

SURGICAL MANAGEMENT OF LIPOMA IN BUDGERIGAR: A CASE STUDY EMPHASIZING ANESTHESIA AND HYPOTHERMIA MANAGEMENT

Monoar Sayeed Pallab, Debashish Sarker, Thomby Paul

*Chattogram Veterinary and Animal Sciences University, Faculty of Veterinary Medicine,
Khulshi, Chattogram, Bangladesh
E-mail: mspallab@yahoo.com*

ABSTRACT

A 3-year-old male Budgerigar bird, weighing 60 gm was presented to the Teaching Veterinary Hospital, Chattogram Veterinary and Animal Sciences University (CVASU) with a history of abnormal swelling mass on the ventral abdominal region. The swelling mass was soft and fixed with underlying tissues. Radiographic examination revealed a radiopaque mass in the ventral abdomen. There was no visible of intestinal loops within the soft swelling but attached with underlying tissues and slightly extended to coelomic cavity. Histopathology revealed there was an aggregation of large amounts of adipocytes surrounded by connective tissues. Based on histopathology, clinical history and physical examination, we confirmed the case as a lipoma. For anesthesia, 5% isoflurane used for induction and xylazine and ketamine combination for maintenance during surgery. Hypothermia was managed in the bird during anesthesia applying heated pad and cotton packs. The surgical excision of the tumour was performed successfully, and the bird was smoothly recovered 2 hours of post-anesthesia. There was no evidence of recurrence of the tumor within two months of post-operative observation.

Key words: budgerigar, anesthesia, hypothermia management.

Introduction

Neoplasia is common in captive birds compared to free-flying wild birds (Filippich, 2004). Among the wild avian species, Budgerigars are the most common captive avian pet species and the incidence of neoplasia is comparatively higher than other avian species. In Budgerigars, the prevalence of neoplasia has been reported 15.8% to 24.2% (Ratcliffe, 1933; Filip, 2002). Different types of tumours are seen in Budgerigars such as lipomas, liposarcoma, lymphomas, fibroma, fibrosarcoma, squamous cell carcinoma, osteosarcoma and hemangiosarcoma (Filip, 2002; Filippich, 2004). Among them, the lipoma is the most common benign tumour in Budgerigars, and the incidence of the tumour is 10% to 40% (Baker, 1980; Petrak and Gilmore, 1982; Turrel et al., 2014). Lipomas can be single or multiple and commonly found in subcutaneous tissues of sternum, wings, legs and abdomen, rarely found in coelomic cavity (Turrel et al., 2014). These tumours are commonly found in the obese and aged bird, but there is no significance in sex predisposition (Turrel et al., 2014). Lipomas are soft, well-encapsulated, the skin over the mass freely movable, and sometimes skin becomes necrotic (Filippich, 2004; Turrel et al., 2014). Surgical excision is the most common approach and the best option for the treatment of lipoma in birds (Schmidt and Quesenberry, 1997; Filippich, 2004; Coles, 2007). Anesthesia is crucial for surgical intervention to alleviate pain and stressful condition of birds (Lierz, 2012). Hypothermia management is critical in birds during anesthesia as it causes potential cardiac instability in birds (Ludders, 1994). Despite numerous reports of surgical excision of lipomas in birds, inefficient anesthetic protocols and hypothermia management can lead to the death of birds. Accordingly, this case study aimed to describe a safe anesthesia and hypothermia management protocol as well as surgical management of lipoma in Budgerigar.

Case history and observation

A 3-year-old male Budgerigar bird, weighing 60 gm was presented at the Teaching Veterinary Hospital, Chattogram Veterinary and Animal Sciences University (CVASU), Chattogram, Bangladesh, with a history of abnormal swelling mass on the ventral abdominal region. According to the owner's observation, the swelling mass was small initially; however, it was gradually enlarged since last three months. Although the feeding habit of the bird was satisfactory, it was reluctant to mate with other female birds. The bird was treated with antibiotics and vitamin supplement by a local veterinarian, but no improvement was observed.

Physical examination revealed the bird was active and alert and moved freely within a cage. After gently restraining of the bird, a swelling mass was observed on the midline of the ventral abdomen just caudally to the keel bone (Figure 1). On palpation, the consistency of swelling mass was soft and fixed with underlying tissue. The overlying skin was normal and freely movable over the mass. Radiographic examination revealed a radiopaque mass in the ventral abdomen. There was no visible of intestinal loops within the soft swelling but attached with underlying tissues and slightly extended to the coelomic cavity (Figure 2). According to histopathological report, there was aggregation of large amounts of adipocytes surrounded by connective tissues. Based on the above findings, it was diagnosed as a lipoma.



Figure 1: An abnormal swollen mass on ventral abdomen.



Figure 2: Right lateral radiograph showing a large mass (arrow) extended into coelomic cavity.

Anesthesia and hypothermia management

Chamber induction was done using 5% isoflurane in a plastic box before pre-operative preparations (Figure 3 & 4). The onset and duration of isoflurane anesthesia was 10 and 150 second, respectively, in this study. After induction, we used injectable anesthetics with a combination of Xylazine and Ketamine at the dose rate of 2 mg/kg and 25 mg/kg body weight, respectively. The duration of anesthesia was 1 hour, and complete recovery was occurred after 2 hours post-anesthesia. For minimizing the heat loss at the time of surgery and post-surgical period, we used heated pad ventrally and cotton packs laterally (Figure 5 & 6). After the operation, we wrapped the bird with the cotton pack and advised the owner not to remove until recovery.



Figure 3: Standing position of the bird before chamber induction.



Figure 4: Lateral recumbency of the anesthetized bird after chamber induction.



Figure 5: Heat management in the anesthetized bird before surgery.



Figure 6: Post-surgical heat management in the bird.

Pre-operative preparations and surgical technique

When the bird reached unconsciousness with lateral recumbency having no movement, we removed the bird from the chamber. The bird was then placed in dorsal recumbency and plucked feathers from surrounding areas of the surgical site. The skin asepsis was performed with 10% povidone-iodine, followed by 70% alcohol swabs.

A skin incision was made over the whole length of the tumour (Figure 7). The lateral edges of the tumour was freed using blunt dissection and was entered laterally to the mass on each side. The tumour adhered to the body wall musculature and the parietal layer of the coelomic cavity (Figure 8). The adhesions were removed by blunt dissection without any damage of musculature and organs in the coelomic cavity. Then the whole mass was removed, and haemorrhage was controlled (Figure 9). The abdominal cavity was closed using catgut 4-0 in a simple continuous pattern (Figure 10). The skin edges were closed using nylon in cross mattress patterns (Figure 11).

Post-operative treatment of the patient included antibiotic gentamycin (10 mg/kg intramuscularly once daily for 5 days); an analgesic, meloxicam (0.3 mg/kg, subcutaneously once daily for 3 days). The skin wound was regularly dressed with povidone-iodine until healing.



Figure 7: Skin incision was placed whole length of the tumor.



Figure 8. The mass was attached with underlying tissues.



Figure 9: After excision of tumor.



Figure 10: The muscle layers were sutured in a simple continuous pattern.



Figure 11: Skin edges were closed by cross- mattress suture.



Figure 12: The wound was healed, and the skin suture was removed at day 14 post-operatively.

Results and discussion

The lipoma is the most common benign tumour in Budgerigars (Frazier et al., 1993). It may be single or multiple and can occur anywhere in the body, but the common sites are sternum, wing, leg abdomen and rarely found in the coelomic cavity (Turrel et al., 2014). In this study, lipoma was found in the ventral abdomen and extended to the coelomic cavity. Excision is the most common surgical procedure for the treatment of lipoma in birds with good short-term outcomes (Schmidt and Quesenberry, 1997; Filippich, 2004; Coles, 2007). Surgical excision was also performed to treat the lipoma in this study. Anesthesia management is crucial for surgery as well as pre-operative preparations in birds. Chamber induction is a simple and easy method which excludes the requirement of physical restraint, minimizes stress, maximizes patients comfort and prevents injury to bird's handler (Mer et al., 2017). In this case, chamber induction was conducted in a plastic box with 5% isoflurane for pre-operative preparations to minimize stress and maximize comfort of the bird. Following Curro (1998), the bird was anesthetized with combination ketamine and xylazine 2 mg/kg and 25 mg/kg body weight, respectively. Management of body temperature is critical in anesthetized bird due to their small size and high metabolic rates. Birds can be hypothermic very quickly during anesthesia; hence anesthetized birds require external thermal support (Curro, 1998). Hypothermia causes potential cardiac instability and lengthens recovery period in birds (Ludders, 1994). In our study, the body temperature of the bird was managed at the time of surgery and up to post-surgical recovery with a heated pad at 45°C and cotton roll around the bird. On 14th day post-operatively, the bird was recovered entirely, and the skin suture materials was removed (Figure 12). The recurrence rate of lipoma in the bird is 14.28% (Castro et al., 2016); however, after the surgical resection of lipomas recurrence was not observed in our case.

Conclusion

The case study indicates that chamber induction with Isoflurane is safe for Budgerigar bird. Xylazine and Ketamine is the right combination of injectable general anesthetics in this type of bird. A heated pad and cotton roll combination is a simple and effective technique to prevent hypothermia in Budgerigar bird.

Acknowledgments

The authors are grateful to the pet owner for good cooperation by providing valuable information, and post-operative follow up. The authors are also thankful to Director of clinics, CVASU for all kinds of technical supports to perform this work successfully.

References

1. Coles. B. H. (2007). *Essentials of Avian Medicine and Surgery*. Blackwell Publishing, Oxford, UK, 3rd edition. pp. 142–182.
2. Castro, P. F., Fantoni, D. T., Miranda, B. C. and Matera, J. M. (2016). *Prevalence of neoplastic diseases in pet birds referred for surgical procedures*. *Veterinary medicine international*.
3. Curro, T. G. (1998). *Anesthesia of pet birds*. In *Seminars in Avian and Exotic Pet Medicine*. Vol. 7, pp. 10–21.
4. Filip. T., Scope, A. (2002). *Prevalence of tumors in Budgerigars*. *Proc Assoc Avian Vet*, Monterey, California, p. 189.

5. Filippich, L. J. (2004). *Tumor control in birds*. In *Seminars in Avian and Exotic Pet Medicine*. Vol. 13, pp. 25–43.
6. Frazier, K. S., Heron A. J., Dee, J. F., Altman, N. H. (1993) *Infiltrative lipoma in a canine stifle joint*. J Am Anim Hosp Assoc. 29:81–83.
7. Lierz, M., and Korbel, R. (2012). *Anesthesia and analgesia in birds*. Journal of Exotic Pet Medicine, 21(1), pp. 44–58.
8. Ludders, J. W. (1994). *Avian anesthesia for the general practitioner*. Proceedings of the North American Veterinary Conference. Reno, NV, Association of Avian Veterinarians, pp. 791–793.
9. Mer, D. R., Parikh, P. V., Amin, N. R., Kelawala, D. N., Gameti, K. S., Parulekar, E. A., Gondaliya, R. B. (2017). *Comparison between chamber and mask induction techniques for anesthesia in birds*. Indian Journal of Veterinary Surgery, 38(1), pp. 41–43.
10. Petrak, M. L. and Gilmore, C. E. (1982). *Diseases of Cage and Aviary Birds*. pp. 606–637.
11. Schmidt, R. E., Quesenberry, K. (1997). *Neoplastic diseases*. in *Avian Medicine and Surgery*, WB Saunders, Philadelphia, USA. pp. 590–603.
12. Ratcliffe, H. L. (1993). *Incidence and nature of tumors in captive wild mammals and birds*. The American Journal of Cancer, 17(1), pp. 116–135.
13. Turrel, J. M., McMillan, M. C., Paul-Murphy, J. (1987). *Diagnosis and treatment of tumors of companion birds*. AAV Today, 1(3), pp. 109–1.