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ORIGINAL ARTICLE

Leiomyosarcoma in a sheep: A case report

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ABSTRACT

Leiomyosarcoma is most common in the dog no in sheep, and is second only to epithelial malignancy within the canine gastrointestinal tract. Gastrointestinal leiomyosarcomas most often cause clinical signs of gastrointestinal dysfunction. These tumors are frequently described as locally invasive but slow to metastasize; however, metastasis may be more common than previously recognized, and its occurrence is probably underestimated due to lack of follow-up information. In the Cornell files, 16 percent of all canine leiomyosarcomas (27 cases) had evidence of metastasis, and of those for which a primary site was recorded, metastasis was recorded for 14 percent of all canine gastrointestinal leiomyosarcomas. In some cases metastasis was evident at the time of surgery, and in others metastasis was detected at varying times, from 1 to 2 months to 2 years following initial diagnosis. Metastasis of small intestinal leiomyosarcoma was most common. On section, leiomyosarcomas are firm, generally solid, cream colored, and may have obvious interstitial fibrosis and/or hemorrhage. Multiple areas of necrosis may give leiomyosarcomas a cystic or multicystic appearance.

Key words: leiomyosarcoma, sheep, Tabriz abattoir.

Introduction

Clinical Characteristics and Sites:

Gastrointestinal leiomyosarcomas most often cause clinical signs of gastrointestinal dysfunction (i.e. vomiting and/or diarrhea, which may contain blood), and intestinal tumors have been associated with intussusceptions of the involved segment. Tumors may result in intestinal perforation and fever, lethargy, and anorexia due to septic peritonitis [21]. In contrast to leiomyomas, canine leiomyosarcoma more commonly occurs in the intestine than in the stomach. In the Cornell files, 88 percent of canine gastrointestinal leiomyosarcomas occurred within the intestine (46 percent in the small intestine, 39 percent within the large intestine, and 3 percent at the ileocecal junction), and only 11 percent occurred in the stomach. In a study of 20 gastric tumors in the dog, only one leiomyosarcoma was reported [7]. Of tumors in which the involved segment of intestine was identified, the jejunum accounted for just over half of the canine small intestinal leiomyosarcoma at Cornell (17 cases), followed by the duodenum (11 cases), with only rare involvement of the ileum (3 cases). The cecum was the second most frequent site (24 cases), followed by, in decreasing order, colon or rectum (15 cases), and ileocecal junction (3 cases), which is similar to an earlier report [9]. Leiomyosarcoma of the esophagus is rare, and only one was found in the Cornell files. In the cat, the small intestine was the most common site of gastrointestinal leiomyosarcoma [6 of 14] in our files; four of six cases occurred in the jejunum, one was in the duodenum, and the specific site of origin was not specified in one case. Feline leiomyosarcoma occurred with equal frequency (three cases each) in the large intestine/rectum and the ileocecal junction.

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Only two gastric leiomyosarcomas were recorded in cats. No reported cases of feline gastrointestinal leiomyosarcoma were found in a literature search. Equine gastrointestinal leiomyosarcoma has been reported to involve the duodenum (two cases) [18], stomach (one case) [19] and rectum (one case) [20]. The two equine cases in the Cornell files were in the jejunum and at the ileocecal junction. Colic was the presenting sign for equine intestinal leiomyosarcomas [8] and the gastric leiomyosarcoma caused anorexia and weight loss [19]. The rectal tumor intermittently protruded through the anus [20]. Gross Morphology Tumors can be seen to arise within the muscular tunic of the involved organ and can become quite large, resulting in considerable narrowing of the lumen of the affected segment. Smaller tumors can be seen growing from the muscular tunic and are still covered by an intact mucosa. Mural thickening may be annular or nodular. Tumors may be relatively well circumscribed or may extend into the adjacent omentum. Necrosis and hemorrhage of either the mucosal or serosal surface, with associated inflammation, is common. Leiomyosarcomas of the rectum are locally invasive and may fill the pelvic canal. The rectal leiomyosarcoma in the horse was polypoid and pedunculated [20] suggesting that this case may in fact represent a rectal leiomyoma, as no light microscopic features were reported. On section, leiomyosarcomas are firm, generally solid, cream colored, and may have obvious interstitial fibrosis and/or hemorrhage. Multiple areas of necrosis may give leiomyosarcomas a cystic or multicystic appearance.

Histological Features, Growth, and Metastasis:

These tumors are frequently described as locally invasive but slow to metastasize; however, metastasis may be more common than previously recognized, and its occurrence is probably underestimated due to lack of follow-up information. In the Cornell files, 16 percent of all canine leiomyosarcomas (27 cases) had evidence of metastasis, and of those for which a primary site was recorded, metastasis was recorded for 14 percent of all canine gastrointestinal leiomyosarcomas. In some cases metastasis was evident at the time of surgery, and in others metastasis was detected at varying times, from 1 to 2 months to 2 years following initial diagnosis. Metastasis of small intestinal leiomyosarcoma was most common (eight cases). Although small intestinal leiomyosarcoma occurred most commonly in the jejunum (17 cases), duodenal leiomyosarcoma was more likely to metastasize; 4 of 11 (36 percent) canine duodenal leiomyosarcomas metastasized. In the literature, metastasis of duodenal leiomyosarcoma was present at the time of diagnosis in one dog [22] and occurred within 1 month after surgery in another dog [23], providing further evidence that a cautious prognosis must be given for duodenal leiomyosarcoma in the dog. Two of 17 canine jejuna tumors metastasized (12 percent), and only 1 of 11 canine gastric leiomyosarcomas underwent metastasis (9 percent). Of tumors of the lower intestinal tract in the dog, metastasis of cecal leiomyosarcoma was most common and was recorded in 4 of 24 tumors (17 percent). One of three ileocecal leiomyosarcomas underwent metastasis (33 percent), and metastasis of 1 of 15 colonic/rectal leiomyosarcomas (7 percent) was recorded. In a study of 44 canine leiomyosarcomas, 31 percent of gastric and small intestinal tumors metastasized, and 20 percent of cecal leiomyosarcomas metastasized, although one dog was alive and well 3 years following surgery, despite evidence of peritoneal metastasis at the time of surgery [16]. Evidence of metastasis of feline gastrointestinal leiomyosarcoma was not found in the Cornell files, although no follow-up studies of biopsy diagnoses were attempted. One feline colonic leiomyosarcoma was apparently multicentric. Evidence of metastasis was not found in the reported equine gastrointestinal leiomyosarcomas, but metastasis of an ileocecal leiomyosarcoma was found at necropsy in one horse in the Cornell files. Metastasis to liver and to mesenteric lymph nodes was most common in all cases of metastatic gastrointestinal leiomyosarcoma, although pulmonary, splenic, omental/mesenteric, and renal metastases were also seen.

Description of observations:

This case report is established based on observation of leiomyosarcoma in a sheep after slaughter. After slaughter, sample to preparation of pathological sections sent to pathology laboratory of Islamic Azad university, veterinary faculty, Islamic republic of Iran. After processing (hematoxylin & Eosin staining), with observation hyperplasic and mitotic cells this report was proved (Fig. 2). Macroscopic (Fig. 1) and microscopic features illustrated in below.

Discussion:

Leiomyosarcoma is most common in the dog no in sheep, and is second only to epithelial malignancy within the canine gastrointestinal tract [9,16]. A review of records for a 5-year period at The Animal Medical Center found that 23 of 44 leiomyosarcoma in dogs occurred within the gastrointestinal tract (16 of 44 were in the spleen) [16]. Of the 158 total canine leiomyosarcoma in the Cornell files, 100 (61 percent) were reported as occurring in the gastrointestinal tract, and approximately 50 percent of these were in the small intestine. An earlier study

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Fig. 1: obviously macroscopic view of leiomyosarcoma in abdominal cavity of sheep.

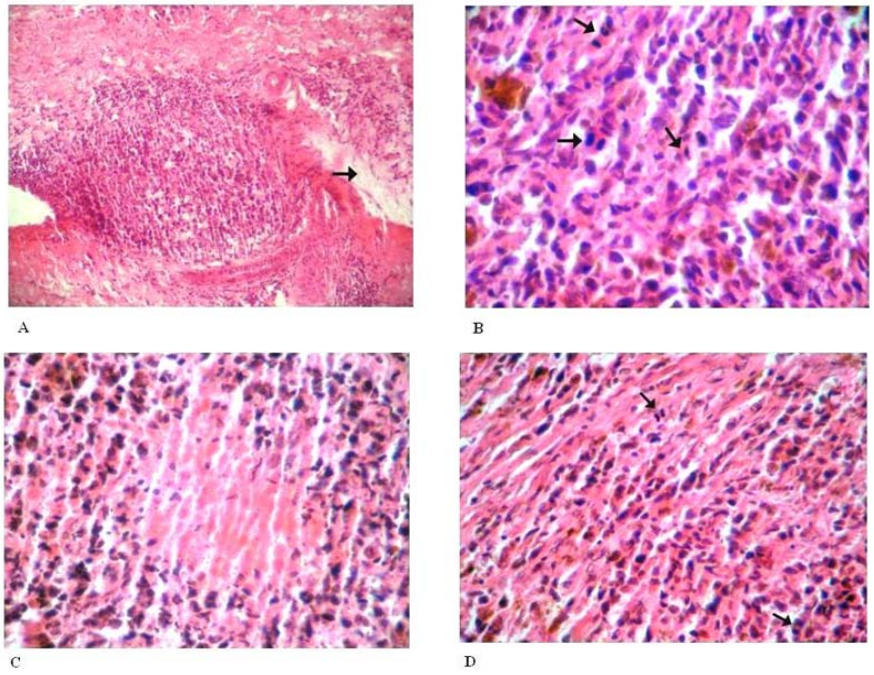

Fig. 2: A; Low power magnification of poorly differentiated leiomyosarcoma from the uterine of a sheep. The neoplastic cells have replaced the normal tissue and the interlacing fascicles are inapparent. Areas of tumor necrosis and inflammation have been resulted in edema (arrow) and attenuated cells are interspersed in edematous areas (H&E; ×40). **B;** higher magnification of pleomorphic leiomyosarcoma from the uterine of a sheep. This tumor is much more cellular and is formed by pleomorphic, spindle to ovoid and round cells. Mitoses (arrows) are present and numerous. Areas of hemorrhage are occurring (H&E; ×400). **C;** higher magnification shows an area of sever tumor necrosis (H&E; ×100). **D;** Leiomyosarcoma from the uterine of a sheep with haphazardly arranged spindle cells and scattered mitosis (arrows). Interlacing fascicles are inapparent. Densely arranged round to spindle cells exhibit marked cellular and nuclear pleomorphism (H&E; ×100).

reported that leiomyosarcoma of the intestine occurred in female dogs approximately twice as frequently as in males [9], but a similar female predisposition was not found in a subsequent study [16], and no sex predisposition was apparent following review of the Cornell files. Although, an intestinal leiomyosarcoma was diagnosed in a 17-month-old dog [17] which the majority of cases occurred in dogs 10 years of age or older. The average age of dogs with gastric leiomyosarcoma was reported to be 7 years, and it was 11 years for dogs with intestinal leiomyosarcoma [9]. Intestinal leiomyosarcoma occurs in all breeds and may be more common in mixed breeds [9], but no breed predisposition for leiomyosarcoma was reported in a study of 44 cases [16]. One study suggested that German shepherds may be predisposed to leiomyosarcoma [9] and German shepherds and poodles were the most common breeds diagnosed with this tumor in the Cornell files. This may simply reflect the popularity of these breeds. The cases in German shepherds, however, included a 3- and a 4-year-old dog, suggesting that these tumors may occur at a younger age in this breed. Gastrointestinal leiomyosarcoma is much less common in other species. Of the 22 feline leiomyosarcoma in the Cornell files, 14 occurred within the gastrointestinal tract; this is slightly higher than the number of feline gastrointestinal leiomyomas [11]. Feline cases occurred in domestic cats as young as 2 years of age, but they were most common in middle-aged to aged cats. No apparent sex or breed predisposition was found. Gastrointestinal leiomyosarcoma in two horses were found in the Cornell files, and there are four reported cases in the literature [18-20]. One case occurred in a 4-year-old horse [20] but all others occurred in horses 10 years of age or older. No sex predisposition is apparent, and breeds include thoroughbred (three), cob (two), and quarter horse (one). Gastrointestinal leiomyosarcoma is apparently very rare in ruminants and pigs, as no cases were found in the literature or in the Cornell files.

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