

Gastro-Subcutaneous fistula due to penetrating foreign body in a dog

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Abstract: A five-year-old, male Great Dane was referred to the Veterinary Hospital of Shahid Bahonar University of Kerman for treatment of a painful swelling mass at the left upper part of the chest wall, between 9th till 12th intercostals space. Lethargy, depression, vomiting and abdominal pain in palpation of the mass were the main clinical observation with no response to antibiotic and anti-emetic treatment. Following radiographic and endoscopic examinations, a foreign body in stomach was diagnosed. In surgical exploration, skin incision was carried out on the swelling mass and a sinus tract with a wooden sharp foreign body (20 cm length) was identified. After removing the foreign body and debridement of necrotic tissue in sinus tract, soft tissue and skin were sutured. One month later, since partial wound dehiscence of surgical site and fluid discharge was seen, therefore ventral midline exploratory laparotomy done and confirmed a gastrocutaneous fistula. Dissection of the fistula and surgical closure of the stomach, body wall and skin led to complete recovery.

Key words: Gastro-subcutaneous fistula, Foreign body, Dog.

Introduction

Dogs are indiscriminate in their eating habits and maybe swallow foreign bodies such as rocks, wood, toys, bones, clothing ... (Rasmussen, 2003; Fossum, 2002). The terms fistula, sinus tract and draining tract are used to describe an abnormal passage between or within body organs or cavities, or leading from an organ or cavity to the subcutaneous space or skin (Blood and Studdert, 1993; Lamb *et al.*, 1994). Until present time, there is only one report about perforating gastric foreign body and formation of infectious tract between stomach and cutaneous tissue (gastro-cutaneous fistula) in dog (Brennen *et al.*, 2004). Gastrocutaneous fistula have been documented in humans after removal of precutaneous inserted endoscopic gastrostomy (PGE) tubes (Bender and Levison, 1991; Yaseen *et al.*, 1996; Makris and Sheiman, 2002), as a complication of splenectomy (Martinez *et al.*, 2000)

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and as a sequela to fulminant pancreatic and abscessation of the pancreas (Warshaw *et al.*, 1989). This case report describes the presenting signs, investigation and successful management of a foreign body induced gastrocutaneous fistula in a dog.

Case Report

A five-year-old, male Great Dane dog was referred to Kerman Shahid Bahonar University Veterinary Teaching Hospital for treatment of a painful swelling mass at the upper part of the chest wall, on the left rib 9 till 12. On clinical examination, all vital signs were in normal range but dog showing lethargy, depression, vomiting and abdominal pain in palpation of the mass. The owner declared that the dog has been treated with anti-emetic (Metoclopramide, im injection); broad-spectrum antibiotic due to severe vomiting two months ago and this treatment has been continued irregularly until 3 days prior to presentation. Radiographic examination





Fig. 1- Gastro-subcutaneous fistula due to the wooden foreign body.

showed a soft tissue swelling and osteolysis in the ribs 11 and 12 and stomach was full of the gas. On endoscopic examination a wooden object was observed in gastric lumen that had perforated stomach wall. There was no bleeding in the gastric lumen. On laboratory findings, CBC (Cell Blood Count) was within normal limits. Base on the history, clinical and Paraclinical findings, perforating foreign body to the abdominal wall and gastric adhesion to be suspected.

The dog was premedicated with 0/05 mg/kg acepromazine (KELA Laboratoria) intramuscularly and anesthesia intravenously was induced with 10 mg/kg thiopental sodium (Sandoz) and was maintained with halothane 2% (Halothane BP, Nicholas Piramal). An elliptical incision was made in the skin around the mass at 11th intercostals space. After dissection of the cutaneous and subcutaneous tissues, an abscess capsule, full of the caseous purulent was observed. After debridment of necrotic tissues, the sinus tract was identified and a wooden foreign body (a sharp stick has probably been used as a skewer) 20 cm long that was continued from gastric lumen to subcutaneous tissue was removed (Fig. 1, 2). Following irrigation with copious amounts of sterile saline the soft tissues were closed with a continuous suture of polyglycolic acid (Safil, Aesculap Co.) USP: 0 and a penrose drain incorporated in the wound. The skin was sutured with Nylon (Monofil Polyamid, Supa) USP: 2/0 in interrupted suture pattern. Postoperative care



Fig. 2- Wooden Foreign body (Skewer) that was removed from the draining tract.

included Cefazoline (Exir Pharmaceutrical Co.) at 20 mg/kg intramuscularly, every 12 hours for 7 days. The chest drain was removed on the fifth day after surgery. The skin wound (drain insertion area) was irrigated with saline solution every day until healed via second intention wound healing process.

After one month the dog was returned to the clinic with a new fistula in pervious surgical site. Lack of appetite and depression was observed on clinical examination. The new fistula was extended to abdominal cavity, probably to the gastric lumen. Therefore exploratory surgery was carried out, immediately. The dog was anesthetized as before. A ventral midline celiotomy was carried out and in abdominal exploration, founds of the stomach was adhered to the abdominal wall. The adhesion was detached and the gastrocutaneous fistula dissected completely and the gastric opening was sutured with a double inverting pattern polyglycolic acid, USP: 2/0. The intracostal and subcutaneous tissues were closed in simple continuous pattern using polyglycolic acid, USP: 0. Six months after repair, there were no postsurgical complications, and the dog recovered uneventfully.

Discussion

Incidence of penetrating foreign body and formation of fistula or adhesion between fore-stomach and body wall is common in the ruminants (Radostits *et al.*, 2000) but there are few reports about gastro-subcutaneous fistula due to the penetrating



foreign body in dogs. In human, most gastrocutaneous fistula occurs after iatrogenic gastric injuries; for example, after splenectomy, breakdown of gastroenteric anastomosis or non-healing of gastrotomy tube tract (Warshaw *et al.*, 1989).

The dog in this case report presumably ingested the wooden skewer and some time later this object in the stomach penetrated the gastric wall resulting in localized peritonitis and pyrexia. The pyrexia and infection resolved after antibiotic administration and the local inflammatory reaction and adhesion subsequently was contained and also because of antibiotic administration at the early stage of disease the hemogram was in normal range. Osteolysis in the ribs 11th and 12th was due to the osteomyelitis, because the local infection involved the ribs.

The wooden foreign body began to migrate and eventually exited the stomach completely to lie in the subcutaneous tissues of the left thoracic wall. The perforated gastric wall developed a stoma and gastric contents followed the track of the foreign body, eventually discharging onto the subcutaneous space. Acid pH of gastric contents injured the subcutaneous tissue and subsequently prepared an optimum condition for bacterial growth. Checking the pH of the discharge could have helped determine if the discharge from the fistula was acid gastric contents (Brennen *et al.*, 2004), but this was not performed. PH measurement of the draining fluid should be included as a diagnostic test, especially when the fistula is located over the caudal thorax and cranial abdomen (Brennen *et al.*, 2004). Surgical treatment of gastrocutaneous fistula in human is reserved for cases refractory to conservative management which has limited success (Makris and Sheiman, 2002). In one report, only two of six gastrocutaneous fistulae were successfully managed medically (Warshaw *et al.*, 1989). Conservative medical management aims to encourage gastric emptying and reduce intragastric pressure to promote healing of fistula (Makris and Sheiman, 2002). In many human cases, gastrocutaneous fistulae are considered benign up to 60 percent mortality is quoted when gastric necrosis with development of gastrocutaneous fistula occurs after splenectomies patients (Martinez *et al.*, 2000).

Three out of six people (50 percent) with gastrocutaneous fistula associated with pancreatitis had significant haemorrhage through their fistulae which contributed to their death (Warshaw *et al.*, 1989).

The dog in this case report had not previous surgery or feeding tube placement, thus it was speculated that gastro-subcutaneous fistula occurred after a traumatic incidence with the sharp wooden foreign body (skewer) penetrating the gastric wall. After swallowing of the wooden skewer and localization in gastric lumen, it stimulated the gastric mucosa and induced vomiting reflexes in the dog. Sever gastric motilities facilitated penetration of the wooden skewer to the gastric wall and passing from the intracostal muscles and entrance to the subcutaneous layer. In first surgery the wooden foreign body was identified and removed. In this stage it was felt that further exploration was not necessary and the case may recover with medication, but after recurrence of clinical sign, exploratory celiotomy was carried out and after dissection of adhesion, the involved tissues in fistula tract were excised completely and gastric opening was sutured.

Regarding to this case report, the progressive swelling on the caudal thorax and cranial abdomen regions associate with some clinical abnormalities with unknown etiology in dogs may indicate the gastro-subcutaneous fistula track formation due to the gastric penetrating foreign bodies.

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وقوع فیستول معده ای - زیر جلدی متعاقب نفوذ جسم خارجی در معده سگ

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چکیده

یک قلابه سگ ۵ ساله، نژاد گریت دین جهت بررسی توده ای در دناک در قسمت بالا و سمت چپ قفسه صدری، حد فاصل دنده ۹ تا ۱۱ به بیمارستان دامپزشکی دانشگاه شهید باهنر کرمان ارجاع شد. در معاینه بالینی بی اشتها، افسردگی، استفراغ و احساس درد شکمی در هنگام لمس توده دیده شد و همچنین تجویز داروهای آنتی بیوتیک و ضد استفراغ جهت درمان حیوان نتیجه بخش نبود. بعد از تهیه عکس رادیولوژی و انجام اندوسکوپی، وجود جسم خارجی در لومن معده مورد تأیید قرار گرفت. بعد از ایجاد برش بر روی ناحیه متورم، وجود یک مجرای عفونی به همراه یک جسم چوبی نوک تیز (به طول ۲۰ سانتی متر) مشخص گردید. پس از خروج چوب و برداشتن بافت های مرده و عفونی، بافت زیر جلدی و پوست بخیه شد. یک ماه بعد چون قسمتی از محل برش جراحی دچار گسیختگی شده و ترشحات عفونی از آن خارج می شد، عمل جراحی لاپاراتومی اکتشافی از خط وسط شکم انجام گرفت و وجود یک فیستول بین معده و پوست مشاهده گردید. پس از جداسازی چسبندگی بین دیواره معده و دیواره شکم، سوراخ موجود در دیواره معده، همچنین دیواره شکم و پوست بخیه گردید و حال عمومی حیوان بهبود یافت.

واژه های کلیدی: فیستول معده ای - زیر جلدی، جسم خارجی، سگ.

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