slight spots of extravasation (*petechiae),* the appearance some­what resembling that of scarlet fever. These “ prodromal rashes,” as they are termed, appear to be more frequent in some epidemics than in others, and they do not seem to have any special signifi­cance. They are probably more frequently seen in cases of the mildest form of smallpox (formerly termed varioloid), referred to below as modified smallpox. On the third day the character­istic eruption begins to make its appearance. It is almost always first seen on the face, particularly about the forehead and roots of the hair, in the form of a general redness; but upon this surface there may be felt by the finger numerous elevated points more or less thickly set together. The eruption, which is accompanied by heat and itching, spreads over the face, trunk and extremities in the course of a few hours—continuing, however, to come out more abundantly for one or two days. It is always most marked on the exposed parts; but in such a case as that now described the individual “ pocks ” are separated from each other (discrete). On the second or third day after its appearance the eruption undergoes a change—the pocks becoming vesicles filled with a clear fluid. These vesicles attain to about the size of a pea, and in their centre there is a slight depression, giving the char­acteristic umbilicated appearance to the pock. The clear contents of these vesicles gradually become turbid, and by the eighth or ninth day they are changed into pustules containing yellow matter\* while at the same time they increase still further in size and lose the central depression. Accompanying this change there are great surrounding inflammation and swelling of the skin, which, where the eruption is thickly set, produce much disfigurement and render the features unrecognizable, while the affected parts emit an offensive odour, particularly if, as often happens, the pustules break. The eruption is present not only on the skin, but on mucous membranes, that of the mouth and throat being affected at an early period; and the swelling produced here is not only a source of great discomfort, but even of danger, from the obstruction thus occasioned in the upper portion of the air-passages. The voice is hoarse and a copious flow of saliva comes from the mouth. The mucous membrane of the nostrils is similarly affected, while that of the eyes may also be involved, to the danger of permanent impairment of sight. The febrile symptoms which ushered in the disease undergo marked abatement on the appearance of the eruption on the third day, but on the eighth or ninth, when the vesicles become converted into pustules, there is a return of the fever (*secondary* or *suppurative fever)*, often to a severe extent, and not in­frequently accompanied by prominent nervous phenomena, such as great restlessness, delirium or coma. On the eleventh or twelfth day the pustules show signs of drying up (desiccation), and along with this the febrile symptoms decline. Great itching of the skin attends this stage. The scabs produced by the dried pustules gradually fall off and a reddish brown spot remains, which, according to the depth of skin involved in the disease, leaves a permanent white depressed scar—this “ pitting ” so characteristic of smallpox being specially marked on the face. Convalescence in this form of the disease is as a rule uninterrupted.

*Varieties.—*There are certain varieties of smallpox depending upon the form it assumes or the intensity of the symptoms. *Confluent smallpox (variola confluons),* while essentially the same in its general characters as the form already described, differs from it in the much greater severity of all the symptoms even from the onset, and particularly in regard to the eruption, which, instead of showing itself in isolated pocks, appears in large patches run together, giving a blistered aspect to the affected skin. This confluent condition is almost entirely confined to the face, and produces shocking disfigurement, while subsequently deep scars remain and the hair may be lost. The mucous membranes suffer in a similar degree of severity, and dangerous complications may arise from the presence of the disease in the mouth, throat and eyes. Both the primary and secondary fevers are extremely severe. The mortality is very high, and it is generally estimated that at least 50% of such cases prove fatal, either from the violence of the disease or from one or other of the numerous complications which are specially apt to attend

upon it. Convalescence is apt to be slow and interrupted. Another variety is that in which the eruption assumes the *haemorrhagic* form owing to bleeding taking place into the pocks after their formation. This is apt to be accompanied with haemorrhages from various mucous surfaces (particularly in the case of females), occasionally to a dangerous degree and with symptoms of great prostration. Many of such cases prove fatal. A still more serious form is that termed *malignant, toxic or purpuric smallpox,* in which there is intense streptococcus septi­caemia, and the patient is from the onset overwhelmed with the poison and quickly succumbs—the rash scarcely, if at all, appearing or showing the haemorrhagic or purpuric character. Such cases are, however, comparatively rare. The term *modified smallpox* is applied to cases occurring in persons constitutionally but little susceptible to the disease, or in whom the protective influence of vaccination or a previous attack of smallpox still to some extent exists. Cases of this mild kind are of very common occurrence where vaccination has been systematically carried out. As compared with an average case of the unmodified disease as above described this form is very marked, the dif­ferences extending to all the phenomena of the disease. (1) As regards its onset, the initial fever is much milder and the pre­monitory symptoms altogether less in severity. (2) As regards the eruption, the number of pocks is smaller, often only a few and mostly upon the body. They not infrequently abort before reaching the stage of suppuration: but should they proceed to this stage the secondary fever is extremely slight or even absent. There is little or no pitting. (3) As regards complications and injurious results, these are rarely seen and the risk to life is insignificant.

Various circumstances affect the mortality in ordinary smallpox and increase the dangers attendant upon it. The character of the epidemic has an important influence. In some outbreaks the type of the disease is much more severe than in others, and the mortality consequently greater.

In 1901 and 1903 there were epidemics in the United States in which it was only 2 %. The mortality in the Philadelphia epidemic is given by Welch and Schamberg as 26·89 % in 7204 cases, while in the Glasgow epidemic of 1900-1901, it reached 51∙6% in the un­vaccinated and 10∙4% in the vaccinated. Below arc some particu­lars of the annual death rate.

|  |  |  |  |
| --- | --- | --- | --- |
| *Smallpox Death Rate, England and Wales.* | | | |
| Years. | Number of Deaths from | Deaths from Smallpox |  |
|  | Smallpox.@@\* | to every Million living. |  |
| 1902 | 2464 | 75 |  |
| 1903 | 760 | 23 |  |
| 1904 | 507 | 15 |  |
| I905 | 116 | 4 |  |
| 1906 | 21 | 0∙6 |  |
| 1907 | 10 | 0∙3 |  |
| 1908 | 12 | 0∙3 |  |

Smallpox is most fatal at the extremes of life, except in the case of vaccinated infants, in whom there is immunity from the disease. Again, any ordinary case with discrete eruption is serious, and a case of confluent or even semi-confluent character is much more grave, while the haemorrhagic variety is frequently, and the toxic always, fatal; Numerous and often dangerous complications, although liable to arise in all cases, are more apt to occur in the severer forms, and in general at or after the supervention of the secondary fever. The most important are inflammatory affections of the respiratory organs, such as bronchitis, pleurisy or pneumonia, diphtheritic conditions of the throat, and swelling of the mucous membrane of the larynx and trachea. Destructive ulceration affecting the eyes or ears is a well- known and formidable danger, while various affections of the skin, in the form of erysipelas, abscess or carbuncles, are of not infrequent occurrence.

The prophylaxis of smallpox"depends on successful vaccination and re-vaccination (see Vaccination), together with the estab­lishment of smallpox hospitals for the treatment of the disease when it has broken out, to which the patient should be at once removed, and those who have been in contact with the patient should be promptly re-vaccinatéd. The efficiency of the

@@@\*Deaths entered as being from chicken-pox are not included, though many are probably due to the graver disease.