CANKER - ITS PREVENTION, CONTROL AND TREATMENT

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Nature of the disease

The disease canker is caused by a protozoan Trichomonas columbae. This is a microscopic single-celled organism. It lives within the digestive tract of pigeons, in particular the throat and crop, and can also involve associated areas such as the bile duct. The organism is fragile in the environment, only surviving for a few minutes once outside the bird. This helps with control of the disease and means that the birds cannot become infected from the loft or immediate environment as happens with other diseases such as worms and paratyphoid. The organism (trichomonad) requires intimate contact between birds to be spread and is usually transmitted by saliva or pigeon milk. Saliva contaminates food and water. As a pigeon drinks, the organism swims away from its beak and, when another pigeon comes to drink, it not only drinks the water but also the trichomonads there. When a pigeon sorts through grain, each dropped grain contains a small amount of saliva. In this way, the disease can also be spread through a feed hopper. Adult birds 'billing' can transmit the organism, as do parents when feeding their nestlings.

Control of canker during the breeding season

Correct medication is vital during the breeding season so that the level of natural immunity in the weaned youngster is as high as possible. Because the severity of the disease varies in different lofts, there is no single blanket program that is best for all lofts. There is no drug that by itself will cure canker in a loft. It is a matter of using medication correctly so that the birds can establish a strong natural immunity to the disease. It is this natural immunity that, in the longer term, protects them from the disease.

What causes canker to appear during the breeding season?

In health, every time the feeding stock bird feeds its youngsters, it passes on some of its own trichomonads to them. This gives the youngsters a controlled gradual exposure to the organism, which in turn allows them to establish their own natural immunity. Clinical disease appears in the babies when the stock birds shed too many trichomonads over a given period of time to their youngsters.

Increased rates of trichomonad shedding will occur if:

- the stock birds are stressed for any reason - Anything that stresses the stock bird will lead to an increased rate of trichomonad shedding and includes such things as a poorly designed loft, poor management practices, incorrect feeding, and other concurrent diseases.
- the stock birds' natural immunity is not high - Stock birds are likely to shed higher numbers more readily when breeding if their own natural immunity to the strains present in the loft is not as yet solid. This can occur if new stock birds carrying different trichomonad strains have been introduced to the loft during the non-breeding time. All birds carry some immunity to the resident trichomonad strains in their loft. When birds from different lofts mix, they exchange their trichomonad strains. Adult stock birds during the non-breeding season are not stressed and so exposure to any new strains brought in by introduced birds is unlikely to lead to disease. They are not moulting, not breeding, and have plenty to eat, and therefore no sign of canker occurs. However, when paired, if their natural immunity to the new different strains is not solid, the stress of feeding will cause them to 'break down' and shed larger

numbers of trichomonads. In the same way, the introduced birds need to establish an immunity to their new loft's resident strains. This is why canker is more of a problem in lofts that are still establishing with birds coming from a variety of other lofts. As the years roll by, fewer new birds are introduced and so the chance of new trichomonad strains getting into the loft decreases. The birds' immunity to resident strains becomes solid and the effect of the disease is less marked.

Many fanciers are frustrated when canker appears in the stock loft. With excellent care in a good loft, they wonder just how it is that the disease can come. Certainly they are on the right track with this approach because in a good loft under good care it is less likely that the stock birds will shed large numbers of trichomonads. However, some strains are so active that problems will arise no matter how well the birds are cared for.

How to manage an outbreak of canker during the breeding season

When canker does appear during breeding, its management is two-fold. It is a matter of:
1. treating the sick youngsters - In lofts with a canker problem, all youngsters should be checked daily. If a sick youngster is noticed it can be successfully treated, and such youngsters can go on to become champions. Either Spartrix or Flagyl tablets* can be used, however, Spartrix is more convenient to medicate the nestlings. The dose of Spartrix is one tablet per adult bird. Estimate how big the youngster is compared to the adult and give it this proportion of the tablet once daily until well. Usually, one to four doses are required. It is often good to also medicate both the nest mate and parents for 2 days. If the unwell youngster is slow to respond, it is usually best eliminated. Individual pairs that breed youngsters with canker are best mated to different birds for subsequent rounds.

At the same time, it is important to
2. decrease the number of fresh cases - This is done by checking the number of trichomonads that the stock birds are shedding. This is achieved by giving 2 days Turbosole* periodically. The exact frequency depends on the incidence of canker but usually every 1 - 3 weeks is appropriate. One needs to give sufficient 2-day courses to limit the number of new youngsters with the disease, but at the same time to avoid overuse of the drug so that the developing youngster is still getting an on-going exposure to the organism. It is a matter of working between these two extremes.

The important thing to always remember with canker during the breeding season is that the disease can never be controlled through medication alone. It is the development of a strong natural immunity that protects the birds in the longer term. It is important that medication is used to keep the birds well but used in such a way as to not interfere with the development of this immunity.

Preventative programs for the breeding season

In the stock loft that had canker last season:

Treat all stock birds for 5 - 7 days before pairing and then for 2 days every 1 - 3 weeks once paired. Frequency of treatment depends on the severity of the problem and the control achieved. Try and coincide these 2-day treatment periods with the time of hatching when trichomonad shedding is highest.

If canker is still a problem in certain pairs, try to only medicate these pairs. This can be achieved by breeding from them in individual runs and only medicating their water with Turbosole for 2 days as required or alternatively leaving them in the loft and just treating them with Spartrix or Flagyl tablets for 2 days when needed. Splitting the pair and remating each to other birds for the next round may help.

Stock birds can be crop flushed before pairing to identify those birds carrying large numbers of trichomonads. These birds are not only more likely to shed large numbers of trichomonads more readily once paired but also to pass on their genetic susceptibility to canker. In the longer term, it is best if these birds, when identified, are eliminated. The problem is that they may, in fact, be the winners and here lies the challenge for the fancier - to breed birds less susceptible to the disease that are also winners.

In the stock loft that had no canker last season;

No treatment is required. If there was no problem with canker in last year's nestlings, then it is best not to medicate for canker. Any medication will stop the paired bird shedding trichomonads and therefore interrupt the on-going exposure of the growing youngster to the organism. This leads to a lower natural immunity and may in fact create a vulnerability to the disease in the postweaning period.

In the stock loft that had no canker last season but to which new stock birds have been introduced

As discussed earlier, all birds carry in their systems the resident trichomonad strains of the loft and usually have a strong natural immunity to them. A newly introduced stock bird brings these strains with it. These strains may not have been encountered by your own birds and the new birds may not have encountered yours. Both lots of birds in time must, through exposure, become immune to the other strains. If introduced in the non-breeding time, when the stock birds are not under any stress, i.e. not moulting and in a good loft with plenty to eat, no clinical disease will be seen. However, with the stress of breeding, any immunity already developed will be put to the test. If immunity is not solid at the time of breeding, excessive trichomonads will be shed and the youngsters may develop canker. For this reason, new birds, especially if introduced immediately before pairing, should ideally be mated in individual runs and the youngsters monitored. If youngsters in the main loft begin appearing with canker, the loft should be managed as discussed under the section How to Manage an Outbreak of Canker During the Breeding Season.

Control at weaning

In lofts with a canker problem, all youngsters can be treated with Turbosole for 2 - 3 days at weaning, to avoid any check in their development through this stressful time. In the longer term, however, the important thing during this time is that only youngsters with the disease should be treated so as not to interfere with the developing natural immunity of the flock as a whole. Affected birds should be separated and treated with either one-quarter of a Flagyl tablet (200 mg) or one whole Spartrix tablet

once daily until well. This usually takes 1 - 3 days. Alternatively, the unwell youngsters' water can be medicated with Turbosole (1/2 teaspoon to 1 liter of water). It is important, however, to ensure that any unwell youngster is still able to drink. Turbosole can also be mixed into a paste and the youngster's throat painted with this using a cotton bud. The group of youngsters, as a whole, should only be treated if more than 10% of youngsters are showing signs, usually with Turbosole for 2 - 3 days. However, in this situation it is best to seek veterinary advice.

Control during the race season

If canker was a problem during the breeding season, this tells us that the birds have the potential to have trichomonad flare-ups in response to stress and that canker is likely to be a problem during racing. However, through good management and the correct use of medication, it is hoped, however, that most birds have developed a reasonably strong natural immunity by the start of the race season. The stress of racing will put any immunity that the birds have formed to the test. Depending on what stresses the birds are under, trichomonad levels will rise and fall. When high, they have a typical parasitic effect, weakening the bird, in the process creating a vulnerability to secondary infection (particularly respiratory infection) and compromising race performance. They also produce a toxin that makes the birds feel unwell. Birds with elevated trichomonad levels are said to have 'wet canker'. Signs of infection can be subtle and quite varied. Typical signs that would alert the fancier to its possible presence include:

1. 'Penguin' posture - Associated with proventricular (glandular stomach) and crop pain. Birds will lean back on their tails and gulp. Noticed particularly after eating and drinking.

2. 'Dry feather' - Due to lack of down feather drop and bloom production.

3. 'Leady' feel - Affected birds will not come into condition and feel heavy in the hand.

4. Wet dropping - Inflammation in the digestive tract creates a thirst, leading to elevated water intake and urine production. This produces a clear watery rim around the dropping.

5. Green droppings - Due to digestive tract irritation and in some birds decreased food intake.

6. Inflammation in the throat - Tonsillitis and increased clear to grey bubbly mucus.

7. Interference with crop function - Delayed crop emptying and sometimes vomiting.

8. Increased food consumption by team as a whole

9. Dry yellow canker - In birds of any age, this tells you that many other birds have elevated trichomonad levels, which have not yet passed the threshold for yellow material to form.

10. Indirect signs - Poor loft flying, poor tossing, respiratory problems that respond poorly to medication or quickly relapse, a dramatic improvement in the birds' general vigor in response to anticanker medication are all suggestive.

Definitive diagnosis, however, depends on microscopic examination of a crop flush. Microscopic changes that are suggestive of the problem also develop in the dropping,. These changes are associated with the stress of the disease and include elevated E. coli and yeast levels. These changes, however, do not occur in all birds.

Other sites of canker

As fanciers would be aware, most canker lesions are found in the bird's throat and are often associated with their tonsils here. However, canker can affect a variety of other sites.

Navel canker

If pigeon milk is spilt into the nest bowl and this, in turn, contaminates a nestling's navel that has not fully healed, a canker nodule can develop on the navel. Treat the nestling with the correct dose of Spartrix daily (usually 1 - 4 days). Antiseptics (such as Beta dine) can be applied to the navel daily until the area has dried. After several days, the nodule can be 'popped' like a scab and separated from underlying healthy tissue. The condition must be caught early for treatment to be successful and for the youngster to be of value racing. The condition is more likely to occur when nest conditions are poor, leading to delayed navel healing, and is therefore often associated with 'wet nests' and with inappropriate nesting material. The condition is also more likely to occur if the parents are shedding large numbers of trichomonads. A suggested course of treatment is:

- Treat youngster and both parents daily with Spartrix
- Dab navel daily with Beta dine
- Clean nest
- Treat parents for 'wet nest' if appropriate (PVM Powder and Probac)
- Improve nest conditions

Sour crop

In pigeons with sour crop, at least 90% have an internal canker nodule located at the base of the crop or within the glandular stomach (proventriculus). As the nodule increases in size, it squashes the windpipe making breathing difficult and blocking the crop outlet. This interferes with crop emptying, leading to bacterial infection of the crop and secondary starvation and dehydration due to the crop contents not being able to pass into the bird's system. Usually by the time the bird is noticed to be unwell, the

condition has passed the point where it will respond to treatment. Deaths often occur due to the nodule growing through the stomach wall, leading to stomach contents leaking into the chest. Alternatively, the nodule can damage the heart or large blood vessels within the chest, causing sudden and severe bleeding. Such birds are often found dead on the floor with blood coming from the mouth. It is always worth attempting to treat valuable birds and I suggest :

- Manually empty the crop
- Give electrolytes in water
- Treat bird with 3 drops Baytril twice daily
- Treat bird with 1 tablet of Spartrix or a 1/4 Flagyl tablet or 0.5 ml Flagyl syrup once daily
- Separate unwell bird from loft mates

Cloacal canker

The cloaca is the pigeon's bottom. Within its wall is a gland called the Bursa of Fabricius. This gland is an important part of the youngster's immune system. It shrivels up and disappears during puberty. If pigeon milk containing trichomonads contaminates the nest bowl, the trichomonads can cause a trichomonad nodule to develop in the cloaca. Affected birds are usually noticed to be a bit quiet or their growth is slightly retarded compared to others of their age. On examination of the cloaca, a firm lump can be felt in the skin above it. Sometimes these lumps do not become apparent until the postweaning period. Affected birds should be treated daily with either Spartrix or Flagyl, usually for 3 - 4 days, by which time the nodule has usually localized and can be expressed by gentle but firm pressure through the cloaca.

Canker nodule in throat or crop

Older youngsters or mature stock birds with a reasonably strong natural immunity will often try and localize a canker infection, leading to nodule formation. If in the throat, these nodules can usually be seen or if in the crop wall can usually be felt as firm mobile lumps ranging in size from 0.5 cm to 4 cm in diameter. Affected birds are treated daily with Spartrix or Flagyl tablets. Once localized (usually 1 - 4 days), throat lesions can usually be teased free with a cotton bud or crop lesions pinched free into the crop. Occasionally, surgical removal is necessary. Premature attempts at removal usually result in excessive bleeding.

Internal canker

Canker can infect internal sites associated with the digestive tract, notably the bile duct, which drains bile from the liver into the bowel. Birds with internal canker nodules usually display non-specific signs of illness, including weight loss, lethargy, reluctance to eat and green diarrhea. The final diagnosis is often made at autopsy. In lofts with a canker problem, it is usually best to include a daily Spartrix or Flagyl tablet in the treatment regime of an unwell bird in case this is the problem.

Sinus canker

Sometimes canker organisms can invade the sinuses through the slot in the roof of the mouth and form a canker nodule here. The birds present with a firm swelling across the forehead between the base of the cere and the eyes. Anticanker medication is given for 4 - 5 days to kill the active infection. After this, lancing the area by making an incision in the skin over the most prominent area of the nodule enables the canker nodule to be expressed. Once the nodule is removed, it is best to continue with anticanker medication for several days. Healing is usually uneventful.

Other sites

It is important not to confuse infection in other parts of the body with canker. Trichomonads, partially because of their fragility, can only infect the digestive tract and associated structures. Pigeons are very restricted in their response to infection. Their white blood cells lack many of the enzymes (called lysosomes) that are normally found in mammals and therefore cannot produce pus. For this reason, no matter where the site of infection, the resultant reaction often looks like a canker infection. Bacterial (or other) infections of the skin, feet and eye, etc. for this reason are often confused with canker because of their appearance.

Medications Available

Any one of a group of medications called nitro imidazoles are effective against trichomonads. There are four commonly in use:

1. Dimetradazole - The common brand name here is Emtryl, available as a water-soluble powder. Dimetradazole was the first nitro imidazole available and is still an effective drug, although trichomonad resistance to it in some areas is a problem because it has been used for the longest. It must be used with care as it has a narrow safety margin. Overdose leads to a reversible loss of balance and coordination and, in high doses, death. The medication can interfere with sperm production in cocks, leading to a temporary infertility, and so is not recommended for use during breeding. The usual dose is 1 teaspoon (3 grams) to 4½ - 8 litres of water. Lower dose rates should be used in stock birds feeding youngsters and during hot weather when water intake increases and evaporation occurs from drinkers, increasing the concentration of the medication.

2. Carnadazole - The common brand name here is Spartrix. It is only available in tablet form. It has a wide safety margin and is very useful for individual bird dosing, particularly youngsters in the nest. The dose is one 10-mg tablet daily.

3. Metronidazole - The common brand name is Flagyl. This is available as a water-soluble syrup and as

tablets in a variety of strengths. It is very economical, with the tablets being useful to dose individual birds. Individual birds are given ¼ of a 200-mg Flagyl tablet once daily. Flagyl syrup is water soluble and is given at the dose of 5 - 10 ml per litre but is very sugary and not very palatable to the birds.

4. Ronidazole - This is available as a water-soluble powder under a number of brand names world-wide, including Ridsol-S, Turbosole, Tricho-Plus and Ronivet. The usual strength used is 10%. The dose at this strength is ½ teaspoon per litre. Weaker preparations are available but the birds need to be treated longer with these. The drug is very bitter so preparations stronger than 10% tend to be unpalatable to the birds. It has a very wide safety margin and is safe to use during breeding, racing and moulting. World-wide, ronidazole is the current medication of choice to treat canker. However, in some countries it is not available for use in pigeons, authorities being concerned that resistant organisms may develop. As the drug is used in food-producing animals such as pigs, its use is reserved for these.

In any canker-control program, it is often best to rotate between at least two of these medications in order to decrease the chance of a resistant trichomonad strain developing. Currently, ronidazole-based preparations are used as the primary treatment because of their effectiveness and wide safety margin, but it is a good idea to swap to one of the other available drugs every third or fourth treatment.