



Smallpox

infectious disease

Basic Information

- Active years:**
? - 8 May, 1980CE
- Transmission rates:** 90%
Fatality rate: 30%
- Status:** Eradicated
- Achievement:** Killed more than **500,000,000** people

Symptom

- Initial symptom (2 – 4 days):**
High fever, fatigue, headache, muscle pain and vomiting
- Visible lesions stage 1 (2 days):**
Enanthem appears on mucous membranes, rapidly enlarged and ruptured
- Visible lesions stage 2:**
Characteristic **pimples**, or **macules** rash develops on the skin in 3 days

Reference:

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Life Experience

- ? / 1156 B.C. **The Origin**
The Egyptian mummies showed suspected signs of smallpox-like rash (earliest evidence)
- ~1750 **The Development**
Quickly spread by exploration, trade and war e.g. Discovery of Americas by Europeans, 1870 Franco-Prussian War
- 1750 — 1795 **The Peak**
3 out of 10 patients died¹
(1.5 billion people were killed in 18-century)
- 1796 — 1980 **The End**
1796: Edward Jenner discovered cowpox could prevent smallpox
1800s: Invention of smallpox vaccine
1966: WHO started the Smallpox Eradication Programme²
1977: The world's last natural occurring case in Somalia
1980: WHO declared smallpox was "wipe out"



Therapy

- Smallpox inoculation (Variolation in China since 1500s)
 - May cause death
 - Smallpox vaccination (since 1796)
 - Remaining the humoral or T cell-mediated immunity for 75 years⁴
 - The longevity of B cell memory lasts without re-exposure to antigen⁵
 - Lifelong immunity in some cases
- BUT due to **anti-vaccine movement**, it took 2 centuries to eradicate smallpox!!



Current situation

1. Most countries stopped producing smallpox vaccine
 2. Still **no effective treatment** to smallpox (after being infected)
 3. After 40 years the people have **no immunity** to smallpox
 4. Possibility that terrorist activities may use smallpox virus as a biological weapon
- If smallpox epidemic breaks out, the consequences will be unimaginable !!!

GOOD NEWS: A kind of oral medicine which has proved to be effective for smallpox is under development³