
**GOUT IN PAINTED STORK (*Mycteria leucocephala*):
A CASE REPORT**

**S. Kalavathi¹, K. K. Swarna Latha², B. Vimala Devi³, L. Ratna Kumari⁴,
K. Kantha Rao⁵, R. Amarendra Kumar⁶.**

¹ Assistant Director, ^{2,3} Veterinary Assistant Surgeon, ⁴ Joint Director,

⁵ District Animal Husbandry Officer, ⁶ Director of Animal Husbandry

^{1,2} Animal Disease Diagnostic Laboratory, Peddacheruvu, Narasaraopet,
Palnadu district, A.P.-522601.

^{3,4} Veterinary Biological Research Institute, Labbipet, Vijayawada, A.P.-520010

⁵ O/o DAHO, Narasaraopet, Palnadu District-522601, ⁶ Directorate of Animal Husbandry,
Labbipet, Vijayawada, A.P.-520010.

Corresponding author: kalavathivety@gmail.com

ABSTRACT

Gout syndrome is one of the common mortality causes in poultry. Gout leads to deposition of urates in kidney, on heart serous surfaces, liver, mesenteric, air sac, and peritoneum, etc. It may occur in two forms as Visceral gout and Articular gout. A rare case of visceral and articular gout in a Painted Stork (*Mycteria leucocephala*). Grossly deposition of urate crystals in visceral organs and joints with enlargement of liver and kidney, haemorrhages and congestion were observed. The histopathological changes included the degenerative to necrotic changes, infiltration of inflammatory cells and urate crystals in the kidney and liver.

Keywords: Gout, Painted stork, Allopurinol, EEC kotappakonda, urate crystals

INTRODUCTION

Gout is a disorder of uric acid metabolism characterized by hyperuricaemia and urate crystals deposition in the body tissue. It usually occurs in two separate syndromes: visceral and articular gout, which may occur together or independently. Visceral gout is characterised by the precipitation of urates in the kidneys and on serous surfaces of heart, liver, mesentery, air sacs or peritoneum. The deposits on serous surfaces appear grossly as a white chalky coating, while those within visceral organs may be recognized microscopically. Articular gout is characterized by accumulation of urates around the joints, particularly those of the feet.⁸ A number of causative factors have been implicated in precipitating gouty deposits in kidneys, joints, or in serosal membranes throughout the body.

These include excessive dietary protein (30-40%), dietary calcium excess (3% or greater), sodium bicarbonate toxicity, mycotoxins (oosporin, ochratoxin), vitamin A deficiency, and nephrotropic strains of infectious bronchitis virus.² Visceral urate deposition has been reported in various caged and aviary birds from different parts of the World. Rare cases of visceral urate deposition may occur in wild birds. Rahimi et al have reported Visceral urate deposition in a little bittern⁴ and Sahu et al reported Gout in Egyptian vulture⁵. A rare case of visceral and articular urate deposition in a Painted Stork (*Mycteria leucocephala*) is reported here.

CASE HISTORY AND OBSERVATIONS

In July 2021, five painted storks (*Mycteria leucocephala*) were found moribund near the Painted stork enclosure

of Environment Education Centre (EEC), Kotappakonda on four consecutive days. These carcasses were presented for necropsy by the forest beat Officer, EEC, Kotappakonda. The necropsy was conducted at Animal Disease Diagnostic Laboratory (ADDL), Narasaraopet, Palnadu District, Andhra Pradesh by the Assistant Director (AH), Veterinary Assistant Surgeon, ADDL, Narasaraopet and Veterinary Assistant Surgeon, Petlurivaripalem (Fig.1,2). The birds were dull and depressed and unable to take water before death. As the Painted storks are carnivores (piscivores), their diet consisted mainly of small fish purchased from fish market.

At necropsy, chalky white deposits were seen on the visceral organs like heart, kidney, liver, Joints and also in the Intestines. The heart was congested and visceral urate deposition was observed



Fig. 1 Carcass of the painted stork referred from EEC, Kotappakonda for necropsy.



Fig 2 Collection of samples during necropsy of Painted stork

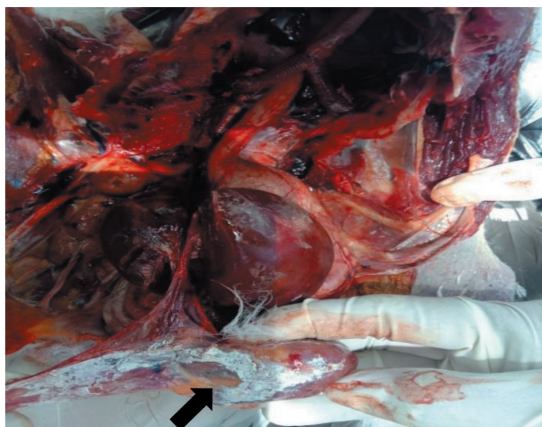


Fig.3 Urate deposits (arrow) on the heart of Painted Stork with visceral urate deposition.

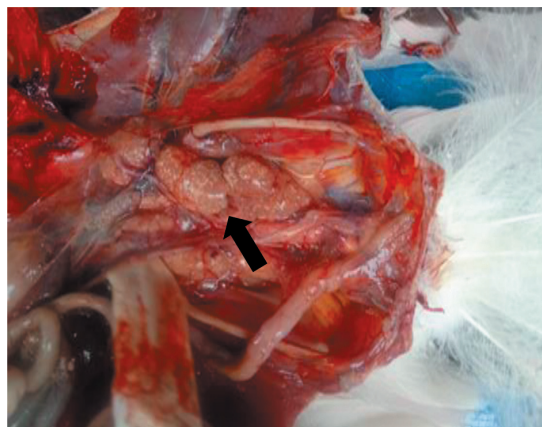


Fig. 4 Surface of kidney revealed presence of gouty deposits



Fig. 5 Gouty deposits from the kidney



Fig.6 Gouty deposits in Parenchyma of Kidney



Fig. 7 Visceral urate deposition over the Liver (Fig. 3). The cortical surface of the kidney revealed gouty deposits (Fig. 4). Cut surface also showed presence of gouty deposits in

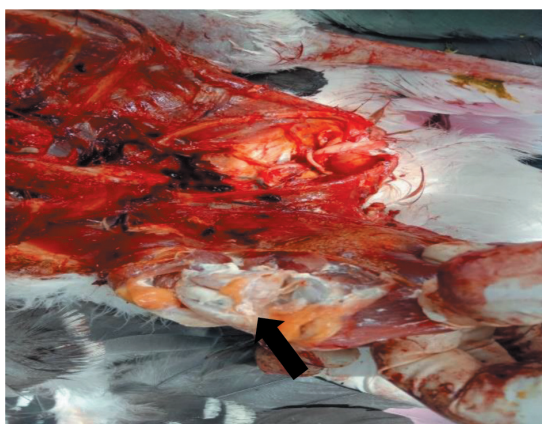


Fig. 8 Articular gout in Joint with Urate crystals the parenchyma of the kidney (Fig.5, 6). Grossly there was enlargement of liver with haemorrhagic patches, congestion

and urate deposition (Fig.7). The Knee and hock joints were opened, the periarticular tissue was white due to urate deposition (Fig. 8). Mild haemorrhages on the Inner lining of Gizzard, Enteritis and Salpingitis were observed. Smears from the Intestinal scrappings revealed no parasites and Coccidial oocysts. The tissue specimens of heart, lung, liver, kidney, intestine, spleen, nasal swabs, water samples and fish which was fed to the painted storks were collected and sent to Veterinary Biological Research Institute (VBRI), Vijayawada for cultural, histopathological and Toxicological examinations.

On Histopathology, there were degenerative changes in heart with severe infiltration of inflammatory cells in myocardial fibres indicating myocarditis. The lungs showed congestion, edema and infiltration of inflammatory cells, exudate in the interalveolar septa, mild fibrous tissue extending between the alveoli showing interstitial pneumonia. The liver revealed severe degenerative to necrotic changes in the hepatocytes, granulomatous inflammatory changes in liver parenchyma with urate crystals and proliferation of bile duct indicating hepatitis. The kidney showed degenerative to necrotic changes in the tubular epithelium, infiltration of inflammatory cells in the interstitium and urate crystals indicating interstitial nephritis.

In the intestines there was desquamation of the epithelium with severe infiltration of heterophils.

The nasal swabs, Liver, Spleen and Kidney tissues were screened for Ranikhet Disease by Rapid Antigen Test and were found negative. *Escherichia coli* & *Staphylococcus aureus* were isolated from Heart, Liver, Kidney and Intestine samples on Cultural examination. *Salmonella* spp., and *Proteus* spp. were isolated from the Fish which was used as food for the painted storks. The water sample had more than 300 coliforms per 100ml of water and as per Mc Cardy's Scale it belonged to class IV category and unfit for consumption. The water sample was also assessed for Nitrate, Lead and heavy metals and found negative for the same.

TREATMENT AND DISCUSSIONS

The degenerative to necrotic changes, infiltration of inflammatory cells and urate crystals in the kidney and liver are suggestive of visceral gout. Apart from this, the knee joint and ankle joints also had deposits of urates. Visceral urate deposition (visceral gout) occurs when there is a failure of urinary excretion⁷. Primary infectious nephritis due to bacterial agents does not appear to be common in poultry. *E. coli* and *Salmonella* have occasionally been isolated from cases of pyelonephritis,

but the infection is likely secondary.¹ Diets containing excess of dietary protein⁶ and high in calcium³ have caused avian gout. Dehydration due to water deprivation is a common cause of visceral gout in poultry. Other causes include vitamin A deficiency, mycotoxins such as oosporein, secondary to urolithiasis, and treatment with sodium bicarbonate⁸. Since there was urate deposition in visceral organs and joints along with isolation of *Staphylococcus aureus* and *Escherichia coli* in tissues; *Salmonella sps.*, and *Proteus sps.* from the fish and high coliform count in the water samples, the death might have been due to gout with secondary bacterial infections.

The birds were treated with antibiotics like Doxycyclin and Neomycin powder (Megadox-N) @1g/ 5L of drinking water, Allopurinol powder 5% w/w (Goutil) @ 1g/kg B.wt. (uricostatic drug), Vimerol syrup (Multivitamin supplement containing Vit. A, D₃, E, B₁₂) for five days consecutively. Provision of Jaggery mixed in water (aids in flushing out uric acid crystals) was provided to the birds which was quite beneficial. The fish feed was also changed and fresh drinking water was provided to the birds. Apart from this, disinfection of the premises was also done. By adopting the above measures, the mortality could be controlled.

CONCLUSION

The necropsy findings and laboratory analysis it was diagnosed as Gout with secondary bacterial infection in painted storks. The birds were treated with antibiotics, Allopurinol powder, Vimerol syrup and Jaggery mixed in water along with other control measures.

REFERENCES

- Bulbule, N. R., Kapgate, S. S. and Chawak, M. M. 2014. Infectious Causes of Gout in Chickens. *Adv. Anim. Vet. Sci.* 2 (4): 255 – 260.
- Charlton, B. R., Bermudez, A. J., Boulianne, M, Halvorson, D. A., Schrader, J.S., Newman, L.J, Sander, J. E. and Wakenell, P.S. 2006. *Avian Disease Manual*. 6th Ed., American Association of Avian Pathologists, U.S.A., p. 192-193.
- Feizi, A., Dadian, F. and Nazeri, M. 2011. Evaluation the Effect of Dietary Calcium Percentage on Incidence of Gout syndrome in Broiler Chicks, *Aust. J. basic appl. sci.* 5(11): 1750-1755.
- Rahimi, M. and Haghighi, Z. M. S. 2015. Visceral urate deposition in a little bittern (*Ixobrychus Minutus*). *Vet. Res. Forum.* 6 (2) :177 – 180.

- Sahu, S. K., Panda, S. K., and Mohapatra, R. K. 2017 Gout in Egyptian vulture (*Neophron Percnopterus*): a case report, *Int. J. Avian Wildl. Biol.* 2(2):46–48.
- Singh, N. and Ghosh, R. C 2014. Pathology of gout induced by high protein diets in growing broilers. *Asian J. Anim. Sci.* 9(2): 149-153.
- Swayne, D. E. 2013. *Diseases of Poultry*. 13th Ed. A John Wiley & Sons, Inc., Publication, USA, p. 1254-1256.
- Vegad, J. L. 2008. *A Textbook of veterinary General Pathology*, 2nd Ed., International Book Distributing Co., India. p. 94-96.