Chronic diarrhea

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One of the most frequent problems of race and ornamental pigeon keeping is loose stool. During our laboratory work we are faced with this symptom more and more frequently so it is worth discussing the topic in detail. First of all we should overview the possible causes of chronic diarrhea (Table 1). Due to limits of space we cannot discuss each cause in detail but by introducing three cases we can get a better idea on why laboratory diagnostic is essential for accurate, fast, effective and cheap treatment.

Table 1: Possible causes of chronic diarrhea

<table>
<thead>
<tr>
<th>Cause</th>
<th>Pathogen</th>
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</thead>
<tbody>
<tr>
<td>Virological</td>
<td>Paramyxovirus, Rotavirus, Adenovirus</td>
</tr>
<tr>
<td>Bacteriological</td>
<td>Salmonella, Staphylococcus, Streptococcus, Escherichia, etc.</td>
</tr>
<tr>
<td>Mycological</td>
<td>Candida, Mucor, Aspergillus, etc.</td>
</tr>
<tr>
<td>Parasitological</td>
<td>Ascaridia, Capillaria, Coccidium, Hexamitia</td>
</tr>
<tr>
<td>Toxicological</td>
<td>Mycotoxins, algae toxins, chemicals, etc.</td>
</tr>
<tr>
<td>Nutritional</td>
<td>Hypervitaminosis, hypovitaminosis, monotonous diet, etc.</td>
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</tbody>
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Case 1.

The owner of a pigeon loft turned to our laboratory for help. His pigeons had been excreting watery, greenish-white dropping for months. Two birds also showed neurological and musculoskeletal symptoms. They were immediately excluded from the loft. The rest of the loft was given Baytril solution and NeoTesol pulvis during the month before the examination but their condition has not improved on the long term. The pigeons were vaccinated against
paramyxovirus every year. The whole loft was given dewormer (Chemisol) every 2 months, Vetacox-S pulvis against coccidia monthly and Baytril solution against salmonellosis. In order to find the cause, one of the pigeons showing serious symptoms was submitted to comprehensive diagnostic dissection and dropping collected from the loft was examined for parasites. During the dissection of the pigeon – which had lost a lot of weight – we saw blushed intestinal mucous membrane and the intestinal content was greenish. Its liver was of normal shape and size, and had a yellowish brown colour. No other visible changes could be found so the following organs have been sent to pathohistological examination: liver, spleen, kidney, brain, lung, bone marrow, heart, small intestine. The pathohistological examination showed that there has not been any significant changes in these organs. A bacteriological examination of the intestinal content has also been carried out which confirmed the presence of Escherichia coli and Staphylococcus intermedius bacteria. Both facultative pathogens were resistant to many antibiotics. During the parasitological examination we have found lots of Capillaria and Ascaridia eggs. Based on the examination results our diagnosis was capillariosis, ascaridiosis, dysbacteriosis and bacteraemia. The loft was then given dewormer, probiotics, trace elements and vitamin as treatment. As a result, the pigeons’ diarrhea ceased in 2-4 days – depending on the individual animal – and the whole loft’s condition has been normalised after 1 week. Based on this case, I would like to call the attention of pigeon keepers to the following:

- Coccidiostatics or antibiotics are ineffective if the pathogen is resistant.
- If the pathogen (e.g Salmonella) cannot be found in the loft then it is unnecessary, even harmful to treat the loft with expensive medicine because unnecessary dose of antibiotics increases the chance of resistance and leads to dysbacteriosis.
- Antibiotics cannot be used for prevention because they are completely excreted from the body a few days after application.
- If Salmonella can be found in the loft then a long term (8-10 days) treatment is advised based on the results of the drug sensitivity test.
- Bacteria spreading to other organs (e.g brain, joints) by the bloodstream can also cause neurological and musculoskeletal symptoms.

Case 2.

A breeder turned to our laboratory for help because his pigeons have been having diarrhea for 2 weeks and the antibiotic treatment (Baytril, Furazolidone, Tylosin) had no effect. The loft was vaccinated against paramyxovirus on a yearly basis and received regular Salmonella prevention. In order to set up a diagnosis, the weakest pigeon was dissected. During the macroscopic dissection we only found lesions in the bone marrow, the gastrointestinal system and the liver: large amount of undigested feed in the crop, proventriculus and gizzard, blushed small intestinal mucosa; normal sized and shaped liver but of light yellowish-brown colour. Histopathological examination was performed on the following organs: liver, spleen, kidney, brain, lung, bone marrow, heart, small intestine. As a result we found pathological fatty
liver disease. As this lesion is usually caused by toxins and the source of toxin is usually the feed, the next step was the examination of the feed. It turned out that the sunflower seeds with which the animals were fed had a high content of mold. Based on the results detailed above, our diagnosis was indigestion and pathological fatty liver disease caused by mold toxins. During the treatment we immediately stopped feeding contaminated sunflower to the animals. Instead, they were given high quality sunflower, wheat, corn, vitamins and probiotics. 1-2 days after the deprivation of moldy feed (depending on the individual animal) the pigeons’ dropping became formed and by the 5-12 th day (depending on the individual animal) its water content has also been normalised. Based on this case, I would like to call the attention of pigeon keepers to the following:

- Always store feed in a dry place. (Later, by cooperating with the owner, we could find the source of the problem. The feed’s surroundings – due to the long term rainy weather and the leakage of the feed storage container – had such a high rate of humidity that the circumstances were optimal for the replication of molds.
- Do not give the pigeons feed that has been wet for a long time.
- Watery stool may not only be caused by bacteria or parasites but by inappropriate housing conditions as well.
- If the watery stool of the pigeons is not caused by bacterial infection then by giving antibiotics, we might worsen their diarrhea, further deteriorating their life expectancy (and our financial situation).

Case 3.

The owner has brought one of his pigeons to our laboratory with the suspected Chlamydiasis. He claimed that his loft had lost a lot of weight due to chronic diarrhea and 3 of his pigeons have died in the past 5 days. Furthermore, he started noticing eye symptoms (high amount of purulent exudate) more often among his pigeons. Before the appearance of eye symptoms, he treated the animals with Neomycin but there have been no signs of improvement. The loft has not been immunised against infectious diseases. In order to set up a diagnosis, the pigeon brought into the laboratory was examined physically. We performed bacteriological examination of dropping, bacteriological and cytological examination of the exudate taken from the bird’s conjunctiva. The pigeon was in a serious condition and it did not protest against the physical examination at all. The main symptom was the purulent exudates covering the eyes. Checking its feathers, we found lots of quill mites. We found two types of bacteria in the conjunctival exudate (Staphylococcus aureus and beta-haemolytic Escherichia coli) and from the dropping we were able to isolate beta-haemolytic Escherichia coli in pure culture. We excluded the possibility of Chlamydia with a cytological examination. Based on the results of the examination our diagnosis was bacterial conjunctivitis, enteritis and dysbacteriosis. As treatment we gave the loft ectoparasiticide, targeted antibiotics, probiotics and vitamins. Due
to the decay of quill mites the pigeons’ mood has improved during the first 12 hours of treatment and in 7-10 days conjunctivitis and enteritis – as well as diarrhea – ceased within the whole loft. Based on this case, I would like to call the attention of pigeon keepers to the following:

- Quill mites can weaken the pigeons’ immune system through its general well-being that even facultative pathogens can easily cause infection.
- The more neglected the loft is, the harder and costlier it is to heal it.
- As Neomycin given per os is not absorbed in the intestine it is ineffective for the treatment of symptoms appearing outside the intestinal system (e.g. eye symptoms).
- If the bacteria causing diarrhea are resistant to antibiotics – which has earlier proven effective – then the treatment will not only be unsuccessful but also harmful because it does not eliminate the cause of diarrhea and it destroys the natural intestinal flora of pigeons.

**Summary:**

In all three cases we found that the symptoms noticed within the loft were of complex origin. Unfortunately pigeons are quite sensitive so the primary disease in most cases is worsened by secondary pathogens. As a result a specifically targeted complex treatment is necessary for a quick and complete recovery. In the absence of such a treatment the animals will only be symptomless but not healthy. It often happens with symptomless but disease carrier pigeons that after an exhausting race the hidden disease appears in a serious form and it may endanger the whole loft.