

Case Report: Oviductal Adenocarcinoma in a Pet Chicken (*Gallus domesticus*)

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Introduction

Oviduct adenocarcinomas are not uncommon lesions in pet poultry and caged birds. Of the hens with oviductal related problems such as decreased egg production, soft eggs, and oviduct bacterial infection and inflammation, a number have oviductal adenocarcinoma. Despite surgery, the outcome of most oviduct adenocarcinoma patients was considered very poor in the short term. This case report suggests the use of debulking surgery combined with GnRH agonists was useful for improving the gross lesions and the quality of life for this chicken.

Signalment

Three year old pet hen (*Gallus domesticus*) weighing 2023g.

History

The chicken had not laid eggs for several months, and had laid soft-shelled eggs immediately prior to this. There was no contact with other chickens. It started to have trouble walking one week prior to presentation and was unable to stand the day prior to presentation.

Physical Examination

The abdomen was enlarged with ascites (yellow with flocculent material within).

The chicken had a mild increase in respiratory effort and the comb was cyanotic. There was bilateral paralysis and paresis of the legs with no obvious fractures.

Initial Treatment

Initial treatment consisted of twice daily fluid therapy (Hartmann's solution) subcutaneously, 1 amoxicillin/clavulanic acid 250 mg (Clavulox Pfizer) tablet, syringed orally with softened pellets and Poly-Aid Plus (Vetfarm) for three days.

On day three oral amphotericin B 10 mg (Fungilin lozenge 10mg Bristol-Myers Squibb) tablets were added for an intestinal yeast infection.

Surgery

On day 4 the chicken was anaesthetised using isoflurane by mask with manual IPPV every 30 seconds. An inverted “L” mid-line incision was made into the abdominal cavity. A large amount of thick inspissated pus was removed from the abdomen. All the abdominal organs were adhered to each other, making it difficult to distinguish each organ. Surgery consisted of debulking the abdominal lesions and removing samples of multiple solid white lesions and several cysts. Samples were collected for histopathology as well as culture and sensitivity. A meloxicam injection 0.1 ml intramuscularly administered post-operatively (Metacam injectable 5 mg/ml Boehringer Ingelheim). On day 5 the comb was red after being cyanotic for the previous 4 days. The feet were no longer clenched but were still paralysed. The chicken defecated, its head was upright and it was bright and alert. One enrofloxacin 50 mg (Baytril Bayer) oral tablet and oral meloxicam 0.2 ml (Metacam drops 1.5 mg/ml Boehringer Ingelheim) twice daily were prescribed as additional medication. By day 6 the chicken ate some food on its own. The chicken attempted to stand with the owner's help and appeared stronger.

GnRH Agonist Treatment

On days 8, 14 and 35 leuprolide injection 1.6 ml (Lucrin 7.5 mg diluted to 0.25 mg/ml Abbot) intramuscularly were administered. On day 14 the chicken was eating and attempting to stand up. At day 18 there was no ascites, but a small distinct intra-abdominal lesion could be palpated. It was now able to stand when assisted. At day 35 the chicken was eating better and walking with the right leg slightly adducted. It was still underweight with a low pectoral mass. There was no ascites. On day 62 a small lump was still palpable in caudal abdomen. A deslorin 4.7 mg (Superlorin Peptech) pectoral intramuscular implant was injected under isoflurane anaesthetic.

The owner reported that on day 65 the bird was doing very well but had it jumped and flown over a fence and drowned in a swimming pool.

Post-mortem Gross Appearance

Post-mortem results showed occasional small cystic structures in the abdomen. The abdominal organs were now clearly defined with no adhesions.

Laboratory Results

1. Abdominal aspiration fluid on day 1 revealed yellow mucousy fluid:
 - Diff-Quik - some bacterial bacilli, otherwise just yolk/mucus.
 - Gram stain - moderate number of gram negative rods.
2. Impression smear of growth on Diff-Quik stain from the surgery contained high erythrocytes, occasional white blood cells and very occasional bacterial bacilli.
3. Culture and sensitivity result from the surgery:
Microbiology specimen: egg yolk
 - Gram stain - bacteria and leukocytes not detected in Gram stained smear.
 - Culture - bacteria not isolated after 24 or 48 hours. No anaerobes isolated.
4. Histopathology results from the surgery:
 - Sample description of the white tissue was an “extensive proliferation of poorly differentiated epithelial cells forming primitive ducts or acini embedded in a fibrous stroma”.
 - Sample description of the cyst was an “extensive proliferation of similar anaplastic epithelium forming large cysts many of them containing some pink proteinaceous material

(albuminous secretion?)”.

The pathologist commented that it was a “metastatic abdominal cirrhus adenocarcinoma with poor differentiation, possibly ovarian or oviductular in origin with a poor prognosis”.

Discussion

In this case report the bird improved significantly after surgery to debulk the lesions in combination with the post-surgical use of GnRH agonists (leuprolide). The chicken had on presentation bilateral leg paralysis and was severely dyspnoeic with a grossly distended abdomen. The bird died two months later due to a misadventure after a significant improvement in the clinical signs. The post-mortem also suggested a significant improvement in the abdominal gross pathology.

Oviductal adenocarcinoma is well reported in the poultry literature as a cause of abdominal swelling. “Metastases to the abdominal viscera occurs via tunnels between the coelomic membranes, with the duodenal loop and pancreas usually involved because of their dependent anatomical position” (Reece 2008)). Adenocarcinoma of the magnum often leads to fibrosis and adhesions of all abdominal organs.

It has been previously been suggested in the literature that “Metastatic abdominal adenocarcinomas are inoperable, the prognosis is grave, and euthanasia is recommended” (Reece 2008). Oviductal adenocarcinoma is also reported as a common condition in both pet cockatiels and budgerigars (Garner 2006). Previous case reports have suggested the possibility of chemotherapeutic agents as a treatment of oviductal and ovarian carcinomas in these pet birds. However, the cases did not improve significantly with these chemotherapeutic agents. Studies in poultry have suggested that the in-vitro administration of anti-oestrogenic compounds will improve some oviductal lesions in chickens while potent oestrogenic compounds maintain the growth of the lesions (Anjum and Payne et al. 1988). No long term studies exist.

The post mortem in this case demonstrated the usefulness of the medical use of “anti-oestrogenic” compounds such as GnRH agonists in combination with surgical debulking. The approach led to the decrease in the gross pathological and clinical signs of ovarian/oviductal metastatic abdominal cirrhus adenocarcinoma. Other cases in pet birds (cockatiels, budgerigars, ducks and chickens) have been treated solely with surgical debulking or alternatively solely with GnRH agonists at the Bird and Exotics Veterinarian Green Square. In this case the chicken had comparatively more serious clinical signs and pathology as compared with these previous non-combination treatment cases. Despite this, it showed significantly better improvement with the combination of surgery and GnRH agonists compared to the solely surgical or solely medical approach cases.

Conclusion

Any cases of increased egg laying, decreased egg production, soft-shelled eggs or abdominal swelling in laying pet bird hens should have oviductal adenocarcinoma as a differential diagnosis.

The combination of surgical debulking of the abdominal lesions combined with GnRH agonists seemed to significantly improve the quality of life for this chicken in the short term. Longer term studies are necessary to determine the prognosis for oviduct adenocarcinomas treated with a combination of surgical debulking and GnRH agonists.

In similar cases of leg paralysis combined with abdominal neoplastic-like lesions in chickens, either lymphoid leukaemia/tumours or Marek's Disease are high on the differential list; both of which have extremely poor prognoses. This case demonstrates the usefulness of biopsy and histopathology in the live pet chicken in order to formulate an effective treatment plan that may improve the animal's quality of life.

References

1. Anjum, AD, Payne LN and Appleby EC (1988). Spontaneous occurrence and experimental induction of leiomyoma of the ventral ligament of the oviduct of the hen. *Res Vet Sci* **45**:341–348
2. Garner MM (2006). Overview of tumours. In: Harrison G J and Lightfoot T, eds. *Clinical Avian Medicine* Palm Beach, FL: Spix Pub Inc; Vol 2 Ch 20 pp 565-571
3. Reece RL (2008). Neoplastic Diseases. In: Saif Y M *Poultry Diseases* 12 Ed Ch 15 pp 601-622