

Chemo-Therapeutic Management of An Acute Abscess in a Male Asian Elephant (*Elephas maximus*)

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ABSTRACT

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A 40-year-old male Asian elephant was presented to the Veterinary Polyclinic North Paravur with right pelvic limb lameness and a swelling in the right iliac region, which had developed after darting one month previously. The swelling was diagnosed as a unilateral acute abscess, which was lanced, drained and lavaged. Topical treatments, systemic antibiotic therapy and an analgesic were administered, and the animal made an uneventful recovery.

Keywords: Abscess, Elephant, Wound

I. INTRODUCTION

Skin wounds in captive elephants may result from social fights, hooks, accidental falls, and foreign bodies, or may be self-inflicted on enclosure features. Mechanical injury from sharp objects, for example the pierced ankus used by mahouts or pieces of wood, and cuts from chains are the most common causes (Burman et al. 2013). Abscesses develop in 27.6% cases of skin wounds in elephants (Sukklad et al. 2006) and may also follow injections administered either by hand or remotely; they may occur on any part of the body and develop following a breach in the skin or mucous membranes and the subsequent introduction of pyogenic organisms (Shuttleworth and Smythe 2000). Even in their early stages, abscesses are encapsulated by a definite boundary wall (the

pyogenic membrane) (O'Connor 2005) and those which cannot break through the skin will extend laterally and must be drained surgically (Toit 2001). The first clinical signs are the typical characteristics of inflammation: swelling, redness, heat and pain; the animal will flinch if digital pressure is applied to the affected area. A deep abscess originates below the deep fascia and the first indication of its presence may be fever (Fowler and Mikota 2006). Needle aspiration to confirm a diagnosis of abscess may be unrewarding unless a large bore needle is used, because purulent material is often thick. Culture of the causative bacteria, along with antibiotic sensitivity testing is important when planning treatment (Toit 2001). Coagulase-positive *Staphylococcus aureus* is the pathogen most associated with skin wounds and abscesses in domestic elephants (Senthilkumar et al.

2014). Abscesses should be incised at their ventral border to establish proper drainage (Fowler and Mikota, 2006) and all exudates drained must be burnt to prevent environmental contamination. Application of zinc sulphate or zinc chloride ointment for several days after drainage will promote removal of necrotic tissue; once healthy granulation tissue appears, application of antibiotic or antiseptic ointments will bring about healing (Silas et al. 1989).

II. METHODS AND MATERIAL

A 40-year-old male Asian elephant, weighing approximately 2500 kg, was presented to the Veterinary Polyclinic in North Paravur, Kerala, with a history of right pelvic limb lameness and a firm, painful swelling in the right ilial region (Figures 1 and 2). According to its caretaker, the swelling had appeared after darting and had gradually increased in size over a period of one month. There was no obvious redness of the overlying skin, but the area was slightly hotter to the touch. The animal had a normal appetite.



Figure 1: Hard painful swelling in the right ilial region



Figure 2: Right lateral view of the swelling

After cleaning the area with 70% ethanol, thick yellow pus was aspirated from the swelling using a 12-gauge \times 7.2 cm needle and a diagnosis of acute abscess was made. Subsequent culture yielded a mixed growth of *Staphylococcus spp.* and *Pseudomonas spp.*, sensitive to streptomycin, amikacin and gentamicin.

According to the owner, hot fomentation had been provided for one month in an attempt to 'ripen' the abscess. At the clinic, the abscess was lanced aseptically after local infiltration of the skin with 2% lidocaine¹. Two separate incisions were made at the proximal and ventral borders of the abscess to establish better drainage. The wound was cleaned with 3% hydrogen peroxide solution², 5% acriflavin solution³ and 7% tincture of iodine solution⁴. The abscess cavity was packed with sterile bandage soaked in 7% tincture of iodine solution; the bandage was replaced every 24 hours for a period of one week. Meloxicam⁵ at a dose of 400 mg (approximately 0.16 mg/kg) was administered intramuscularly once daily for 7 days (Figure 3).

Once the antibiotic sensitivity test results were available, streptomycin⁶ was also administered intramuscularly twice daily at a dose of 25 g (approximately 10 mg/kg). Tetanus toxoid⁷ (10mls) was also given as a single intramuscular dose.



Figure 3: Intramuscular injection of drugs

After 7 days, triple sulphate powder⁸ was applied to the wound once daily for a period of 15 days. The elephant showed marked improvement after 14 days of medication, and the affected area of skin appeared normal 60 days post treatment (Figure 4).

III. DISCUSSION

The abscess diagnosed in this elephant was successfully

¹ Lignocaine hydrochloride injection 2%, Neon Laboratories

² Hydrogen peroxide 3%, PRS Pharmaceuticals

³ Acriflavine BPC, Southern Union Pharmaceuticals

⁴ Tincture of iodine 7%, Southern Union Pharmaceuticals

⁵ Melonex, Intas Pharmaceuticals

⁶ Dicrysticin-S, Zydus Animal Health

⁷ Tetanus Toxoid, Biological E

⁸ Triple Sulphate Powder, Southern Union Pharmaceuticals

treated using chemo-therapeutic methods. An abscess is characterised by localized infection and the presence of pus within a cavity. In animals, several organisms may be pyogenic: *Staphylococci*, *Streptococci*, *Corynebacterium pseudotuberculosis*, *Corynebacterium pyogenes*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Actinobacillus lignersi* and *Actinomyces bovis*; other organisms may also be involved (Julian and Margret, 2006).



Figure 4: Appearance after 2 months of treatment

The five classical signs of inflammation are redness, heat, swelling, pain and loss of function of the affected area. Redness was not observed in this case, possibly because elephants are pachyderms and cover their skin with mud and slush to protect against harmful ultraviolet radiation. Heat is almost always present and is due to the increased flow of blood through the affected area; the detection of heat is extremely valuable in diagnosing inflammation even if no redness is present. Swelling always occurs,

except in those locations where the anatomy prevents expansion, and results from cellular outflow, vasodilation, increased capillary permeability and extravasation of fluids, and is continued to the margin of the inflamed tissue. Its greatest single cause is capillary permeability and clinically this is manifested by tissue oedema: an important clinical feature of local inflammation. In some cases, it may be sole sign which gives an indication as to the inflammatory nature of the swelling.

The presence of pain, heat, fluctuating swelling and oedema are of great clinical significance. One of the special signs noticed in inflammatory swellings is the shape, which tends to assume a spherical form owing to the regular spread of the reactionary process. In the early stages the mass is firm and tense but when necrosis, liquefaction and suppuration occur, an area of softening appears. In abscesses of sufficient size, an experienced clinician may be able to discern a wave-like impulse transmitted through a soft-walled sac of fluid in response to pressure. Probably the outstanding characteristic of an inflamed area is the absence of definite edges as the mass seems to blend into the surrounding tissue (O'Connor, 2005), as was observed in this case.

The treatment of an abscess comprises: (1) measures to hasten the maturation of abscess; and (2) opening the abscess to evacuate its contents. The first treatment is effected by application of either hot fomentations or stupes, or by a blistering agent. The latter is quicker in its results, but the former has the advantage of acting as an analgesic. Opening of an abscess is usually delayed until it is obviously fluctuating. If opened before all the pus is collected in one cavity, a secondary abscess may form in the inflamed tissue. In certain cases it is advisable to open an abscess as soon as diagnosed and before the pus has approached the surface - for example, when it is situated in the vicinity of an important cavity or

structure to which extension of suppuration might have serious consequences (e.g. peritoneum, joint). The opening of the abscess wall (the pyogenic membrane) will allow drainage of pus, the character of which varies according to the tissue involved and organisms it contains.

The skin over the swelling should be shaved or clipped closely and an efficient skin antiseptic applied. If the pus is deeply situated, the tissues along the proposed line of incision should be infiltrated with a solution of a local anaesthetic, as was done in this case. To obtain rapid and complete healing of the abscess, the incision should be made so it allows complete drainage of the cavity. After the pus is removed, the cavity is packed with gauze that has been saturated with tincture of iodine. This is used to destroy any infection that may be present in the lining membrane of the cavity. Aftercare consists of keeping the opening free for drainage and removing any exudate that collects in the cavity (Frank, 2002).

Aerobic and possibly anaerobic cultures can be submitted in case of systemic infection. The most reliable method of obtaining an accurate culture is by taking a sample of the abscess wall, because cultures obtained from the pus itself can contain bacterial contaminants rather than the primary organism responsible for infection; however, this was not performed in this case. An antibiotic sensitivity test should always be performed to determine the drug of choice for treatment.

IV. CONCLUSION

This elephant was presented to the Veterinary Polyclinic, North Paravur, with a history of right pelvic limb lameness and swelling in the right ilial region. The swelling was diagnosed as an acute abscess, which was lanced, drained and lavaged. Treatment included streptomycin, topical antiseptics,

and an analgesic. The animal made an uneventful recovery.

V. REFERENCES

- [1]. Burman, N.N., Nat, A.J. and Sarma, B. 2013. Bacterial Infection, Antibioqram and Wound treatment in domesticated Asian elephants. *Gajah*, p40
- [2]. Firgal, S. and Naureen, A. 2007. Elephant as a veterinary patient. *Pakistan Veterinary Journal*, 27:48-57
- [3]. Fowler, M.E. and Mikota, S.K. 2006. In: *Biology, Medicine and Surgery of Elephants*. (1st Ed.). Blackwell Publications, USA, p256
- [4]. Frank, E.R. 2002. *Veterinary Surgery*. (7th Ed.). CBS Publishers and Distributors, New Delhi, p56
- [5]. Julian, H., Margaret, M. 2006. *Minor Veterinary Surgery: A handbook for veterinary nurses*. Elsevier Publishers, Edinburgh. p138
- [6]. Krishnan Nair, M., Nirmalan, G., Silas, E.G. 1989. *The Asian Elephant: Ecology, Biology, Diseases, Conservation and Management*. Kerala Agricultural University, Vellayani. p173
- [7]. Michael, M.P. 2010. *Atlas of small animal wound management and Reconstructive Surgery*. (3rd Ed.). Willey-Blackwell, New Jersey. p141
- [8]. Nath, I., Bose, V.S.C., Panda, S.K., Das, B.C., and Singh, L.A.K. 2012. A case of multiple abscesses in a baby elephant. *Zoos Print J* 18: 1270
- [9]. O'Connor, J.J. 2005. *Dollar's Veterinary Surgery: General, operative and regional*. CBS Publishers and Distributors, New Delhi. p7
- [10]. Ollivet-Courtois, F., Lecu, A., Yates, R. A., Spelman, L.H. 2003. Treatment of a sole abscess in an Asian elephant (*Elephas maximus*) using regional digital intravenous perfusion. *Zoo and wildlife medicine J*, 34: 292-295
- [11]. Senthilkumar, A., Senthilkumar, K., Jayathangaraj, M.G. 2014. Clinical management of chronic abscess in Asian Elephant (*Elephas maximus*). *J. Adv. Vet. Anim. Res.* 1:73-74
- [12]. Shuttleworth, A.C., Smythe, R.H. 2000. *Clinical veterinary surgery: General principles and diagnosis*. 1st vol. Greenworld Publications, Delhi. p7
- [13]. Sukklad, S., Sommanustweechai, A., and Pattanarangsarn, R. 2006. A retrospective study of elephant wound, wound management from Thai Veterinarians. *Proceedings of AZWMP Chaulaonongkorn Uni. Fac. Vet. Sc., Bangkok, Thailand*. p16
- [14]. Toit D.J.G. 2001. *Veterinary care African Elephants*. South African Veterinary Foundation and Novartis Animal Health, South Africa. p1
- [15]. Venugopal, A. 2008. *Essentials of Veterinary Surgery*. (8th Ed.). CBS Publishers and Distributors, New Delhi. p95

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