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Duodenal adenocarcinoma in a pug and its management: A case report

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Abstract
A three years old pug was presented to the Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu with the history of showing praying posture, chronic emesis and melena for past two weeks. On clinical examination, animal was dull and depressed with pale mucous membrane. On physical examination, pain evinced on palpating the abdomen and fluid filled sac on abdomen was observed. Blood samples were collected for whole blood and serum biochemistry examination. On ultrasonography, sac with distension of stomach and duodenal wall thickening was noticed. On contrast radiography, stomach contents are stagnant like a pouch followed by narrowed duodenal lumen with ulcerative irregular lumen margin was noticed. Exploratory celiotomy revealed the presence of tumour in the intestine and it was removed surgically. Histopathology revealed the presence of Duodenal adenocarcinoma. The animal showed uneventful recovery and no evidence of recurrence.

Keywords: Pug praying posture, melena, duodenal adenocarcinoma, exploratory celiotomy, chronic emesis, canine gastrointestinal neoplasm

Introduction
Canine small intestinal tumours are rare in dogs and make up approximately 8% of tumours in canines (Crawshaw *et al*. 1998; Dobson *et al*. 2002) [1, 2]. There are four general tumour categories in canines and they are epithelial, mesenchymal, neuroendocrine and round cell neoplasms with half of them are adenocarcinomas (White 2003) [3]. Malignant intestinal epithelial tumours can be seen in middle to older dogs and are most prevalent in duodenum (Edward J Hall *et al*. 2005) [4]. Adenocarcinomas of gastric and intestinal origin were in dogs younger than the average age of 10 years (Patnaik *et al*. 1980) [5].
The consequence of adenocarcinomas is usually secondary to local infiltration and intestinal obstruction. Anaemia and melena may arise from associated mucosal ulceration. Explorative Surgery is the most recommended option for Confirmative diagnosis and removal intestinal masses in canines with exception of lymphoma.
The present paper briefs about the diagnosis, differential diagnosis and treatment aspect of Duodenal adenocarcinoma in dogs.

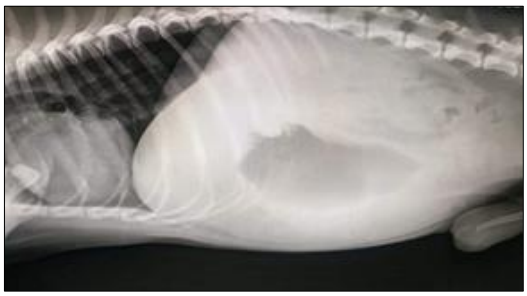

Fig 1: Plain radiograph: Increased Soft tissue opacity and no metastasis

Materials and Methods
A three years pug was presented with the history of showing praying posture, chronic emesis and melena for past two weeks. On physical examination, pain evinced on palpating the abdomen and fluid filled sac on abdomen was observed. Haematological examination showed mild anaemia with neutrophilia.

On Plain Radiography, increased soft tissue opacity and absence of metastasis (Fig.1) was noticed. On ultrasonography, sac with distension of stomach and duodenal wall thickening was noticed (Fig 2).

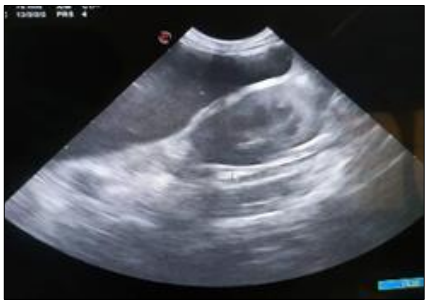

Fig 2: Duodenal wall thickening and distension of stomach up to kidney

For contrast radiography, barium meal was given at 6-9 ml per kg body weight. It revealed stomach contents are stagnant like a pouch followed by narrowed duodenal lumen with saw like ulcerative and irregular lumen margin was noticed (Fig.2). Exploratoryceliotomy was performed, which unfold the presence of tumour in the intestinalpart near stomach (Fig.3). The tumour mass was removed and samples were collected for Histopathology. The tissue samples obtained for Histopathology were fixed with 10% formalin, processed, stained with haematoxylin and eosin and when needed, with Mayer's mucicarmine, Masson's trichrome, periodic acid-Schiff and van Gieson's stain (Patnaik *et al*. 1977) [6].

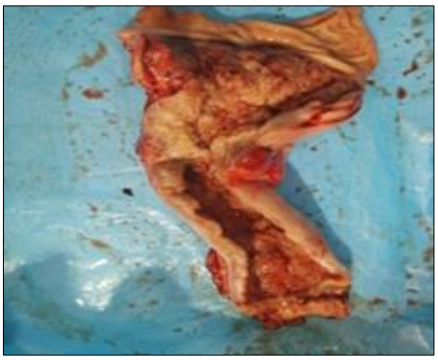

Fig 3: Tumour mass along with intestine

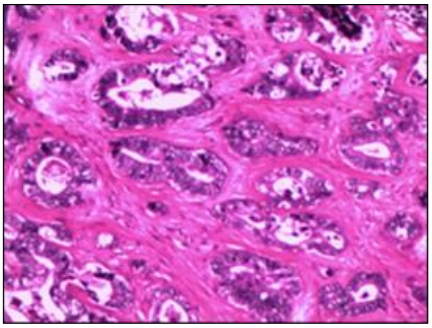

Fig 4: Histopathology: Glandular cells in the outer layer, Duodenal adenocarcinoma

Results and Discussion

Intestinal adenocarcinoma (Fig.4) occurs at 0.1% of all canine malignant tumour and 0.3% of all canine neoplasm (Duncan B, *et al*.). It occurs in three forms Infiltrative adenocarcinoma – annular formed tumour, Ulcerative adenocarcinoma-mucosal ulcer indurated tumour and proliferative adenocarcinoma-lobulated tumour. Male are more affected than females. Collies, German Shepherd, Boxers are more predisposed. The clinical signs are anorexia, vomition, diarrhoea, melena and palpable abdominal mass. The diagnosis can be done with Ultrasonography, Plain radiography, Contrast radiography, Computed tomography, Exploratory celiotomy and Histopathology.Biopsy and histopathological assessmentare required for definitive diagnosis. In this case, Exploratory celiotomy and Histopathology was used for confirmative diagnosis. The differential diagnosis to be done with Ascites, Pancreatitis, Lymphangiectasia, Inflammatory Bowel Disease, Small Intestinal Bacterial Overgrowth, Gastric Dilatation and Volvulus, Lumen obstruction. The tumour was removed surgically and the excised mass has been sent to histopathology. Chemotherapy and Radiation therapy are also used, butChemotherapy has been reported not to be effective. In dogs with terminal or metastatic neoplasms without renal compromise, metronomic administration of lomustine was well tolerated (Tripp *et al*. 2011) [8]. Remission periods of up to2 years have been reported.

Conclusion

Early diagnosis with advanced diagnostic techniques before metastasis of the malignancy will save the animal. The prognosis was good when there is no metastasis. Pancreatitis should not be mistakenly diagnosed as the animal showed praying posture. In this case, duodenal adenocarcinoma has showed the clinical sign of praying posture, should be differentially diagnosed with pancreatitis and abdominal pain (Nelson *et al*. 2019) [9].

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