

Case summary for “Yondu” Madar, necropsy findings.

July 1, 2021

Yondu originally presented April 7, 2021 to Purdue University’s Veterinary Hospital through our Exotic Pet Service for a post purchase exam and appropriate infectious disease screening. He looked good on exam and weighed 268 grams. A young blue headed macaw, quite social and obtained in late March from a large avian facility in New Jersey.

A blood sample was obtained for Parrot Fever (Chlamydia/Psittacosis) screening. This was advised since this is a disease most commonly seen from birds obtained from large flocks or aviaries, with clinical disease more evident in South American species (which would include macaws) compared to African and Australian continent parrots. It can be transmitted to people. It is enough of a concern it is reportable when diagnosed in birds in Indiana.

A blood sample was obtained for Macaw wasting disease (Bornavirus/Proventricular Dilation Disease) as well. This is a disease most commonly seen in macaws and South American species compared to the other continent parrots.

The initial Psittacosis test came back POSITIVE > 1:10, based on an Elementary Body Agglutination test, which is an uncommon occurrence on pre or purchase exams in our practice. This test was run through the University of Georgia Infection Disease Lab, one of the few university labs listed in the 2017 update of the Avian Psittacosis Compendium, under Appendix 1. Excerpt from this document includes: *The elementary body is the infectious form of C psittaci. Based on immunoglobulin kinetics, the elementary body agglutination assay favors the detection of immunoglobulin M antibodies, which are generated and reach the highest titers early in an infection. Titers of 10 or greater are considered positive. However, increased titers can persist after treatment is completed.*

I notified the Indiana State Board of Animal Health as required. Dr. Michael Kopp and I discussed the bird was not clinical currently but was arriving from out of state and from a large aviary facility. A treatment protocol of doxycycline (antibiotic of choice) was discussed as a therapeutic option to limit development of clinical signs in a susceptible species and protecting the Madar household. Doxycycline was mailed to her on April 30 to begin at the doses advised in the Compendium. Macaws are treated at the lower end of the 25-50 mg/kg/day dose spectrum advised for most parrots. Yondu was started on 28 mg/kg/day.

Yondu returned to Purdue on May 7 for another blood sample for Borna virus. We submit these to a different lab. The Animal Genetics, Inc. lab had previously reported “No Result” from the initial drop of blood submitted on April 7. We have not had a “no result” before. One drop of blood has typically been sufficient on previous birds, but they advised submitting more sample since they were unable to try to run a second test with our initial submission. Two drops of blood were submitted to the lab on May 7. Yondu was on day 7 of the antibiotic doxycycline and still eating well. A few birds cannot tolerate this antibiotic or rarely can have a drug reaction. Typically 7-10 days after starting it.

Mrs Madar contacted us on May 14 to indicate that while Yondu weighed 270 grams on May 12, his weight was down to 207 grams that day and he had regurgitated/vomited. He developed breathing difficulty as the day progressed and died that evening despite seeking emergency care.

A necropsy was performed at the Univ of Illinois Veterinary Diagnostic Lab by veterinary pathologist Dr. Miranda Vieson, DVM, PhD, DACVP

There was no obvious food, seeds or object in his wind pipe/trachea to indicate he had aspirated something and was choking as a cause of his breathing distress. Typically choking would not include weight loss and does not have a prolonged course throughout the day.

I have placed many birds on doxycycline as an antibiotic since it is routinely used for bacterial respiratory diseases with limited side effects other than regurgitation. While I have not seen a patient develop doxycycline toxicity in my 30 years of treating birds, this has been rarely documented by others. Toxicity from this family of antibiotics typically would cause liver necrosis/damage and contribute to weight loss. The report noted some inflammation of the liver and slowing of the bile which increases liver size rather than shrinking it with necrosis. I spoke with Dr. Vieson directly after her initial report to clarify if she felt doxycycline toxicity was still possible with what she saw on his liver. She did not see necrosis present and she indicated it wouldn't explain the heart necrosis and degeneration she found.

The degeneration and necrosis (dying cells) throughout (multifocal) the heart were her most concerning finding and best explain his rapid deterioration that day including breathing problems. Limited inflammation was noted on the heart cells, so these changes were quite rapid.

An enlarged spleen was noted in addition to the heart damage which concerned her primarily for infectious diseases. Rapid declines more typically relate to viruses compared to bacteria or fungi or parasites. Plasma cells were noted in the liver and spleen and these cells are more prevalent in chronic low grade infections which could be viral, bacterial, fungal or parasitic.

Her top viral concern attacking the heart quickly was West Nile Virus, an encephalitis virus transmitted by mosquitos. Classic times of the year however are late summer instead of spring. PCR testing was 0.00 indicating a NEGATIVE result, no virus was found. Testing would have to exceed 36 to be suspicious and 40 to be positive.

She did antibody testing for reaction to the Chlamydia bacteria on cells of the liver and spleen. His cells had a positive response to antibody in both the positive AND negative controls so this makes it difficult to confirm Psittacosis and she reported the response as NON-SPECIFIC. The negative controls would have had to be NEGATIVE to support that the positive response on these cells was a true POSITIVE. Both sets of cells had a response, vs neither sets of cells responding would be the NEGATIVE result.

Ultimately, on June 7 we received a response from Animal Genetics related to another "No result" test. This was on the second blood sample we submitted May 7 for Bornavirus prior to his death. This time they indicated that it was possible that too much blood was submitted and dried during transport in their provided medium. The Geneticist specific to the Bornavirus test also indicated *"It's also possible that the bird may have had a bacterial infection in the past and developed antibodies that may be interfering with the testing."*

In my conversation with Dr. Vieson as to postulating his ultimate diagnosis, we could not confirm a viral or bacterial cause of death. The necropsy findings do not support choking or doxycycline toxicity. The enlargement of the spleen with predominantly plasma cells lean us both to support an inflammatory or infectious cause, particularly in a young bird. The POSITIVE EBA test for Chlamydia would indicate high IgM antibodies typically seen in an early infection back when he was purchased. The necropsy POSITIVE antibodies in cells from his spleen and liver, to Chlamydia on both positive and negative controls , indicate nonspecific high antibodies to something infectious, even if not ultimately Chlamydia. Repeated “no result” on the Bornavirus screen on both one and two drops of blood may also be due to antibodies that this bird had to a previous bacterial infection. This could be Chlamydia or any of many other bacteria that infect young birds during their development. Bacteria were not otherwise visualized on necropsy (except for the positive Chlamydia screen on both positive and negative controls) nor were they cultured on the necropsy. Bacterial cultures can be negative when done on birds currently on antibiotics.

I do not see anything in the necropsy that supports household exposure or negligence on the part of Mrs Madar.

Since my initial exam on April 7 and through his necropsy findings in May, Yondu has had an antibody response to some, or multiple, infectious agent(s). This would include even if he had a non-specific response for Chlamydia on blood, spleen and liver cells and a reason for the suspected interference with the Bornavirus screening.

While I cannot confirm the specific viral or bacterial cause of his heart degeneration and necrosis (dying cells), it appears to me that it would fall under his 6 month health guarantee. He has never had negative tests since I have seen him. Multiple positives or interference with tests, and plasma cells in his spleen and liver, support an underlying immune and inflammatory response to infectious agent(s) since his first post purchase exam through his necropsy.

Please contact me if I can be of further assistance professionally.

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