

Case Report

Omental Lipoma in a Slaughtered Lamb



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ABSTRACT

Lipoma is a benign tumor of well-differentiated adipocytes that has been reported in some domestic animals. Omental lipomas in human and domestic animals are rare and reported as a case report. This study aimed to report an omental lipoma in a slaughtered sheep. In the observational examination of a sheep in a slaughterhouse in Tehran Province, Iran, and during the inspection of the abdominal area, a mass was seen on the greater omentum. The mass was sampled and placed in 10% formalin for histopathology. The mass was single, soft, dense, capsuled, oval, weighing 150 g, and 4.5×3.5 cm in size. Microscopic examination showed omental mass composed of uniform and mature lipocytes encased within a thick layer of immature connective tissue. The final diagnosis was primary benign lipoma. Lipoma can occur anywhere in the body where there are fat cells, and probably obesity and trauma are important risk factors for its occurrence. The size of the lipoma mass may help predict the age of the mass.

Keywords: Adipocyte, Lipoma, Omentum, Slaughtered lamb

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Case History

Adipocytic mass is classified as pure adipocytic tumors (lipomas, liposarcomas, and infiltrative lipomas) and mixed cell types such as fibrolipomas (Agerholm et al., 2016).

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Lipoma is a well-bounded adipocytic lesion that is histologically determined with lobules of mature fat cells (Di et al., 2002; Sickinger et al., 2009; O'Neill et al., 2018). This mass is a benign tumor of well-differentiated adipocytes and has been reported in domestic animals, including dogs (Bergman et al., 1994; McChesney et al., 1980; O'Neill et al., 2018), horses (de Barros, 2020; Hammer et al., 2002), donkeys (Mozafari & Derakhshanfar, 2011; Mohyeddin et al., 2022), and cattle (Agerholm et al., 2016; Sickinger et al., 2009; Ghuman et al., (2008); Mahajan & Gupta, 2017). The occurrence of lipoma in sheep is rare. However, there are some case reports on the occurrence of this tumor in the meninges (Curson, 1933), abomasum (Azizi et al., 2011), and skin (Ahmed & Hassanein, 2012) of sheep.

Although lipomas are common in humans and can occur anywhere in the body, lipomas of the omental in humans are rare and reported as a case report (Luo et al., 2005; Chaudhary et al., 2011; Li et al., 2022). Also, omental lipomas are rare in domestic animals and have been reported as case reports in some studies in dogs (Bertolini, 2017; Jang et al., 2022). Although there is little information about risk factors for the occurrence of lipoma in animals, age, overweight, breed, and gender are suggested as risk factors for this tumor in dogs (O'Neill et al., 2018).

Despite the rarity of lipoma in sheep, its occurrence in an unusual location in this animal is surprising, and the purpose of the present study is to describe the macroscopic and microscopic characteristics of lipoma in the omentum of sheep and to report lipoma of omentum as a rare tumor occurring in an unusual location in sheep.

Clinical Presentation

In an observational examination of a 6-month-old male lamb in Shahre Ray slaughterhouse in Tehran Province, Iran, in February 2023 and during the inspection of the abdominal area of this lamb, a single, unusual, and palpable mass was seen on the left side of the rumen and inner surface of the parietal layer of the greater omentum. The carcass of this lamb is otherwise normal. This lamb belonged to a herd of 100 fattening native lambs

that were sent together to be slaughtered, and none of the carcasses of other lambs in this herd had such masses. Before slaughter, this lamb had no clinical signs and appeared healthy.

Diagnostic Testing

First, the macroscopic characteristics of the mass, including shape, weight, consistency, size, and color, were recorded. This mass was then cut to examine its cross-section for macroscopic characteristics. A part of the mass was sampled and placed in 10% formalin for histopathology. Hematoxylin and eosin staining was performed on the sample taken for histopathology.

Macroscopic characteristics

The mass found on the omentum of the lamb carcass was single, soft, dense, capsuled, oval, weighing 150 g, and 4.5×3.5 cm in diameter. Apart from this mass, no other apparent lesions were seen in the omentum. After cutting, the mass had three distinct parts from the outside to the inside: milky white omentum, a thick and creamy capsule, and a dense tissue inside the capsule, which is gray and, in some parts, yellowish cream (Figure 1).

Microscopic characteristics

Microscopic examination showed an omental mass composed of uniform, mature lipocytes (homogenous mature adipose tissue) encased within a thick layer of immature connective tissue (reactive fibroblasts covering the surface of the omental lipoma). The mass consisted of lobules of variable size separated by fibrous septa. Each lobule was composed of uniform and mature lipocytes (Figure 2). The definite diagnosis was primary benign lipoma.

Assessments

The occurrence of tumors in small ruminants is not uncommon (Sasani et al., 2017; Omidi et al., 2018). Lipomas are mesenchymal tumors. They are soft masses without pain and can be detected anywhere in the body where normal adipocytes exist (Kolb et al., 2023). However, omental lipoma is rare in humans and domestic animals and usually appears in literature as a case report (Li et al., 2022; Song et al., 2019). To our last knowledge, omental lipoma in domestic animals has been reported only in dogs (Bertolini, 2017; Song et al., 2019). A potential relation between trauma and the formation of lipoma has been suggested (Charifa et al., 2022; Aust et al., 2007), and the rarity of trauma to the omentum

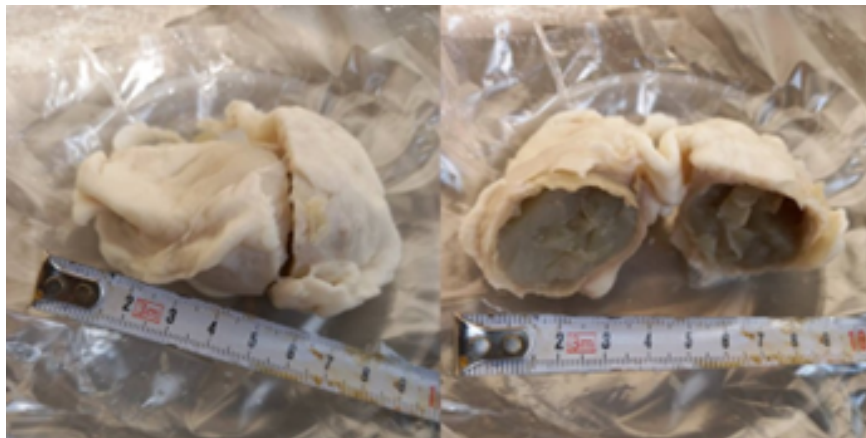


Figure 1. A capsuled and oval mass weighing 150 g and measuring 4.5×3.5 cm in diameter thick and creamy capsule around the mass and dense tissue inside the capsule is seen

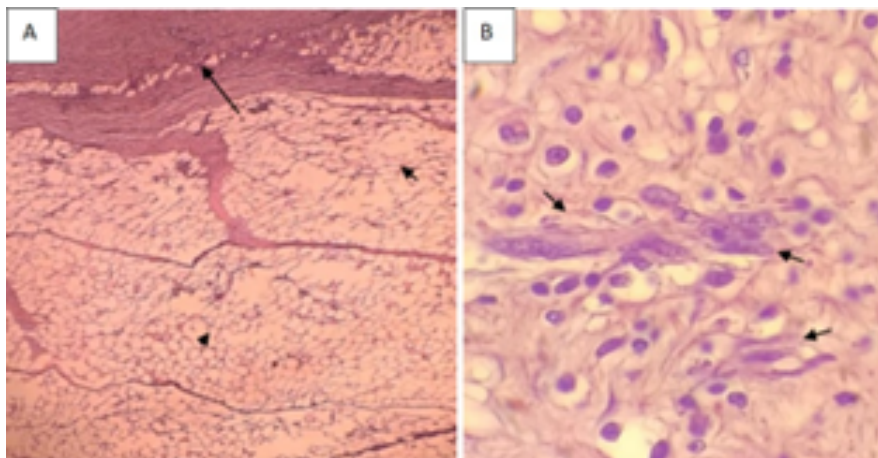


Figure 2. A) Uniform and mature lipocytes (small arrow) encased within a thick layer of immature connective tissue (large arrow) (H&E staining, ×100 magnification), B) Reactive fibroblasts covering the surface of the omental lipoma (H&E staining, ×1000 magnification)

may explain the rarity of omental lipoma, although this needs further study. Although the exact cause of lipoma is unknown, trauma, genetics, diabetes, and obesity have been implicated in the etiology of lipoma in humans and animals (Kolb et al., 2023; O'Neill et al., 2018; AL-Obeidi & Mansoor, 2023; Keywanloo et al., 2021). In addition, age (middle to old), overweight, breed, and gender (female) are suggested as risk factors for the occurrence of lipoma in dogs (O'Neill et al., 2018). This study did not determine the cause of omental lipoma, but obesity was present in this sheep as a risk factor for lipoma. However, the risk factors of lipoma occurrence in animals need more studies.

Lipomas usually occur without symptoms and are found incidentally when an examination is done for another reason (Okromelidze et al., 2019; Emekli &

Gündoğdu, 2022). A study observed non-cutaneous malignant melanoma without previous clinical signs in a slaughtered goat (Hatefi et al., 2021). The sheep with lipoma in the present study were asymptomatic, and the lipoma was found incidentally during the observational examination of the carcass in the slaughterhouse.

Lipomas often have a fibrous capsule that is commonly singular (Charifa et al., 2022). These features were observed in this study. Lipoma is a well-bounded adipocytic lesion histologically determined with lobules of mature fat cells (Di et al., 2002; Sickinger et al., 2009; O'Neill et al., 2018), which was also present in this study. Previously reported cutaneous lipomas in sheep had mature adipocytes similar to this study (Ahmed & Hassanein, 2012). Morphologically, it has been reported that canine lipomas are typically homogeneous with sharp edges

and a thin capsule (Song et al., 2019), while thick capsule around the mass and dense tissue inside the capsule were seen in the present study. In some studies, lipoma has a necrotic center (Song et al., 2019), which was not present in this study. The lipoma mass in our study is smaller than other omental masses reported in humans (Luo et al., 2005; Li et al., 2022; Chaudhary et al., 2011) and dogs (Song et al., 2019). Omental lipoma in humans and dogs was usually diagnosed when the lipoma mass became large enough to develop clinical findings such as abdominal distension (Luo et al., 2005; Li et al., 2022; Chaudhary et al., 2011; Song et al., 2019) but sheep in our study was slaughtered, and its omental mass probably had not time to be large enough. So, it is possible to comment on the age of the lipoma mass based on the tumor size, but this issue needs to be more studied.

Lipoma in sheep is rare and has been reported in the abomasum (Azizi et al., 2011), meninges (Curson, 1933), and skin (Ahmed & Hassanein, 2012). To our knowledge, omental lipoma is reported for the first time in sheep in this study, and the occurrence of this rare tumor in a rare place is surprising. Determining the cause of its occurrence requires further research and investigation.

In conclusion, lipoma can occur in places in the body where there are fat cells, and obesity and trauma are probably important risk factors for its occurrence. The size of the lipoma mass may help predict the age of the mass.

Ethical Considerations

Compliance with ethical guidelines

All ethical principles are considered in this article.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

All authors declared no conflict of interest.

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گزارش موردی

لیپومای چادرینه در یک رأس بره کشتار شده

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چکیده

لیپوما تومور خوش خیم سلول‌های به‌خوبی تمایز یافته بافت چربی است و در برخی دام‌های اهلی گزارش شده است. وقوع لیپومای چادرینه در انسان و دام‌های اهلی نادر است و گزارش آن به‌صورت گزارش مورد است. هدف از این مطالعه گزارش لیپومای چادرینه در یک رأس گوسفند کشتار شده است. در بررسی مشاهده‌ای یک گوسفند کشتار شده در یک کشتارگاه در استان تهران و در طول بررسی ناحیه شکم این گوسفند توده‌ای روی چادرینه بزرگتر دیده شد. از این توده نمونه‌برداری شد و نمونه حاصله در فرمالین ۱۰ درصد قرار داده شد تا برای بررسی آسیب‌شناسی استفاده شود. توده مدنظر تکی، نرم و متراکم، کپسول‌دار، بیضی شکل، با وزن ۱۵۰ گرم و قطر ۳/۵×۴/۵ سانتی‌متر بود. بررسی میکروسکوپی وجود یک توده چادرینه‌ای متشکل از سلول‌های چربی یکنواخت و بالغ قرار گرفته در یک لایه ضخیمی از بافت همبند نابالغ را نشان داد. تشخیص نهایی این توده چادرینه‌ای لیپومای خوش خیم اولیه بود. لیپوما می‌تواند در هر جایی در بدن که سلول چربی دارد، رخ دهد و احتمالاً چاقی و ضربه عوامل خطر مهمی برای وقوع لیپوما هستند و همچنین این احتمال وجود دارد که اندازه توده لیپوما در پیش‌بینی سن توده مفید باشد.

کلیدواژه‌ها: چادرینه، سلول چربی، بره کشتار شده، لیپوما

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