

Budgerigar Health And Related

Megabacteria Information

Megabacteria

Virtually unknown of us recently as 5-6 years ago, Megabacteria is being increasingly found in more and more species of birds. Although very easy to diagnose and treat, many avian veterinary exams do not include a wet mount of a fresh fecal, generally the ONLY way it can be seen. Like it or not, this is something ALL aviculturists may be facing in ALL species in the very near future.

The following article as well as the links to the left contain a tremendous amount of info regarding this organism, its origin, diagnosis, and treatments. Get familiar with it, it is likely you will see it or hearing about it again soon!

Information contributed by Kay

Megabacteria

By Carole Owen

Part I - My Experience

My beautiful 6 month old Pacific blue mutation parrotlet was found on the floor of his cage, puffed up and with his head tucked under his wing his appetite was good, but he was very lethargic - I put him into isolation, weighed him (he had a 10% weight loss), provided heat, seeds, soft foods and water.

My veterinarian was out of town, so he was taken to a non-veterinarian doctor the next day. At my request, a CBC and blood chemistry panel were taken, as well as a culture. Blood results came in with a very low white count, apparently an indication of a bacterial infection, and all culture results were negative. He was put on antibiotics, but there were no signs of improvement.

Aggravated "tummy care" pulled this bird through the next 4 days, until my veterinarian's return. Heat and hand feeding saved his life. When my avian veterinarian returned, he gave me a call, and asked to see the bird since there had been no improvement from the antibiotics treatment.

This bird had arrived on a second bird, and the two had been sharing the same cage. The cage mate showed no signs of ever clearing down. He was highly energetic, and never stopped a beat. One morning, I was surprised to see the cage mate spitting up undigested seeds! Well, he made the trip, along with the blue, to my veterinarian's office.

Luckily for me, my avian veterinarian is well informed, well read, and stays on all the new "things" going on in the world of avian medicine. He checked the bird's droppings under the microscope. I took a look at the microscope, and there it was - Megabacteria! Both birds had the bacteria, but only one of them showed noticeable symptoms!

Medication was prescribed for the two birds, and I added in 100 mg. The blue made a complete turn around his energy returned, and he began to regain the weight he had lost. The two birds went on to make an unremarkable recovery, and the blue has since produced several clutches of babies.

Once the infection was under control, I needed to deal with the "flock." So I collected "sample" birds from every cage I had and made the big trip to my veterinarian. These birds from an individual source I checked for Mega. Guess what? It was found in 25% of my cages.

The original two affected birds were the only ones to come from that particular source, and they came from a line of imported European birds. A European import fellow here from a second source tested positive for Mega. One cage-full of babies, from parents that tested negative, had positive tests for the organism, while another group of babies from the same parents tested negative. The one oddity in the cage of babies that tested positive was a single bird from a third source that shared the cage with them. That bird came from an aviary with birds that had been imported from Europe. I isolated all three avian sources of the problem.

The European babies had been "keeping suspicious" ever since buying her first chicks, and had become rather reclusive. I started to look for veterinarians give her a second exam. He found that this hen had "fat ribs" above her legs. She sat on her feet all day and did nothing while her mate fed her. She laid no more eggs that year, and isolated scurried most of the time. She was chosen as one of the "sample birds" that went in for testing for Megabacteria, and this would be her third trip in. Yes, she had Megabacteria! She was treated, became active once again, lost the fat ribs, and laid and reared 3 successful clutches in 1997. She is active to this day, and has never developed those fat ribs again.

I have identified, at the acute symptoms that appeared in my line - a bird that looked very much like it would not live to see the morning, the fallow hen that was infected but only looked "appetitive", and CJ at the rest of the birds that were infected and displayed absolutely no symptoms! Other than those described symptoms, no others showed up with my birds.

Part II - What Is Megabacteria?

Megabacteria is a recognized problem in both Europe and Australia. It's been seen primarily in canaries and budgies, and in particular "show" budgies, although other species have been affected. For the Europeans and Australians, Megabacteria is recognized as a common pathogen. For aviculturists and pet owners in the US, this is viewed by many as an exotic pathogen, and as such should be eliminated from our aviaries and pet birds.

In a publication by Lucie J. Fijappin of the University of Queensland, Queensland, Australia, he states that "Megabacteria are large, gram positive, rod-shaped organisms that are being increasingly found worldwide in the proventriculus or droppings of several pet bird species, especially budgerigars and canaries."

He goes on to say that Megabacteria has been reported to have been found in wild-caught Australian sulfur-colored cockatoos. He states that budgerigar breeding colonies in Australia show a 64% infection rate.

He describes symptoms of budgerigars in the acute stage to include severe depression, lethargy, fluffed feathers, ending with death within 12 - 24 hours. Regurgitated food can stain the feathers around the breast and neck. This same bleeding may result in droppings that are black or reddish-black. The chronic stage is more common, and is usually seen in budgerigars over one year of age, or just after the first breeding season. These birds become depressed, lose condition, fluff up and lose weight in spite of apparent good appetite. Although the birds are often at the head of the flock, they only drink or eat when they are forced to. They may regurgitate blood-tinged feces. They may "flush" or "back strain" in an attempt to regurgitate. Their droppings may contain undigested seed particles, or even undigested whole seeds. These budgies will continue to lose weight over weeks or even months, then they either die or clearly recover. The caution that what may appear to be a recovered bird will usually require later avian treatment.

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Dr. Spier says that the birds exhibit all the classic signs of having a severe stomach ache. They fluffed themselves, looked heads, stood on the bottom of the cage, closed eyes and pinned expressions all look like "uh" when we have a stomach ache.

Diagnosis and treatment are relatively reliable and safe. Your avian veterinarian will have to test, diagnose, and prescribe the medication for you. The test in live birds is a simple direct fecal (a fresh droppings) wet-mount slide checked at 400 power or higher. Staining (including Gram's staining) is not necessary. Dr. Spier takes a great deal of time examining the slides, and he has found as few as one or two organisms in the last field checked. In less careful hands, these could have been missed.

Culturing for this bacteria, using conventional culture medium, is not effective. This bacteria can be cultured with great difficulty, but it has special medium requirements, which are not commonly available.

In history experimentation, the lining of the proventriculus and ventriculus are washed for direct examination under a microscope. The organism produces a slimy coating on the mucosal surface of the proventriculus and ventriculus. This slimy coating will be thick with the organism, and diagnosis should be eminent. On some occasions, the bacteria can cause perforation of the proventriculus and ventriculus, which will lead to internal bleeding and death. This seeps of the mucosal surface must be done on fresh tissues, not on tissues that have been subjected to preservatives such as formalin. Therefore, it will usually be the veterinarian or pathologist who originally opens the carcass that will have to run this test. It is not uncommon for the organism, and hence the diagnosis, to be washed off in formalin-fixed tissues, unless fresh and mounts have been prepared prior to tissue fixation.

Megabacteria is resistant to antibiogram antibiotics. One recognized effective treatment is with the antifungal drug, Amphoteribin B. Fijappin states that Amphoteribin B works on certain components of the cell membranes of fungi. This same action does not apply to Megabacteria, since Megabacteria is lacking that particular component based on electron microscopy studies. Just how it affects Mega is not known at this time. Mega is, at this time, assumed to be a bacterial organism, although there has been an absolute confusion.

Treatment prescribed for my birds was the antifungal, Amphoteribin B (Fungizone)

Part III - Management

I decided to treat the entire flock of about 50 birds - which is when I discovered that it would cost me well over \$700.00! The pharmacist at the local hospital conducted a search and found that there was an oral suspension form. Well, you might know how I reacted when she told me that I could buy enough oral medication to treat the entire flock twice for around \$30!

The oral form of this medication still is not commonly available in drugstores. Many pharmacists don't even know about it yet. If you ask for their help, they can do a search on their computers and will find that the medication is available.

The oral form was well tolerated by all birds, they even seemed to like its taste. Every bird had to be caught and treated individually every morning and every night for 10 days. As part of the recommended treatment, about halfway through the ten day period, every cage was thoroughly cleaned and disinfected. Perches and nest boxes, toys and barrier sheets, everything was either discarded or disinfected.

For prevention and containment, treat the birds that you currently own (sample birds will probably be adequate for breeding with larger aviaries), then treat accordingly. If you find Mega in one of your birds, you should treat your entire flock. Follow your avian veterinarian's advice for treatment, then retest your birds. For breeders, the use of a microscope for screening will be your best tool of elimination efforts.

Use Dr. Spier's "closed aviary concept". House all new birds quarantined by your avian veterinarian, including appropriate tests, and maintain quarantine for a minimum of 60 days. Every new bird purchased should be considered a potential carrier. There are many types of birds that are regularly being imported from Europe, resulting in multiple opportunities for cross contamination. Over the course of 2 years, I acquired birds from 5 different breeders and had the organism found in birds from each and every one of them. I now have all new birds tested. The test is non-invasive, inexpensive, and accurate in the hands of a careful diagnostician. If even one bird tested positive in an aviary, the entire aviary should be considered suspect, and efforts should be made to treat the entire flock. Retesting should confirm the presence or absence of the organism.

Keep your cages clean and use closed water bottles (the hamster style bottle, which helps to reduce the spread of many diseases within an aviary). Clean your cage thoroughly before housing a new bird in it. Do not cross contaminate by sharing used dishes or water bottles between cages. Always thoroughly clean and disinfect all feeding equipment.

Part IV - Antifungal

I had very strongly that birds should not be dying from Megabacteria, but I do not believe that it is. It is not the fact that has led to us aware of the problem. The same goes for our avian vets. This is quite simply because the organism has not been recognized as a problem in this country until recently, although there have been a number of reported cases for several years now. Have your birds properly screened for the organism, and make the effort to eradicate it. If it is identified in single birds or in your flock, avoid water-based treatments. The probability of only a reduction, not an elimination, of this organism is greater with water-based treatment approaches. This will result in infected or carrier status birds still being sold from your flock, which will potentially go on to infect others, develop disease or damage your reputation in the future.

Although my experience has been with parrotlets, this problem is not limited to parrotlets. Birds of several kinds are still being imported from Europe, and you can bet that infected birds are still coming in. Be sure to check your birds. You may have this "hidden killer" in your aviary.

(1) How would using water bottles instead of bowls help? Does it have to do with the problem of "porret soup" and pooping in water dishes?

Answer: For the single bird owner, it may not be much of an issue. In an aviary, however, it's a different story. This bacteria may be spread of particles of fecal debris floating in the air from flapping wings and vacuum cleaners, or being directly dropped from cage to cage. Although there has been no specific research done pertaining to how Megabacteria is spread, this mode has been proven in the Harrison & Harrison of Oxford or fresh droppings falling into the water dish of another bird will cause the spread of this bacteria. Because the water dish is an ideal medium for the growth of many bacteria.

(2) I know someone who had a case of Megabacteria in their birds which was diagnosed by a reliable avian vet. The birds were put on a treatment of a very diluted solution of hydrochloric acid for several weeks and that seemed to do the trick. By the way, that is the same treatment given in Avian Medicine: Principles and Applications by Ritchie, Harrison & Harrison.

Answer: I understand that the treatment has been used in the past. I also understand that this particular treatment has not been found to be consistently effective, according to Fijappin. Dr. Spier and other vets in this country. Perhaps the Avian Medicine book is out dated as regards this particular bacteria and its treatment. That's not to say, it's just that research changes things. When it becomes a good medicine today or other program being improved upon tomorrow? I would suggest that any treatments we are faced with treating this bacteria for the first time, those who are using the method of changing the pH level, and those who are considering using the water-based treatment from Australia should first consult with Dr. Brian Spier. His consultation number is 925-825-1878 and e-mail address for consultation is AVNVTG@aol.com. Consultation costs are very reasonable, considering the potential loss of birds, production and regulations that are in place.

Also, I caught a note from Dr. Brandon Ritchie on another list stating that the only recognized effective treatment for this bacteria is Amphoteribin B. You might recall that he co-authored Avian Medicine: Principles and Applications with the Harrison's.

(3) Not knowing that what Megabacteria is, this an organism that can dormant in a bird and for some unknown reason at any time it could start shedding IF that is the case how would we test for it? If the bird is not shedding at the time the test would be inconclusive, just like for polyoma.

Answer: At this time, no real understanding of the nature of this beast is in hand. There are verified cases of false negative results. The current recommendation is that the bird is considered clean after three consecutive tests are performed, with negative results in all three tests.

The following are answers from Dr. Brian Spier:

(4) How long after a bird is dead can Megabacteria still be isolated from the mucosal linings?

Answer: We have been able to identify Mega on fresh wet mount of proventricul or proventricul mucosal scrapings in post mortems - even some fairly old carcasses - 2-3 days since death.

As I believe you know, histopathology usually will not demonstrate the organisms reliably, as they tend to wash off in the formalin during fixation, and gram stains (in my opinion) are fraught with the same problem.

(Since that time, Mega was found in a 5 day old carcass.)

(5) If Mega is a bacteria why are we treating it with an anti fungal antibiotic?

Answer: Technically, we do not know WHAT Mega is. It morphologically resembles a bacterium, but therapeutically responds to an antifungal which should have no effect on bacteria. We know that it is a bacteria-hemolytic organism that can be grown (with great difficulty) on blood agar media.

(6) For human purposes, Amphoteribin B is a last resort drug and must be used for 10 days to be effective. Why only 10 days for a bird?

Answer: Ten days has been shown to be clinically effective. Human treatments are based on IF you use for severe systemic fungal disease - which Megabacteria is not.

(7) After a 10 day treatment can it be considered cured? Since there are false negatives, and lack of expertise in the department of detecting low numbers of rods, how can we ever be sure it is gone.

Answer: By monitoring for confirmation of its absence over time, we may be able to claim a cure. In general, I feel much better when there have been no organisms seen on a series of three independent checks in birds, as long as the environment and traffic flow are secure.

(8) If we can never be sure it is gone and since no one can say what the incubation period is then would it be practical to treat on a regular basis, say annually.

Answer: This is the approach adopted by the Australian train of thought - with the concurrent statement that there is an incidence of up to 65% subclinically infected birds there. Routine treatment will reduce numbers, but will also subclinically infection and spread of the agent. The Australian data has clearly shown that.

(9) What harm or good would it be to treat all of the for sale birds again just two weeks prior to shipping.

Answer: There is no harm known with Amphoteribin B treatment other than the cost and labor involved. But, a reflection that is free of the organism (a far but longer term goal) will not necessitate this approach. Also realize that this may make detection of the presence of the organism in your birds leaving (the true benefits for your management program) much more challenging; therefore, may lead you to more of a false sense of security as to your standing pertinent to this organism's presence in your flock.

(10) Can a sun lamp or UV lighting protect or clean in an indoor aviary situation?

Answer: We have no factual data to support or deny this thought. UV light should not hurt, but we do not know if it will help.

(11) Would you recommend new cages considering all the little waste and wired together spots on cages being able to harbor the Mega?

Answer: No. In general, good quality cleanliness is the key. A "farm fresh" environment is both impractical as well as biologically inappropriate.

(12) Someone said feeding citrus fruit could help prevent Mega. Is there any truth to that statement?

Answer: Not much. Some canaries tend to have less disease when eating or drinking acidified fruit/water. Parrotlets are not canaries, and this approach is not an acceptable TREATMENT. It only reduces numbers of organisms present.

(13) How about other species being affected with Mega?

Off of the top of my head, Mega has been seen in many psittaciformes - but predominantly in the smaller species; it has been seen in several small passeriformes (particularly canaries, finches, etc.). It has been reported in the ostrich and a few other ground feeding species.

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