

THE INTERNATIONAL JOURNAL OF SCIENCE & TECHNOLEDGE

Vitamin C in Combination with Corticosteroids in Veterinary Practice: Report of Clinical Cases

Offiong, Edem Effiong Asukwo

Department of Animal Science, Akwa Ibom State University, Obio Akpa Campus, Nigeria

Obioku, Obioku Eyo

Eddie Veterinary Clinic, 16 Akpakpan Street, Uyo, A.K.S., Nigeria

Akpabio, Uduak

Department of Veterinary Public Health ad Preventive Medicine, Michael Okpara University, Umurdike, Nigeria

Okpongette, Ruth. Odudu

Veterinary Clinic, Animal Science Department, Akwa Ibom State University, Obio Akpa Campus. A.K.S., Nigeria

Maimuna Habib

Quarantine Services, Federal Ministry of Agriculture, FCT, Abuja. Nigeria

Abstract:

Vitamin C a water soluble vitamin plays a major role as antioxidant and as an immune booster as well as many other functions. As a chemotherapeutic agent, it is used also in cancer therapies due to its ability to enhance survival, improves quality of life and the reduction of the adverse effects of the generally accepted cancer treatment. Corticosteroids are anti-inflammatory drugs with the ability to suppress the immune system while helping the body to heal itself without much harm and scars. As the case may be it is advisable to use corticosteroids only on animals with robust immune system and as such the use of Vitamin C with Corticosteroids in these cases was justified as explained by the case in the text below. It is also advised that Vitamin C be used in all or most therapeutic cases in order to enhance immediate healing.

Keywords: Corticosteroids, Vitamin C, Immune booster

1. CASE I: Patient with Chronic Ear Infection (Otitis Media)

An Alsatian stud was presented with leg injury for treatment and management.

On close examination, we noticed a strong putrid odour from the dog. We suspected the wound may have been infected, so we examined the animal closely from the nose to the tip of the tail. We could not notice any other open wound or boil instead; we noticed the dog's external ears (the Pinna) to be twisted and the skin of the ears thicker. We attempted looking inside the ears but were resisted by the dog which was an indication of severe pain. We sedated the dog to enable us do the examination of the ear well before commencing treatment. Inside both ears was collection pus which was the cause of the putrid smell.

History from the owner was that the ear infection had been there for more than two years and that the infection has been reoccurring after several treatments, so she decided to ignore it. We asked the consent of the owner to treat the ear infection in our own way the owner agreed. After dressing the dog's wound we consulted within ourselves and agreed that antibiotics alone may not handle the situation due the anatomy of the affected organ and even when it does, it is on a temporary basis.

1.1. Chemotherapeutic Approach.

The ears were cleaned with cotton wool dipped in 50% hydrogen peroxide and water after which we further cleaned the ears with cotton wool dipped in methylated spirit such that the ears were free from pus, wax and dead cells. By cleaning out the ears with hydrogen peroxide, we introduced oxygen which is lethal to anaerobic bacteria. The methylated spirit further disinfected the ears and aided in drying out any fluid that was left in the ears.

The dog was then placed on a three days oxytetracycline (Long Acting) shot at 1ml/10kg body weight alongside 20mg/day of prednisolone for seven days and 600mg/day of Vitamin C for 30 days to be administered orally. The oral therapy was adopted for Vit. C for the period the treatment lasted.

1.2. Results

On the second day following the administration of the oral Prednisolone, it was reported that the dog had stopped shaking of the head and pawing of the ear which are all common symptoms associated with otitis infection. It was also said that the dog even allowed its owner to stroke his head which the dog never allowed until then.

Fifteen days into the administration of the 600mg vitamin C in three separate doses per day, we re-examined the dog's ear and the ears were all dried up, the pink colouration of the ear was restored, the foul odour was also gone

However, we advised the owner to continue the administration of the Vitamin C orally until the thirty days dose was exhausted since the ascorbic acid is a water soluble vitamin where excess are excreted through the urine. Therefore daily dose(s) is always advised to maintain the required plasma level of the drug.

After the expiration of the thirty day treatment with Vitamin C, we re-examined the dog and was satisfied that the Otitis was completely healed. We asked the owner to be checking the dogs ear at least once per week for any sign of reoccurrence of the otitis and to report us immediately the condition is noticed.

After about six months after treatment we decided to check back on the dog since we never heard from the owner. We met the dog healthy, free of any ear infection.

2. CASE II: An Adult Alsatian Crossed with Caucasian Male, Was Presented with Blood Oozing from the Nose, Eyes and Ears from Traumatic Automobile Accident

Clinical history had it that the dog was knocked down by the owner with his Car while backing out of the garage. The owner came out to meet the dog lying unconscious on the ground and we were called to revive the dog.

On arrival, we noticed the dog was still lying on the ground. We felt for pulse and assured the owner the dog was still alive. Though the dog had difficulty in breathing, we try not to complicate the situation by handling the dog with care. Due to the bleeding from the nose, ear and eye, we assumed the dog must have had concussion as a result of being knocked in the head by the car and impact with the concrete floor. Though the blood that came out has clotted, we noticed swellings around the head, neck as well as facial region.

The swellings we assumed may be due to the movement of the brain within the skull which may have resulted in contusion and disruption of blood vessels.

We made efforts to clear the nostrils of clotted blood and keep the airways clear.

After a while the dog regained consciousness and was struggling to regain motor function but was unable to do so. One other unsuccessful attempt saw the dog crashing down to the floor.

2.1. Chemotherapeutic Approach

The dog was first sedated with mild sedative (xylazine) to relax the muscle and ease pain and keep the animal awake and also prevent it from being a danger to himself.

Thereafter, we administered Analgin (a mild analgesic) with 4mg of dexamethasone and 10mg of menadione sodium bisulfite as vitamin K₃ to check further bleeding. The dog was placed on fluid therapy with dextrose saline as a result of showing general weakness and inability to eat.

On the second day of the accident, the dog still showed general weakness, confusion, uncoordinated functions and inappetence. There was evidence of inflammatory fluid dripping from the nose; we placed the dog on antibiotic therapy combination of Penicillin, streptomycin and oxyteracycline given intramuscularly coupled with 1000mg/day of ascorbic acid (Vitamin C) through I.V. infusion.

On the fourth day, we noticed the inflammatory fluid had stop dripping. So we started administering Vitamin B-Complex to stimulate appetite alongside prednisolone.

On the seventh day after the accident, we noticed major improvement as the dog was able to stand on it four limbs, walked briefly and even had a drink of water voluntarily.

We discontinued the administration of antibiotics while maintaining the Vitamin C and the appetite stimulant until the animal ate, walked and played with other dogs. It took the dog about fifteen days to recover. We continued the Vitamin C therapy till it was 30 days from the administration first dose.

As at the time of writing this report (ten months after), the dog has been in stable state of health, with no evidence of physical, mental and physiologic malfunctioning.

3. CASE III: Five Years Old Bitch Presented with Advance Case Trauma to the Breast as a Result of Automobile Accident

The owner informed us that He accidentally stepped on the dog's breast with his automobile tyres while reversing out of the garage while the dog was taking her nap under his car.

On the third day we were called upon to examine her, we discovered the bitch was not lactating but the affected mammary glands were as large as that of a lactating bitch. Those unaffected by the trauma were normal in size.

The affected glands were hot to touch, lethargic, with signs of erythema and congestion. There were dark bluish colouration of the affected breast, with some having serious wounds now dripping with pus and inflammatory fluids due to bacterial infection.

The bruises were as a result of contact of the breast with the automobile tyres and friction with the ground.

We tried standing the dog up but she could not due to pain and weight of the affected mammary.

3.1. Chemotherapeutic Approach

We first administered a mild sedative to ease pain and calm the dog as she resisted every attempt to touch her due to pain. Thereafter, we cleaned the affected area with cotton wool dipped in methylated spirit. The open wound dripping with pus was flushed with a solution of equal part of water and hydrogen peroxide. This freed the wounds of dirt, tissue debris and the pus.

Since the inflammation was already in advanced stage before our attention was called, we feared there was going to be a suppuration of the affected breast. To prevent this from happening, we infiltrated locally about 1mg of Dexamethasone (Intramammary). Thereafter, we gave oxytetracycline and pencilin injection 1ml/10kg body weight (Intramuscularly) with recommendation of 20mg/day prednisolone and 1000mg/day Vitamin C for five days to be administered orally.

3.2. Results

On the third day of treatment, we observed that there was noticeable reduction in the size of the affected breast. The skin discolouration was gone, the pyrexia was no more. The bitch was no longer feeling the heaviness so she could walk though staggering.

On the fifth day post examination and treatment, the affected breast regressed drastically and the dog was able to stand and walk with no difficulty. Although she could still feel pain when palpated, she showed signs of full recovery four days after treatment.

By the tenth day, the swelling and the inflammation was gone, the bruise healed with very little scar. By day fifteen, she even went with the owner for a morning jog.

4. Discussion

These cases mentioned above and other case yet unreported are proves of the potency of Vitamin C in the treatment and management of diseases.

The otitis case reported here was a great relief because veterinarians and animal care givers are always faced with issues of reoccurring otitis cases months after treatment.

Vitamin C is known to perform a lot of functions to include; repairs and maintenance of teeth, bones and cartilage. Healing of wound as well as being a part in the formation of important proteins that aids in growing new skin, making of tendons, ligaments and blood vessels (Alison Evert, 2013).

Vitamin C as a chemotherapeutic agent in the treatment of cancer is well documented. One web report had it that vitamin C has the ability to prolong life survival, improve quality of life and reduce adverse effects of conventional cancer treatment therapies.

Vitamin is also held by many to boost the immune system and protect the body against infections.

Dexamethasone and Prednisolone are corticosteroids and are used as anti-inflammatory drugs both in animal and human medicine. Their functions are non curative but suppressive i.e. they make the symptoms go away according to the (Merck Vet. Manual, 1986).

The corticosteroids are in two classes; the mineralocorticoids and the glucocorticoids according to the role and functions.

Dexamethasone is a synthetic glucocorticoid with relative potency of about 24-30 and duration of effect lasting between 48-72 hours while Prednisolone used in these cases exhibit both glucocorticoid and mineralocorticoid properties.

The Merck Veterinary Manual reported that prednisolone has 5 and 0.8 relative potency for glucocorticoid and mineralocorticoid properties respectively. With duration of effects lasting up to 24 hours.

Due to the immune-suppressive effects of the corticosteroids, it is always advised to administer them on animals with robust immune system or in any case administered with antibiotics to prevent the invasion of the animal immune system by pathogens.

5. Conclusion

Though the administration of corticosteroid during wound healing is believed to delay healing the administration of Vitamin C, Corticosteroids alongside antibiotics during treatment of conditions that may trigger strong inflammatory reaction will aid the animal in the following ways:

- Quick recovery
- Check and control detrimental immune response
- Help the animal recover from traumas and injuries quicker with less scars
- Vitamin C may also boost the animal immune status.

6. References

1. Alison Evert, M.S. Vitamin C. MedlinePlus Medical Encyclopedia. www.nlm.nih.gov/medlineplus/ency/article/002404.htm
2. Michael . A. Prytula. Intravenous Vitamin C in cancer Management. www.wellness-institut.ca.
3. <http://www.seanet.com/~alexs/ascorbate/198x/smith-lh-clinicalguide1988.htm>
4. The Merck Veterinary Manual (1986). Handbook Of Diagnosis, Therapy and Disease prevention and Control for the Veterinarian. 6th Ed. Merck & Co., Inc. Rahway, N. J., U.S. A. Pp: 11501, 1587.
5. The Merck Veterinary Manual, (2010) 10th Ed. Merck & Co., Inc. Whitehouse Station, N.J., U.S.A. Pp: 2317, 2318, 2319, 2319.