

## HISTORY OF SMALLPOX

Dr. P. N. Shrestha,\* M.B.B.S., M.P.H. (Harvard)

**Terminology:-** The term "Variola" was first used by Marius in 569 A.D. but he did not give any clinical description. "Variola" is derived from the Latin word "Varius" which means spotted or from "Varus" which means pimple. "Smallpox" is derived from the word "pocca" which means a bag or pouch. This term was used in the 16th century to differentiate it from the "great pox" and is the English counterpart of the French "la petite verole". Between 800 and 1400 A.D., various terms were used for smallpox. Among them are Variola, Vayrola, Veyrola, Variolas and Morbis Varicus.

**Origin of Smallpox:-** There is no recorded evidence of the disease until the middle ages. The disease has been occurring in India for many thousand years. Evidence of variolation was contained in the sanskrit text "Sacteya" attributed to Dhanwantari. A special god "Kakurani" was recognised for smallpox in India and similarly goddess Sitala in Nepal. From time immemorial, there has been a temple for Sitala in Nepal though the present temple at Swayambhu was built after the abdication of King Rana Bahadur Shah.

From the features of the mummified body available, Rameses is supposed to have died of smallpox in 1160 B.C. Smallpox was known in the Tcheon dynasty in China in 1122 B.C. The Chinese name for this disease was "tai tou". Inoculation was first described in China in about 590 B.C. in the Sung dynasty.

A severe epidemic occurred through out the Roman Campagna in 79 A.D. immediately following the eruption of Vesuvius. There was widespread pestilence in North Africa in 125 A.D. In the period 164 to 180 A.D. during the reign of Marcus Aurelius, a pestilence ravaged through the Roman Empire from Syria to the west. Identification of the disease in these epidemics is doubtful but it is supposed to be probably smallpox.

**Medieval Period:-** There is no doubt about the existence of smallpox in the middle ages. Rhazes (850-923) gave the first unambiguous description of the disease in the 10th century. He described the distinguishing features between smallpox and measles and said

---

\* Chief, Nepal Smallpox Eradication Project.

that smallpox was widespread throughout the East. The same opinion was expressed by Al-Jahiz and other Moslem writers of the 10th and 11th centuries.

Smallpox was well known and established in the Middle East before the 7th century. There is a general agreement that the disease became epidemic in Arabia towards the end of the 6th century. Then it spread through the Mediterranean into Europe. Smallpox was known in England in the middle ages but there is no definite knowledge about its prevalence. One of the routes of spread of smallpox into Europe was through Spain. Smallpox was first recorded in Ireland in 675 A. D. Iceland experienced many severe epidemics in the past causing great loss of human life. In the outbreak of 1241-42 several thousand people died of smallpox. In 1310-11, there were 1600 deaths. The most severe outbreak was in 1707 when 18,000 of 57,000 people died of smallpox.

Smallpox was introduced into the New World by the European settlers and explorers. The disease occurred in West Indies in 1507. It reached Mexico in 1520 with the troops from Spain and within a short period 3.5 million people died of this disease—a great catastrophe. The disease was introduced in Brazil in 1563 and exterminated the whole race there.

Towards the end of the medieval period, smallpox became widely prevalent throughout Asia, Africa and Europe. Italy experienced many major epidemics in the second half of 16th century—in Mantua in 1567 and in Brescia in 1577 and 1588. In 1629, the first printed bill of mortality of England listed smallpox as a separate disease. From then onwards, the figure went on rising every year. The 1659 epidemic in London caused 1500 deaths. By the end of the 17th century, the disease became so common that it was considered an inevitable part of childhood. In the beginning of the 18th century, it became endemic and frequently epidemic. In 1660 smallpox was the chief cause of high infant mortality in Europe. Smallpox carried off annually the 10th part of Swedish children. In Berlin, 5876 out of 6707 deaths that occurred in children under 5 years of age between 1758 and 1774 was due to smallpox. The disease was responsible for 50% of all deaths in children under 5 years in the London bill of mortality.

Smallpox was more common in the crowded town than in the villages. It affected all sections of the community both rich and poor and even the royalties were not spared. In October 1562, queen Elizabeth I of England suffered from a severe attack of smallpox from which she nearly died. In the epidemic of 1694, Queen Mary died on 28th September of malignant smallpox on the ninth day of illness. death in 1700 of the Duke of Gloucester, Son of Anne and heir to the throne, precipitated a constitutional crisis. Many rulers of Europe died of the disease. Among them are Emperor Joseph I of Germany, Louis XV of France, Peter II of Russia and William II of Orange. Many others had severe attack but survived. Among them were Queen Anne of England, Louis XIV of France and William Orange after William III. King Girvana Bir Bikram Shah died on 20 November 1816 of smallpox at the young age of 21. The disease also affected the royal court of king Rana Bhadur Shah. One of the prominent figures of the court had an attack of the disease causing the disfigurement of the beauty and the subsequent suicide led to the reckless desecration and destruction of the previous Sitela temple at Swayambhu.

Various treatments were tried for smallpox but with no avail. Sydenham asserted in the 17th century that there is no treatment for those with discrete attack—which still holds true till today. In the 17th century also, von Helmsut and Boerhaave described smallpox as an infectious disease.

**Inoculation:** It was known for centuries that an attack of smallpox conferred life long immunity. Based on this, an effective prophylactic method, Variolation, was developed and used, particularly in the East and is still being used in some remote areas of certain countries. In this method, smallpox matter was taken from mild cases and inoculated into healthy individuals. This caused a mild attack of the disease leading to protection against future attacks. It was also practiced in Nepal and was well known during the reign of King Prithvi Narayan Shah.

Smallpox was so prevalent in Europe causing a high degree of mortality and a sense of terror that when a practical possibility of preventing the disease was suggested, it was immediately tried. Inoculation was first suggested in England in 1714. It was brought to the attention of the English people by a Greek named Emmanuel Timoni. Medical men realised its importance but the public got only amused. One of the prominent persons who propagated the practice of inoculation was Lady Mary Wortley Montague, who, while as wife of the British Ambassador in Constantinople, got her son inoculated in March 1718. During the severe epidemic of London in 1721, her daughter was inoculated in the presence of physicians. The inoculation of royal children in 1722 gave a further impetus to the procedure. Some of the persons inoculated developed a severe attack of smallpox and died of it. This led to the controversy between the proponents and opponents of inoculation. But later on, became an established practice.

Voltaire was an ardent exponent of inoculation in France. Inoculation was established in France in 1750, in Sweden and Denmark in 1754 to 1756 and in Prussia in 1775. It was first introduced in U. S. A. in Boston by Boylston in 1721. A controversy developed about its practice but was overcome subsequently. It was widely practiced during the revolution and General Washington ordered the entire army to be inoculated.

Inoculation had a significant impact in reducing the mortality of smallpox. One of the drawbacks of inoculation, apart from causing occasional severe attack, was that people had to be admitted into hospital for inoculation. So many inoculation hospitals were established. This was alright and effective in colonies where the population was sparse but in England and other European countries only the rich could go to the inoculation hospital.

**Vaccination:** One of the most important victories of preventive medicine was won in 1798 with smallpox when Edward Jenner published his work on the immunity conferred against smallpox by the inoculation of cowpox matter. Jenner had offered his observations to the Royal Society which refused his paper. Later on, the practice of vaccination was gradually accepted and established. Benjamin Waterhouse of Harvard Medical School vac-

nated his children in 1799. Thomas Jefferson was one of the active supporters of Waterhouse when controversy was raised by the opponents. The main opposition came from variolators and from religious quarters. One of the contentions of the opponents was that transmission of other diseases occurred during vaccination. But all opposition was overcome and the practice of vaccination was accepted, established and spread to all countries of the world leading to a substantial reduction in the incidence of smallpox.

**Current Trends:** Smallpox is fast disappearing from the world scene because of eradication programmes. Europe and North America became free of the disease in the first half of this century. In the Americas, eradication programme was initiated in 1950 and the disease was wiped out from many countries. Several countries of Asia and North Africa became free of smallpox. By 1967, still 29 countries of Asia and Africa; and Brazil were considered endemic. Twelve other countries reported imported cases.

Because of the risks of importation, the Eleventh World Health Assembly in 1966 proposed that smallpox eradication be undertaken on a global scale. Systematic vaccination programme was started but during the following 8 years, only a few countries were successful in eradicating the disease. The Nineteenth World Health Assembly decided to intensify the global eradication programme from 1967.

The number of countries reporting smallpox decreased from 42 in 1967 to 16 in 1971. In 1971 only 7 countries - Afghanistan, Ethiopia, India, Indonesia, Nepal, Pakistan and Sudan were considered to be endemic. Ten other countries have reported cases within the past few years. In addition, cases have occurred in Botswana in 1971. In 1972 18 countries have reported cases of smallpox up till now. Notable among them is Bangladesh. Bangladesh which had been free of the disease reported cases following the return of refugees from India. Transmission of smallpox is now considered to be endemic in Botswana. Outbreak in Yugoslavia has been controlled and in Iraq is being contained.

In 1967, 131,418 cases were reported. Scar surveys suggest that this represents only a fraction of the actual number of cases - estimated to have been at least 2.5 million. In spite of more complete reporting, smallpox incidence went on decreasing until 1970 when 33,304 cases - lowest on record - were reported. In 1971 the reported incidence rose to 52,123 cases - due to further improvement in reporting and mostly to initiation of intensive surveillance activities in Ethiopia which accounted for more than half of the world's total. It is believed that at least one-third of all cases were reported in 1971 and the actual number of cases in 1971 is estimated to be 151,000. In 1972, until 25 July 45,042 cases have been reported - an increase of 39% over the 32,456 cases reported during the same period in 1971. This is considered to be mainly due to improved reporting and to cases in Bangladesh. In Nepal recent outbreaks have been limited to 4 districts of 2 Western zones bordering Uttar Pradesh of India. Additional outbreaks can be expected as long as the smallpox is present in the bordering states of India.

In view of the present situation and the programme, it is hoped that by the end of 1972

there would be only a few residual endemic foci of smallpox. Transmission of smallpox can be interrupted within a short time if a concerted and coordinated effort is made.

## Ref

1. Dixon, C. W; 1962, Smallpox, London, J & A Churchill Ltd.
2. Hamilton, F; 1819, An Account of the Kingdom of Nepal, Edinburgh, Archibald Constable & Co.
3. Oldfield, H. A; 1819, Sketches from Nepal, Vol. I, London, W. H. Allen & Co.
4. Rosen, G; 1957, A History of Public Health, New York, MD Publications.
5. Singe, S. S; 1877, 'Vansavali' History of Nepal, Ed. Daniel Wright, Cambridge University Press.
6. WHO Weekly Epidemiological Report, 1972, No. 30, Geneva.
7. WHO technical Report Series No. 493, 1972, Geneva.