. This followed by the eruption, which began on the face and upper extremities. Most lesions evolved through similar stages, i.e. macules, papules, vesicles, and pustules, over 8-15 day period. The pustules umbilicated, dried, and began to desquamate between day 6 to 10 of rash, followed by crusting or scab stage.

The rash was concentrated mainly on the periphery, a cardinal point of differentiation between smallpox and chickenpox. In the severe form → lesions occurred on the palms of the hands and soles of the feet.

Clinical variations :

1. Modified : occurred in vaccinated patients, mild prodrome and fewer lesions, and recovery was more rapid and complete.

2. Flat : had a severe prodrome with persistent fever, lesions were slow to mature, and pustules tended to be flat and coalesce, giving an “alligator skin” appearance. CFR was 40%

3. Hemorrhagic : <1% of cases and always fatal. The pre-eruptive phase was severe and the fever continued. Bleeding into the conjunctivae, mucous membranes, skin, kidneys, intestines, and urogenital system, without typical rash. Death occurred within 1 week of illness. This form was especially contagious.

- Variola virus is strictly a human virus, although primates and other animals can be affected under laboratory conditions
- Infection begins when the virus comes into contact with oropharyngeal or respiratory mucosa, virus multiplication then occurs in regional lymph nodes
- There are 2 clinical forms of smallpox : variola major and minor
- Variola major is severe and the most common form with more extensive rash and high fever with a death rate of about 30%
- Variola minor has less common presentation and is much less severe with a death rate of 1% or less

Complications :

1. Skin infections
2. Bacteremia
3. Pneumonia
4. Panophthalmitis → scarring → blindness

Diagnosis : on clinical ground

Differential diagnosis :

1. Drug reactions
2. Insect bites
3. Secondary syphilis
4. Measles
5. Enterovirus

Treatment : no specific treatment

1. Supportive
2. Symptomatic

Prevention :

1. Vaccination : no vaccination after 1980