

Clinical Report

**Successful Surgical Ablation of Coelomic Granuloma
in Pigeon (*Columba livia*)**

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Abstract

Case Description- A 4-year-old male homer pigeon (*Columba livia*) with anorexia, lethargy, emaciation, and abdominal distention was referred to Veterinary Teaching Hospital of Faculty of Veterinary Medicine, Ferdowsi University of Mashhad.

Clinical Findings- Palpation revealed a solid mass in the caudal coelomic region. Radiographic and ultrasonographic examinations showed caudal coelomic soft tissue mass. On the base of the clinical and paraclinical evaluations, coelomic mass was diagnosed presumptively.

Treatment and Outcome- Because of the importance of racing aspect of the pigeon, surgical remove of the mass was done. One week after surgery, there were no postsurgical complications, and the bird recovered uneventfully. Histopathologic findings identified a well-organized encapsulated granuloma. In three years follow up no recurrence of the signs was reported.

Clinical Relevance- Successful surgery of occupying lesion has not been described in pigeons frequently. According to solid mass dimension (6×6×5 cm) with well-organized encapsulated granuloma, this situation is a rare case.

Key words: Pigeon, Granuloma, Radiology, Surgery.

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Case Description

A 4-year-old male homer pigeon (*Columba livia*) in a flock of 20 pigeons was referred to Veterinary Teaching Hospital of Faculty of Veterinary Medicine, Ferdowsi University of Mashhad. The pigeon suffered from anorexia, lethargy, emaciation, and abdominal distention for 4 weeks. Palpation revealed a large solid mass in the caudal coelomic region. After clinical examination, lateral and ventrodorsal plain radiographs were taken using mammographic films. Radiographic evaluation revealed abnormal increased opacity of the caudal coelomic cavity. In lateral and ventrodorsal (VD) radiographs, a large soft tissue mass was obvious in caudal region of coelomic cavity that displaced ventriculus and intestine, cranially, compressed air sacs and obliterated caudal border of the heart. The heart size and shape changed due to the occupying mass compression that was observed in VD view. These changes included a heart shadow widening, loss of indentation at the junction between heart and liver lobes. Focal radiolucent areas superimposed on heart in VD radiograph that represent abnormal displacement of gaseous gastrointestinal tracts (Fig.1A,B). A mass was observed in the caudal region of the coelomic cavity. Transabdominal ultrasonography was done by 8 MHz linear transducer. Ultrasonography was shown hypoechoic and heterogenous mass with well- defined margin and ruled out cyst like mass (Fig.2). These findings were suggestive of an abnormal space-occupying soft tissue mass.



Figure 1. (A) Lateral radiograph of caudal coelomic cavity of pigeon shows a large soft tissue mass that displaced ventriculus and intestine. (B) Whole body ventrodorsal view, note soft tissue mass in caudal coelomic cavity displaced ventriculus and intestine, cranially, compressed air sacs and changed heart shape and size.



Figure 2. Sagittal ultrasonogram, shows hypoechoic and heterogenous mass with well- defined margin dorsally. Cranial is to the left side.

Treatment and Outcome

The food was restricted for 3 hours prior to surgery. The patient had been wrapped loosely in a towel to prevent wing flapping and excessive struggling. Mask induction was carried out with 5% isoflurane (Isoflo, Abbott Laboratories, Chicago, IL, USA) for approximately 20–30 seconds. After stable plane of anesthesia has been reached, the bird was placed in dorsal recumbency and maintenance of anesthesia carried out using isoflurane via a facemask at 2% concentration, with Oxygen flow rate at 1 liter/minute. In order to prevent hypothermia, a heat pad was used and the legs abducted caudally. The abdomen was plucked and prepared surgically for a ventral midline celiotomy. The skin and line alba were incised separately and a firm, gray, solid mass was observed in the caudal region of the coelomic cavity. The mass seemed to be attached to serous layer of small intestine. After removing of the mass, the line alba was closed with 4-0 polydioxanone with a simple continuous pattern. Skin was closed with a simple interrupted pattern using the same suture material. Recovery was uneventful. Postoperative care included Cefazoline (Cefazex®, Loghman pharmaceutical Co, Tehran, Iran) 20 mg/kg intramuscularly. Two weeks after surgery, the patient was bright and alert, and the incision had healed. The bird was re-evaluated 6 months postoperatively. No abdominal distention was present on physical examination. The follow up study for three years revealed no complications.

On gross examination, the mass sized in 6×6 cm was presented. The external surface of the mass was smooth. Cross-section examination revealed a grayish-white solid tissue with a central necrosis. For histopathological evaluation, some parts of the resected mass were transferred to 10% buffered formalin. Histologic slides were obtained and stained with hematoxylin and eosin staining and examined under light microscope. Logical changes were characterized by well vascularized extensive connective tissue with macrophages as dominant cell type, lots of multinucleated giant cells, many lymphocytes and plasma cells, and a few heterophils around a central necrotic region. The histopathologic diagnosis was a well-organized encapsulated granuloma (Fig.3,4).

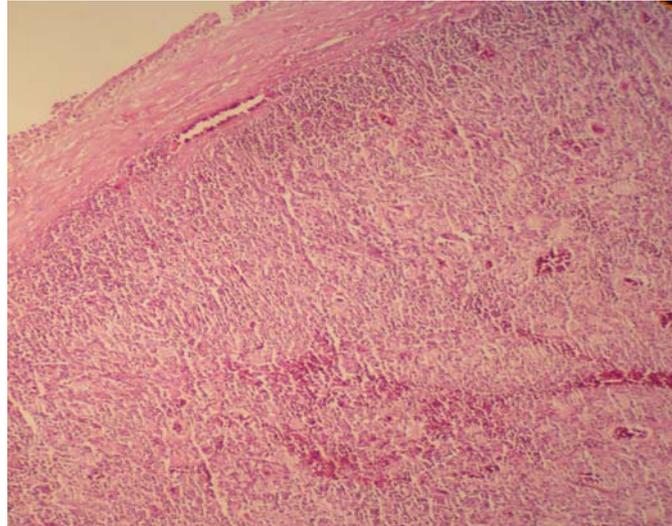


Figure 3. Encapsulated granuloma, shows numerous inflammatory cells and granulation tissue that surrounded by fibrous capsule (H&E $\times 200$).

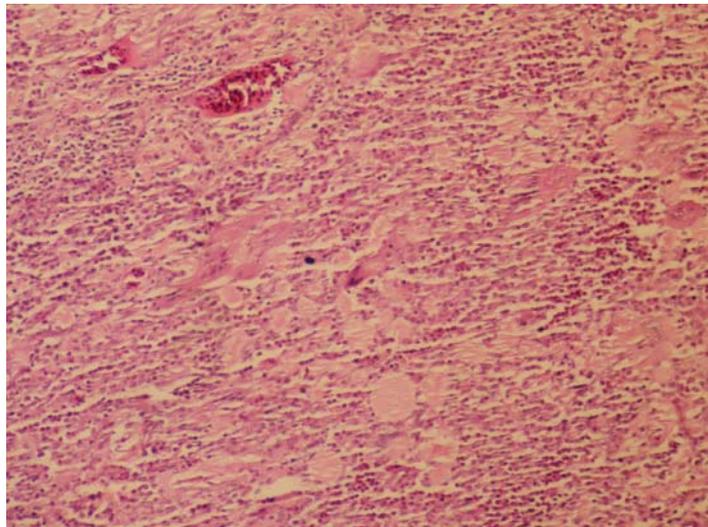


Figure 4- Organized granuloma shows: inflammatory cells containing numerous macrophages, lymphocytes, heterophils and multinucleated giant cells, fibroblasts and fibrocytes (H&E $\times 320$).

Discussion

Coelomic distention in birds maybe caused by obesity, hepatomegaly, ascites, internal neoplasia, egg binding, intestinal severe parasitism, air sac distention, abdominal hernia and etc.^{1,2,3,4} Granulomatous inflammation is a specific kind of chronic inflammation. Bacterial and mycotic lesions causing granuloma has been well documented in a variety of avian species, involving different parts of body.^{5,6,7,8}

Many diagnostic test results have limited interpretive value in avian patients (e.g., percussion, body temperature, the collection of adequate amounts of blood from birds with a body weight under 40 g, etc.) and avian patients can often hide their clinical disease signs for a long period of time.¹ The role of imaging techniques is becoming increasingly important in avian medicine. Ultrasonography has found its place in veterinary practices and is predominantly

used to diagnose and assessing coelomic distension and masses in avian patients. Ultrasonography can differentiate between a solid mass and a fluid-filled cyst.⁹ In some conditions, surgical resection of granulomatous mass has been recommended.^{3,10} Because of the importance of racing aspect of the pigeon, surgery was selected. Surgical success may be improved by access to, and careful removal of the granuloma with minimal surgical trauma to adjacent structures. Most granulomas are difficult to remove because of their location within the delicate body systems of pigeon. These results in either partial removal and subsequent recurrence or greater morbidity and mortality associated with prolonged anesthesia and/or excessive surgical trauma. In the current case report, three years after surgery, the bird was normal and had no further problems related to the mass.

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جراحی موفقیت آمیز برداشت گرانولومای شکمی در کبوتر

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توصیف بیمار - یک کبوتر نر ۴ ساله با علائم بی‌حالی، بی‌اشتهایی، لاغری و اتساع شکم به بیمارستان آموزشی دامپزشکی دانشگاه فردوسی مشهد ارجاع داده شد.

یافته‌های بالینی - در ملامسه وجود یک توده سفت در قسمت خلفی شکم قابل لمس بود. ارزیابی‌های رادیولوژی و اولتراسونوگرافی وجود یک بافت نرم در قسمت خلفی شکم را نشان داد. بر اساس معاینات بالینی و پاراکلینیکی وجود توده شکمی تشخیص داده شد.

درمان و نتیجه آن - با توجه به آنکه سلامتی کبوتر از نظر مسابقات حائز اهمیت بود، برداشت توده انجام شد. یک هفته بعد از جراحی عوارضی مشاهده نشد و حیوان بهبودی کامل داشت. در مطالعات هیستوپاتولوژی، وجود بافت گرانولومای کپسوله تشخیص داده شد. تا سه سال بعد از عمل جراحی، علائمی از رخداد مجدد عارضه دیده نشد.

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کلید واژگان - کبوتر، گرانولوما، رادیولوژی، جراحی