

Streptococcus

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Streptococcus is the name given to a group of dot-shaped bacteria that are capable of causing disease in pigeons. They are everywhere in the environment, mainly in the dust and air. Many species have been isolated from pigeons and they are considered part of the normal bacteria found on the skin and the lining of the digestive, respiratory and reproductive tracts. There are different types of Streptococcus that vary in their ability to cause disease. Transition from a normal bacterial inhabitant to a disease agent depends on how effectively the pigeons' immune system is operating.

Experimentally, researchers have deliberately infected pigeons with disease-causing strains of Streptococci, both by intravenous injection and by mouth. Many of those infected by the intravenous route became sick, developing a variety of symptoms. Interestingly however, in the pigeons inoculated with the organism by mouth, none became sick, although the organism could be cultured from the droppings or mouth of at least half of the pigeons in the month following infection. This experiment helps to explain the nature of the disease process with Streptococcus. Pigeons are obviously being exposed to the organism intermittently but when an otherwise healthy pigeon ingests the organism, disease is unlikely to occur. Once the organism, however, gains entry to the blood stream, the pigeon can become unwell. In some studies, potentially harmful species of Streptococci have been recovered from the intestines from up to 40% of healthy pigeons. Many pigeons obviously carry these organisms without becoming sick. This means that Streptococcus infection CANNOT be diagnosed by examining a pigeons droppings. As with other diseases in pigeons, there needs to be a trigger factor that enables the organism to invade the blood stream and spread throughout the body. This trigger is essentially any factor that runs the pigeon down. Predisposing factors include poor management, poor loft environment and concurrent disease, but also the ability of the type of Streptococcus itself to cause disease.

Signs associated with disease

Once the bacteria have invaded the body of a vulnerable bird, it can spread to a variety of sites. This, together with the fact that the severity of the disease can vary, leads to a wide variety of symptoms that often mimic other diseases. It is therefore important that pigeon fanciers do not jump to a premature conclusion that this is the problem with any unwell pigeons they may have.

Once the organism invades from the bowel or skin, etc, into the blood stream, it can be carried to a wide variety of sites. The symptoms displayed by the pigeons depend on the actual site within the body that the bacteria infect and also the severity of the infection. Disease displayed by the pigeons can be per acute or chronic. Some pigeons develop a severe overwhelming disease and will die so quickly that they do not have time to lose condition. These pigeons become quiet, fluffed up and die within 2 – 3 days. Other pigeons, develop a chronic ill-thrift type condition that may persist for as long as 6 – 8 weeks. Some of these pigeons with treatment will recover, while others will eventually die. In some apparently recovered pigeons, relapses can occur. In still other pigeons, the disease may be transient and mild.

In some infected pigeons, the organism will localize in the respiratory system, leading to red watery eyes, a nasal discharge and difficulty breathing. In other pigeons, the liver can be affected, leading to a green diarrhoea and weight loss. In some pigeons, the heart itself may become infected. If these pigeons survive, they may develop long-term heart problems, leading to a chronic shortage of breath. The organism can also infect the membrane around the brain (leading to poor coordination, loss of balance, or a head tilt), the muscles (leading to bleeding and inflammation), the joints (leading to swollen red painful joints, in particular in the wings and legs), the kidney (leading to a thirst and excessive urination), the bowel (leading to diarrhoea), the abdomen (leading to fluid accumulation and a swollen abdomen) and testis (leading to premature infertility in young cocks). Notably, the organism can also infect the ovary and fallopian tube of hens. This can lead to interference with ovulation, meaning that some hens will become sterile or lay eggs late or irregularly. In those that do lay, the organism can be incorporated in the egg at the time of its formation, leading to embryonic death during incubation or a weakened chick that dies during hatching or shortly after. Because the organism is found in pigeons droppings, it can contaminate the nest box and infect the healing navel of recent hatchlings.

Diagnosis

Because of the wide variety of symptoms associated with the disease, the disease cannot be diagnosed by the signs displayed by the pigeons. Similarly, the disease cannot be diagnosed through examination of the droppings as it is found there normally in many pigeons and most of these will be quite healthy. The only way to diagnose the disease is by culturing the organism from certain organs during autopsy. Swabs for culture are usually taken from the heart, brain, liver or a visible lesion.



Streptococcus as it appears under the microscope when magnified 400x. A gram positive cocci that forms chains

Treatment and control

As always, good ongoing care will mean that most pigeons are able to resist the disease and those that do get sick are in the best situation to recover. When Streptococcal disease is diagnosed, it is vital for the pigeon fancier to identify and correct the flaw in his management or loft environment that has enabled the disease to flare up in the first place. Otherwise, a poor response to any medication can be anticipated.

Being a bacterial infection, the organism responds to antibiotic treatment. And so, what are the best antibiotics to use? The best way to treat is to have your veterinarian culture the Streptococcal organism involved in your outbreak and also have him do what is called a sensitivity test in order to ascertain which is the most effective antibiotic for that particular strain of Streptococcus. Studies do, however, show that 80% of organisms are controlled by the antibiotics amoxicillin (a synthetic penicillin) and doxycycline, while 70% are sensitive to erythromycin, 30% are sensitive to enrofloxacin ('Baytril') and only 10% are sensitive to sulfur-based antibiotics. Obviously, the two poorest drugs are 'Baytril' and the sulfur-based antibiotics, so they are not likely to be the first choice for treatment of this disease (although obviously they are useful in other situations). In the absence of testing, doxycycline is the usual choice as it is equally effective as the synthetic penicillins but is more economical.

As with other bacterial bowel diseases, probiotics have a significant role to play in the control of Streptococcal infections. They can be used in times of stress when the normal bowel bacteria are disrupted to minimise the risk of Streptococcal invasion and also to preventatively treat healthy pigeons that have been in contact with pigeons infected with Streptococcus. Interestingly, exhibitors of fancy breeds have noticed how Streptococcal diarrhoea can be avoided in pigeons taken to shows if the pigeons are treated with probiotics, eg 'Probac,' for several days before and after the show.

Maintenance of a clean, dry loft will minimise exposure to the organism. If necessary the loft can be disinfected. Streptococci are sensitive to most of the commonly used disinfectants.

When Streptococcal infection occurs in a loft, it will spread slowly through the flock and some pigeons will start to die. When testing by your veterinarian confirms the disease, the following protocol can be followed:-

1. Unwell pigeons are separated and treated with doxycycline tablets, eg 'Doxyvet' 50 mg, ½ tablet once daily.
2. Loft cleaned and disinfected (eg with 'F10' or 'Virkon').
3. Trigger factors such as overcrowding, poor diet, low hygiene, inadequate parasite control, cold or damp conditions etc etc, are identified and corrected.
4. Start in-contact healthy pigeons on probiotics.
5. If further pigeons continue to become unwell while on the probiotic treatment, then start a flock treatment of antibiotic eg. Doxycycline water soluble powder eg "Doxyvet 12%" 3gm/2L water.