

*A Case Report***Management of septic arthritis in a calf – a case report***Sutradhar, B. C.* , Biswas, S., Datta, A., Biswas, S., Chowdhury, J. and Bristi, S. Z. T.*

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ARTICLE INFO*Article history :*

Received : 01/06/2019

Accepted : 19/09/2019

Keywords :

Clinical management, Septic arthritis, Fetlock joint, Calf.

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ABSTRACT

A 4-month-old male calf was presented to the S. A. Quadery Teaching Veterinary Hospital, Chattogram Veterinary and Animal Sciences University. The complaint was recorded as lameness and swelling of the joint. On the clinical examination, the calf had dehydration (7%), pyrexia, swelling of the right hind fetlock joint. The joint had a foul smelling wound characterized by purulent exudates. Jugular venipuncture was performed to collect samples for hematology and blood chemistry. Based on the history, physical examination and laboratory findings the case was diagnosed as septic arthritis. Treatment plan for this calf was fluid therapy using 500ml of Lactated Ringer's solution intravenously for 3 days SID, dressing of the wound using 1% povidone iodine solution daily for 10 days and topical application of penicillin-streptomycin BID for 10 days. Systemic antibiotic oxytetracycline (20mg/kg) was administered intramuscularly at 72 hours interval for 2 times. Flunixin meglumine (1mg/kg) as NSAID was administered intramuscularly TID for duration of 5 days whereas Dexamethasone (1mg/kg) as steroidal was administered intramuscularly at 72 hours interval for 2 times. On the 12th day of post treatment, the prognosis of the case was good and the calf was bright and alert with good appetite and the swelling of joint was resolved and healed. The case report highlights the clinical management of septic arthritis in a calf.

To cite this paper : Sutradhar, B. C., Biswas, S., Datta, A., Biswas, S., Chowdhury, J. and Bristi, S. Z. T. 2019. Management of septic arthritis in a calf – a case report. Bangladesh Journal of Veterinary and Animal Sciences, 7 (2): 75-79

1. INTRODUCTION

Septic arthritis defined as an inflammation of the joint which is caused by invading of several microbial pathogens into the joint space (Desrochers *et al.*, 2001). It is most commonly encountered by bacterial arthritis in both small and large ruminants; however, there are unimaginable reports of arthritis also found by viral infections (André Desrochers and David Francoz, 2014). One of the most damaging joint pathology is bacterial arthritis. Studies have reported that the origin of bacterial infections is from wound contamination, hematogenous spreading, adjacent infection or direct

trauma (primary cause). Other causes of septic arthritis could include iatrogenic infection, which occurred as a result of intra-articular injection (Desrochers *et al.*, 2001). Clinical signs of septic arthritis include acute and severe lameness, inappetance, pain and joint swelling (Desrochers and St Jean, 1996).

Lameness caused by septic arthritis is a common, costly and widespread health problem in cattle. It has reported that 13.8% of the population in dairy herd suffering from lameness due to arthritis (Jesse *et al.*, 2017). In American feedlots, 12% of cases of lameness are associ-

ated with swollen, while in Israel, 13.8% of cases of lameness are linked with joint arthritis (André Desrochers and David Francoz, 2014). Septic arthritis is a welfare issue in ruminants and if not treated adequately, it can result to a prolonged severe pain resulting decreased joint function as well as decreased range of movement. Additionally, due to severe pain, it may lead to alteration of the normal joint physiology that may contribute to a quick and permanent destruction of the joint cartilage and bone. Furthermore, in cases where synovial infections occur, the degradation of the synovial hemostasis will lead to permanent damage to the cartilage as well as preventing complete healing of the joint (Mulon *et al.*, 2016). Early diagnoses accompanied by prompt and effective treatment are essential to effectively manage the condition in order to restore the normal physiology of the joint. Thus early management of the clinical case may reduce the chances of culling the affected animals due to poor prognosis (André Desrochers and David Francoz, 2014). Diagnosis of the condition is normally based on clinical manifestation, analysis of the blood and synovial fluid as well as diagnostic imaging (André Desrochers and David Francoz, 2014). For prevention, identifying the sources of infection is important in order

to avoid clinical cases of septic arthritis in a farm (Mulon *et al.*, 2016). For medical management, administration of local and system antimicrobial agents and analgesic are recommended for mild and moderate clinical condition (Desrochers and Francoz, 2014). For severe and chronic clinical cases of arthritis, surgical management is required or indicated (Desrochers and Francoz, 2014). Therefore, the main aim of this clinical case report was to describe the clinical management of a case of septic arthritis in a calf.

2. CASE PRESENTATION

A 4-month-old male calf was presented with the complaint of lameness and swelling of the joint (Figure 1). The calf was raised intensively in the farm and providing with Napier grass, pellets and others feed supplement. Clinical examination showed that the calf was suffering from dehydration (7%), pyrexia, swelling of the right hind fetlock joint. The joint had a foul smelling ulcerated wound characterized by purulent exudates (Figure 2). Upon palpation of the affected joint, the calf showed signs of discomfort and pain. Radiographic examination of the affected joint revealed that destruction in the phalangeal bones with severe soft tissue swelling (Figure 3).



Figure 1. Unilateral swelling of the right hind fetlock joint

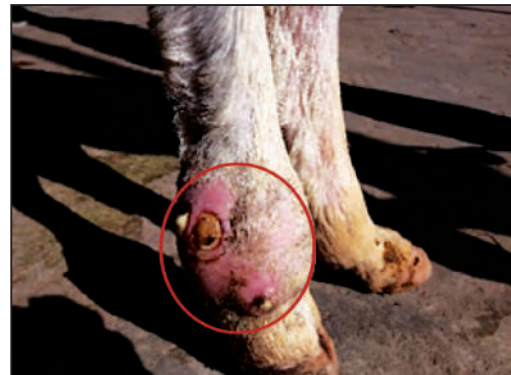


Figure 2. Ulceration and purulent exudates at the fetlock joint



Figure 3. Anteroposterior radiograph of the septic arthritis showing destruction in the phalangeal bones and severe soft tissue swelling.

Sample collection and laboratory analysis

Blood samples were collected in a vacutainer with EDTA and without EDTA via jugular vein for hematology and serum biochemistry analysis.

Hematology Profile

Parameters	Result	Reference Value
Hemoglobin	9.4	8-15 gm %
ESR (Wintrobe tube method)	0	0-1 (mm in 1st hour)
Total count of RBC (TEC)	7.8	5-10 million/cumm
Total count of WBC (TLC)	8.4	4-12 thousand/cumm
PCV	28	24-46 %
Differential count of WBC		
Lymphocytes	38	45-75 %
Monocytes	2	2-7 %
Neutrophils	57	15-75 %
Eosinophils	3	0-20 %
Basophils	0	0-2 %

Biochemistry profile

Parameters	Result	Reference Value
Calcium (mg/dl)	9.89	8.0-11.4
Phosphorus (mg/dl)	5.68	5.5-8.0
Magnesium (mg/dl)	2.22	1.5-2.9
Total Protein (g/dl)	4.35	6.7-7.5

All parameters were normal in CBC where the serum biochemistry shows hypoproteinemia.

Clinical management and treatment

From the history, clinical examination and laboratory findings the case was diagnosed as septic arthritis. Clinical treatment plan for this calf was fluid therapy using 500 ml of Lactated Ringer's solution administered intravenously for 3 days to correct dehydration. Wound cleaning was performed daily for 10 days. The wound was thoroughly washed using normal saline along with povidone iodine (1%) and topical penicillin streptomycin (Streptopen®; Renata Pharmaceuticals Ltd.) was applied q12h for 10 days. Systemic antibiotic oxytetracycline (Ranamycin LA®; Renata Pharmaceuticals Ltd.) @20mg/kg bwt q24h was administered intramuscularly

at 72 hours interval for 2 times. Flunixin meglumine (Pif-R vet®; Eskayef pharmaceuticals Ltd.) @1 mg/kg bwt q8h was administered intramuscularly for 5 days as anti-inflammatory and Dexamethasone (Dexaroid®; Eskayef pharmaceuticals Ltd.) @1mg/kg bwt q24h was administered intramuscularly at 72 hours interval for 2 times for prevention of fibrosis. The improvement of the case was satisfactory. On the 12th day of post treatment, the calf was bright and alert with good appetite and the swelling of joint was resolved (Figure 4) and healed (Figure 5). For prevention, the owner was advised to have a good sanitary hygiene at the farm.



Figure 4. Gradual improvement of the swelling and the calf stands normally



Figure 5. The wound completely healed at 12th day

3. DISCUSSION

Early postnatal period is one of the most prioritized and challenging factors in calf health (Brenner and Ungar-Waron, 1996). Septic arthritis is one of the major problems that affect calf health and can develop from haematogenous spread such as umbilical cord diseases or percutaneous infection such as trauma or invasion from adjacent tissue (Haerdi-Landerer *et al.*, 2010). Lameness in ruminants, constitute one of the major economic drains of the livestock farming. It is one of the most common factors responsible for culling animals preceded only by failure in reproductive performance and mastitis (Coulon *et al.*, 1996). Indirectly, lameness also causes significant economic losses through reduction in milk production, milk protein and milk fat as well as treatment cost (Enting *et al.*, 1997). Additionally, inappetance, severe pain and discomfort associated with septic arthritis induced lameness, leads to a reduction in carcass quality in livestock farms committed for meat production (Heppelmann *et al.*, 2009). In the current study, all the clinical signs were present diagnosed as a septic arthritis. Septic arthritis in ruminants is a severe rheumatologic emergency as destruction of the joint tissues occurs immediately after the onset of infection and can lead to significant morbidity and mortality (Sharff *et al.*, 2013). The condition has detrimental effect on reproductive capacities of the animals, thus resulting in severe economic loss. The common clinical manifestation of the condition is swelling and painful joints, lameness, inappetance and fever that takes place 2-5 days post onset of septic arthritis condition (Mulon *et al.*, 2016). To achieve effective and favorable outcome, rapid onset of therapy is very essential. In addition, systemic application of analgesics and anti-inflammatory drugs also helps in achieving good and early onset of healing. Furthermore, the immediate initiation and administration of prolonged antibiotic

treatment have shown to greatly improve the condition (Sharff *et al.*, 2013). In case of negative bacteriological cultures, it is important to administer broad spectrum antibiotics. However, the choice of the antibiotics used can be changed following sensitivity testing (Madison *et al.*, 1991). Furthermore, despite the rigors of intensive treatment, the outcome is guarded. In this clinical case, the prognosis of the condition was observed to be promising following post treatment. Hence, the rationale behind the treatment option used in the management of this condition as reported in this case report.

4. CONCLUSIONS

Septic arthritis is a medical emergency that requires prompt diagnosis and treatment in order to avoid morbidity, mortality as well as to increasing the general welfare of the animal. In this case report, the calf was presented with a classic case of septic arthritis. Treatment with oxytetracycline, dexamethasone and funixine meglumine were able to combat the inflammation as well as initiating healing.

5. ACKNOWLEDGEMENT

The authors are indebted to Prof. Dr. Bhajan Chandra Das, Director clinics and the owner of the patient for supporting this work in SAQTVH, CVASU.

6. REFERENCES

- André Desrochers D, David Francoz D. 2014. Clinical management of septic arthritis in cattle. *Bovine Orthopedics, An Issue of Veterinary Clinics of North America: Food Animal Practice*, E-Book 30 (1): 177.
- Brenner J, Ungar-Waron H. 1996. Environmental and managerial risk factors affecting morbidity and

- mortality of young calves. *Israel Journal of Veterinary Medicine*.51: 3-8.
- Coulon J, Lescourret F, Fonty A. 1996. Effect of foot lesions on milk production by dairy cows. *Journal of Dairy Science*.79 (1): 44-49.
- Desrochers A, Anderson DE, St-Jean G. 2001. Lameness examination in cattle. *Veterinary Clinics: Food Animal Practice*.17 (1): 39-51.
- Desrochers A, St Jean G. 1996. Surgical management of digit disorders in cattle. *Veterinary Clinics of North America: Food Animal Practice*12 (1): 277-298.
- Enting H, Kooij D, Dijkhuizen A, Huirne R, Noordhuizen-Stassen E. 1997. Economic losses due to clinical lameness in dairy cattle. *Livestock production science*.49 (3): 259-267.
- Haerdi-Landerer M. C, Habermacher J, Wenger B, Suter M. M, Steiner A. 2010. Slow release antibiotics for treatment of septic arthritis in large animals. *The Veterinary Journal*.184 (1): 14-20.
- Heppelmann, M., Kofler J., Meyer H., Rehage J., Starke A. 2009. Advances in surgical treatment of septic arthritis of the distal interphalangeal joint in cattle: A review. *The Veterinary Journal*.182 (2): 162-175.
- Jesse, F., Bitrus A., Abba Y., Mahadzar M., Hambali I., Peter I., Haron A., Lila M., Saharee A. 2017. Clinical management of septic arthritis in a sheep: A case report. *Adv Anim Vet Sci*.5 (6): 267-270.
- Madison, J., Sommer M., Spencer P., 1991. Relations among synovial membrane histopathologic findings, synovial fluid cytologic findings, and bacterial culture results in horses with suspected infectious arthritis: 64 cases (1979-1987). *Journal of the American Veterinary Medical Association*. 198 (9): 1655-1661.
- Mulon, P-Y., Desrochers A., Francoz D., 2016. Surgical management of septic arthritis. *Veterinary Clinics: Food Animal Practice*. 32 (3): 777-795.
- Sharff, K. A., Richards E. P., Townes, J. M., 2013. Clinical management of septic arthritis. *Current rheumatology reports*. 15 (6): 332.