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Surgical management of cutaneous histiocytoma in a five-year-old golden retriever

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Abstract

Background: Canine cutaneous histiocytoma is a benign skin tumor originating from epidermal Langerhans cells, most commonly affecting young dogs and often presenting as a solitary, alopecic, dome-shaped mass. While many histiocytomas undergo spontaneous regression, surgical management is indicated when the lesion fails to regress, shows rapid growth, ulceration, or causes discomfort.

Case presentation: A five-year-old male Golden Retriever presented with a solitary, firm, erythematous cutaneous mass located on palmar surface of the digit. The mass had shown progressive growth over the past three months, without signs of spontaneous regression. Post-surgical histopathological examination confirmed the diagnosis of cutaneous histiocytoma with no evidence of metastasis.

Management and Outcome: Complete surgical excision of the mass was performed under general anesthesia. Histopathology confirmed complete removal with clear margins. Post-operative recovery was uneventful, and at follow-up at fourth week, the dog demonstrated good wound healing with no evidence of recurrence.

Conclusion: Although most canine cutaneous histiocytomas spontaneously regress, surgical excision is a reliable and curative option when the tumor persists, increases in size, or causes clinical concern. Early diagnosis and appropriate surgical intervention can ensure excellent outcomes.

Keywords: Cutaneous histiocytoma, dog, Golden Retriever, surgical excision, Langerhans cell tumour, dog tumor

Introduction

Cutaneous histiocytoma is a common benign neoplasm of dogs arising from epidermal Langerhans cells and represents one of the most frequently diagnosed cutaneous tumors in veterinary clinical practice (Moore *et al.*, 2002) ^[5]. The tumor is characterized by rapid growth, a dome-shaped or button-like appearance, and a tendency for spontaneous regression mediated by host immune responses (Gross *et al.*, 2005) ^[2].

Histiocytomas are most commonly observed in young dogs under three to four years of age, although cases have been reported in older animals, indicating that age alone should not exclude this diagnosis (Meuten, 2017) ^[4]. Certain breeds, including Boxers, Dachshunds, Cocker Spaniels, and Retrievers, have been reported to show increased prevalence, suggesting a possible genetic predisposition (Gross *et al.*, 2005) ^[2].

Clinically, cutaneous histiocytomas typically present as solitary, firm, alopecic, erythematous nodules measuring less than 2 cm in diameter and are frequently located on the head, pinnae, neck, and distal limbs (Goldschmidt & Hendrick, 2002) ^[1]. Ulceration may occur secondary to trauma or inflammation, which can complicate clinical differentiation from other cutaneous round cell tumors (Meuten, 2017) ^[4]. The biological behavior of cutaneous histiocytoma is generally benign, with spontaneous regression occurring within weeks to months as a result of lymphocyte-mediated cytotoxicity against neoplastic Langerhans cells (Moore *et al.*, 2002) ^[5]. However, lesions that fail to regress, continue to enlarge, or cause discomfort to the animal may require therapeutic intervention (Withrow & Vail, 2019) ^[7].

Histiocytomas often grow rapidly with significant epidermal ulceration. Recurrence at the surgical excision site or development in a new location is highly uncommon, and malignant transformation is a rare occurrence.

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(Goldschmidt and Hendrick, 2002; Kambala and Kavitha, 2024) ^[1, 3]. Roshini *et al.* (2013) ^[6] documented an 8.6% incidence of canine cutaneous histiocytoma among 41 canine tumorous growths studied, ranked second to mammary gland tumour.

Accurate diagnosis is essential due to the morphological similarity of histiocytomas to other round cell tumors such as mast cell tumors, cutaneous lymphoma, and transmissible venereal tumors, which differ significantly in prognosis and treatment (Goldschmidt & Hendrick, 2002) ^[1]. Fine needle aspiration cytology serves as a valuable initial diagnostic tool, while histopathological examination remains the gold standard for definitive diagnosis (Meuten, 2017) ^[4].

Although conservative management is often recommended, surgical excision is indicated in cases of diagnostic uncertainty, persistent lesions, ulceration, or cosmetic and functional concerns (Withrow & Vail, 2019) ^[7]. The present case report describes the surgical management of a cutaneous histiocytoma in a five-year-old Golden Retriever, highlighting the clinical presentation, diagnostic approach, and favorable outcome following complete excision (Gross *et al.*, 2005) ^[2].

Case report

A five-year-old male Golden Retriever was presented with a solitary cutaneous mass on the palmar surface of the digit on the hindlimb that had shown progressive enlargement over three months. The dog was otherwise clinically normal, with no history of systemic illness or behavioral changes reported by the owner. On physical examination, the animal was alert and active, and vital parameters including body temperature, heart rate, and respiratory rate were within normal limits. The

cutaneous mass was firm, well circumscribed, alopecic, and erythematous, with a smooth surface and with a smooth surface and mild ulceration noted at presentation

A complete blood count was performed and revealed mild neutrophilic leukocytosis along with mild monocytosis. Hemoglobin concentration, packed cell volume, platelet count, and other leukocyte parameters were within normal reference ranges. Renal function tests showed blood urea nitrogen and serum creatinine values within normal limits. Liver function tests, including serum alanine aminotransferase, alkaline phosphatase, and total bilirubin, were also within normal physiological ranges. Thoracic radiography was performed to evaluate the thoracic cavity, with no evidence of pulmonary lesions or metastasis was observed.

Based on the clinical presentation and diagnostic findings, the case was prepared for surgical intervention for definitive diagnosis and treatment.

Histopathological evaluation revealed a dense proliferation of neoplastic round to spindloid cells arranged in loose sheets with minimal supporting stroma. The cells exhibited characteristic histiocytic features, including ovoid to reniform nuclei and abundant eosinophilic cytoplasm, though significant cellular atypia, hyperchromatic nuclei, and numerous mitotic figures were noted. While some cells resembled normal macrophages, the presence of multinucleated forms and cytoplasmic vacuolation further defined the lesion (Figure 2). These findings are highly suggestive of a cutaneous histiocytoma, a common round cell tumor in canines.



Fig 1: The ulcerated mass on the palmar surface of the digit.

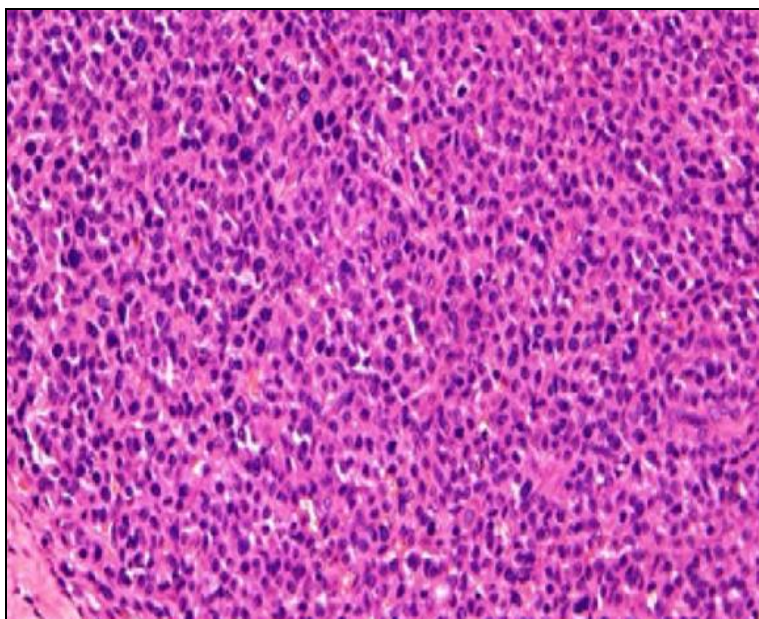


Fig 2: Neoplastic round cells with reniform nuclei and abundant eosinophilic cytoplasm characteristic of a canine cutaneous histiocytoma (H&E stain).

Therapeutic management

The cutaneous mass was surgically managed by complete mass extirpation under general anesthesia. Prior to surgery, the dog was premedicated with xylazine at a dose of 1 mg/kg intramuscularly and buprenorphine at 0.02 mg/kg intramuscularly to provide sedation and analgesia. General anesthesia was induced using ketamine at a dose of 2 mg/kg intramuscularly in combination with midazolam at 0.2 mg/kg intramuscularly. Following induction, the animal was

positioned appropriately, and the surgical site was prepared by thorough clipping of hair and cleansing with surgical spirit, followed by aseptic preparation using 5% povidone-iodine solution.

A standard surgical approach was employed, and the mass was completely resected with adequate surrounding tissue. Hemostasis was achieved, and the surgical wound was closed routinely using appropriate suture material. Postoperative bandaging of the surgical site was performed, and bandage

changes were carried out on alternate days. Postoperative antibiotic therapy consisted of cefpodoxime proxetil administered orally at a dose of 10 mg/kg once daily for 10 days. Additionally, Penetrat Pet (Trypsin, Bromelain and Rutozide) tablets were administered orally at a dose of one tablet once daily as supportive therapy. The owner was advised to clean the surgical site regularly and to keep the area dry to promote optimal wound healing.

The postoperative recovery period was uneventful. Sutures were removed on the 12th postoperative day, and the surgical site showed satisfactory healing with no complications.

Discussion

In the present case, the patient was a five-year-old Golden Retriever, slightly older than the typical age range reported in the literature. The lesion was solitary, firm, and erythematous, consistent with the classical description of cutaneous histiocytomas in previous studies (Gross *et al.*, 2005; Meuten, 2017) [2, 4]. Unlike many spontaneously regressing histiocytomas, this mass showed progressive growth over several weeks without signs of regression, which aligns with other reported cases where surgical intervention was necessary due to persistent or enlarging lesions (Withrow *et al.*, 2019) [7].

Hematological evaluation revealed mild neutrophilic leukocytosis with monocytosis, likely reflecting localized inflammation associated with the tumor rather than systemic disease. This finding is in agreement with earlier reports where minor inflammatory changes were observed in cases without systemic involvement (Meuten, 2017) [4]. Renal and liver function tests were within normal limits, and thoracic radiographs revealed no pulmonary lesions, supporting the benign nature of the tumor and absence of metastasis, which has been similarly noted in previous case series (Gross *et al.*, 2005) [2].

Surgical excision remains the treatment of choice for histiocytomas that do not regress spontaneously. In this case, complete resection of the mass with appropriate margins resulted in an uneventful recovery, proper wound healing, and no recurrence at follow-up. These outcomes are consistent with prior studies reporting excellent prognosis after surgical excision of persistent histiocytomas, even in older animals or atypical breeds (Withrow *et al.*, 2019; Meuten, 2017) [7, 4]. The use of preoperative sedation and anesthesia protocols, aseptic technique, postoperative antibiotics, and wound management in this case ensured optimal recovery, paralleling the perioperative management recommendations described in the veterinary literature (Gross *et al.*, 2005) [2].

Overall, this case reinforces several key points highlighted in earlier reports: cutaneous histiocytomas can occasionally present in older dogs, may fail to regress spontaneously, and surgical excision is a safe and effective treatment option. It also emphasizes the importance of thorough preoperative assessment, including hematology, biochemistry, and imaging, to rule out systemic disease and plan safe surgical management (Moore *et al.*, 2002; Withrow *et al.*, 2019) [5, 7]. By documenting this case in a 5-year-old Golden Retriever, we expand the clinical understanding of histiocytoma presentation beyond the typical young-dog population and provide additional evidence supporting surgical management as a curative approach.

Conclusion

Cutaneous histiocytoma is a benign epidermal tumor most commonly seen in young dogs, but this case demonstrates that older dogs, such as the five-year-old Golden Retriever presented here, can also develop persistent lesions. While spontaneous regression is typical, lesions that persist, enlarge, or cause discomfort require surgical intervention.

Complete surgical excision of the tumor in this case resulted in uneventful healing, no recurrence, and excellent clinical outcome, highlighting the effectiveness of surgery as a curative approach for persistent cutaneous histiocytomas. Thorough preoperative evaluation, aseptic technique, and postoperative care are essential to ensure successful outcomes.

This case reinforces the need for individualized clinical assessment and demonstrates that surgical management remains a safe and reliable treatment for cutaneous histiocytomas, even in older dogs or atypical presentations.

Availability of data and materials

All data generated or analysed during this study are included in this published article.

Ethics approval and consent to participate

Ethical approval was not required per institutional guidelines for single case reports.

Competing Interests

The authors declare no competing interests.

Consent for Publication

Informed consent for publication was obtained from the owner of the animal involved in the study.

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