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PERTUSSIS

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The cause is Bordetella pertussis. There are several types. The antigenic structure is complex and it is not clear which antigen is the protective antigen There is little, if any, cross immunity between types. This means that a vaccine must contain all the prevalent types of the organism. Otherwise a community protected by a vaccine not containing all known types can be attacked by one of the missing types This probably happenend in the U K in the sixties

B pertussis is present in the early stages of pertussis It is present in the early catarrhal stage before the typical cough, when diagnosis is difficult In the second week, when the cough is becoming severe, it is much more difficult to isolate the germ, and by the third week it is not often isolated. So infection is at its highest before the typical symptoms appear · this makes attempts at isolation of the patient of little value in preventing spread He has spread the infection before his illness is diagnosed.

Antibody to B pertussis crosses the placenta, but this does not seem to protect the young baby (Perhaps it is not the protective antibody which passes) Pertussis tends to be most severe in young babies: most deaths occur in babies below one year of age. Many babies get pertussis in the first few months of life This makes some difficulties for an immunization programme Immunization beginning at the third month of life obviously cannot protect babies under that age directly But if older brothers and sisters are protected by immunization, then they are unlikely to bring the infection into the home to infect the infant

Pertussis is a disease of childhood, mainly early childhood, but no age is immune. Nurses and doctors sometimes catch the infection from their young patients They may appear to have just "a severe cold" but they can spread pertussis to other young patients: but this is an uncommon situation. (Annotation, 1972)

Pertussis is a disease spread from one young patient to another by droplets Carriers are not known to occur, and sub-clinical seems not to occur.

Clinical aspects

In its typical form with cough, whoop and vomit anyone can diagnose pertussis, but in the early stage, the first ten days or so, the child may appear to have only a bad cold This unfortunately is the most infectious stage By the end of the second week the typical spasms of coughing are heard and the diagnosis is obvious The two serious complications of the disease are bronchopneumonia and encephalopathy The pneumonia is usually caused by other germs which attack the lungs already

weakened by Bordetella pertussis · the condition often responds to proper antibiotic treatment, but many deaths are still caused by bronchopneumonia especially in young infants The signs of encephalopathy are tremors, convulsions and coma; the condition seems to be caused by anoxia or vascular damage; there are no signs of encephalitis in the brain after death This is a serious complication: coma often ends in death; if the child recovers, he may have severe sequels such as paralysis or mental damage.

It is important to know that very young babies may suffer from pertussis without showing the usual symptoms of cough, whoop and vomit. The infant appears to have a severe cold or bronchitis : its breathing is rapid and shallow but it has no spasmodic cough This does not mean that the infant has a mild attack It is quite the opposite, and an infant may die of pertussis, or one of its complications, without ever having had a spasmodic cough or whoop The clue to the diagnosis may be the presence of the disease in typical form in an older brother or sister.

Pertussis vaccine

The germ of pertussis, Bordetella pertussis, attacks the lungs of an infected child To provide protection the body must produce antibody against the whole germ, not just against a toxin as in the case of diphtheria or tetanus The vaccine therefore consists of a suspension of the germs· they are grown on special media and are killed by chemicals. The vaccine is tested to make sure it contains enough killed germs to make the body produce enough antibody to protect the child.

Pertussis vaccine is given along with tetanus toxoid and diphtheria toxoid (DPT) The first dose is usually given at age three months, the second at five months, and the third at the seventh or eighth month A booster dose is given at 18 months, but after that age pertussis vaccine is not given because pertussis is not usually a severe disease after that age DPT must be kept in the refrigerator but must not be frozen (EPI manual, Book III, Annexe 1, page 4).

Reactions may occur after pertussis vaccine. These may be only soreness of the arm, or slight fever. Sometimes there may be screaming attacks or pallor like shock. These may be alarming for a short time but are not serious: they disappear quickly Very rarely there may be a more serious reaction with convulsions or other signs of brain damage. This is a rare complication, and one must balance this rare risk against the common, but severe risks of pertussis

Reference - Annotation (1972). Pertussis in adults
British Medicine Journal, 4, 316