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RESEARCH ARTICLE

Surgical and Chemotherapeutic Management of Connective Tissue Neoplasms in Dogs

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Abstract

A total of 30 cases were suspected for tumours and 15 cases were confirmed to be connective tissue tumours after histopathology. Out of these 15 cases only 5 cases were diagnosed as malignant connective tissue tumours and 10 were benign connective tissue tumour. Out of fifteen, 12 (80%) dogs showed normal healing while 3 dogs (20%) showed delayed healing After confirming malignancy by histopathological examination, dogs were put on chemotherapy using Vincristine, Doxorubicin and Methotrexate.

Introduction

Canines are equally prone to neoplasms as other animals and there is occurrence of different types of neoplasms also in them. The skin has been reported to be the most common seat for tumors in dogs (Wilcock, 1993).Reducing these tumor masses surgically is an important aspect of multidisciplinary approach and other therapies include chemotherapy, radiation therapy, immunotherapy and hormonal therapy (Bastan and Kaymaz, 1999). Therefore, due to the advanced stage at the time of diagnosis, cancer is preferentially treated with multi-modality therapies. Connective tissue tumour is a general term and refers to group of tumours of mesenchymal origin e.g. fat, smooth muscles etc and they tend to have similar histological appearance and biological behaviour and can be either benign (non cancerous) or malignant (cancerous) tumours, commonly called as neoplasm, they spread throughout the body and are challenging to treat for a veterinarian (Vegad, 2007). Chemotherapy may help to control generalized, rapidly progressive disease not amenable to surgery or radiotherapy or may help to increase disease free interval after other intial treatment (Rosenthal,1993). Combination therapy has minimum side effects of either of drugs alone (Jain and Raghunath, 2007).

Material and Methods

The tumor of each animal was excised surgically and tissue samples were sent for histo pathological examination. Based on histo pathological findings tumour was categorized as benign and malignant. Animals having benign tumor were given routine post-operative treatment and treatment regime for animals having malignant tumors were started 10th day after surgery.

SURGICAL PROTOCOL:

Animal were kept off fed for 24 hours before surgery and water was withheld for 12 hours prior to surgery. The surgical area was widely clipped and prepared aseptically. Anaesthesia was induced and cuffed endotracheal intubation was carried out. The animals were secured in suitable recumbency according to site of tumor. General anaesthesia was induced and maintained with (Atropine sulphate @ 0.04 mg/kg b.wt I/m +xylazine hydrochloride @ 1mg/kg b.wt I/m +ketamine hydrochloride @ 10 mg/kg b.wt I/m). An elliptical incision of sufficient length given on healthy skin surrounding the tumors. The tumor was separated by blunt dissection. Surgical trauma was minimized by minimal, gentle handling of tumors growth .Proper haemostasis was maintained throughout surgery by ligation of large blood vessels and crushing the minor ones. A wide lateral margin of normal tissue was excised. Dead space was obliterated by suturing in one or two layers with chromic catgut (no. 0 or 1). Mursilk was used for skin suturing in cross or horizontal mattress pattern. Intravenous infusion was maintained during operative and post-operative period @ 10-15 ml/kg/hr

depending upon blood loss and condition of patient using either normal saline solution or ringer's lactate. Surgical wounds were dressed with povidone iodine solution daily for 10 days post operatively or till sutures were removed. Post-operative treatment included ,

Injection Ceftriaxone @ 15-25 mg/kg b.wt I/m for 5 days.
Injection Meloxicam @ 0.2-0.3mg/kg b.wt I/m for 3 days.
Injection Nemuslide @1mg/kg b.wt I/m was administered immediately after surgery for post operative analgesia.

Chemotherapeutic protocol for malignant tumor:

The following chemotherapeutic regimens were used for adjuvant chemotherapy. After confirming malignancy by histopathological examination, dog was put on chemotherapy using Vincristine, Doxorubicin and Methotrexate (VDM combination) which was administered in the following manner.
Food was withheld from the morning on the day of chemotherapy.The animal were overhydreated by administration of sodium chloride for 4 hours @ 20mg/kg/hr by fixing an intravenous catheter of appropriate gauge in cephalic vein. It was also followed by mannitol @ 250 mg/kg intravenously. Saline diuresis was continued for another 2 hrs at the same rate.
Dogs were given injection Vincristine @ 0.02mg/kg b.wt (Brander *et al.*, 1982) along with 5% dextrose i/v once.
After a week of vincristine shot, injection Doxorubicin @1-2mg/kg b.wt (Brander *et al.*, 1982) with 5% dextrose slow i/v was given once after complete overhydreation as mentioned above.
After a week of doxorubicin injection, Injection Methotrexate@ 0.3-0.8mg/kg b.wt (Brander *et al.*,1982) slow i/v along with 5% dextrose was also be given once after over hyderation.

Post Chemotherapeutic Precautions:

Haematology was monitored before and after surgery, before administering each cycle of chemotherapeutic drug and one sample was collected seven days after completion of cycle of chemotherapy. Chemotherapy was given only if the TLC count was found satisfactory (≥ 4000/cu mm) otherwise it was delayed until TLC count was revived.
Injection Odansetron @ 0.2 mg/kg was given as slow I/v just before chemotherapy.

Supportive Therapy:

With all chemotherapeutic agents the Hepatoprotectant (Proteolytic liver extract @ 0.05-0.2 mg/kg b.wt I/M) was given for 5 days followed by polybion syrup 1tsf bid and Tab Liv-52 every day during course of chemotherapy also Antacids (Ranitidine @ 0.5 mg/kg b.wt.) was given SOS.

Drug evaluation and post surgical follow-up:

All treated dogs were observed for next six month to evaluate the efficacy of chemotheraupetic trials in terms of reoccurrence, metastasis, death, disease free intervals and hemato biochemical alterations.

RESULT AND DISCUSSION:

Surgical Wound Healing:

A total of 30 cases were suspected for tumours and 15 cases were confirmed to be connective tissue tumours after histopathology. Out of these 15 cases only 5 cases were diagnosed as malignant connective tissue tumours and 10 were benign connective tissue tumour. Most of the cases had given fast recovery with good surgical wound healing except cases of high grade malignancy. Out of fifteen, 12 (80%) dogs showed normal healing while 3 dogs (20%) showed delayed healing. The reason for delayed healing might be due to large surgical wound, poor health condition, decreased immunity, improper management by owners and post operative infections (Mason 2007).

Evaluation of Drugs:

Out of five dogs who received chemotherapy, one dog died within a week after chemotherapy, dog died after completion of first cycle of chemotherapy might be because of metastasis of tumor in vital organs. Harris (2007) reported sudden death in dogs suffering from malignant tumor suggestive of metastasis in the internal organs. one more dog died after recurrence of tumor growth without completion of full cycle of chemotherapy. The reason for reoccurrence may be due to incomplete eradication of tumor cell population by surgery. Sandhu (1995) and Palta (2000) have also reported recurrence in connective tissue tumor cases after surgery and chemotherapy. All the dogs except two showed signs of toxicity like loss of appetite, vomition, dullness etc. This was managed by giving liver stimulants, hepato protectants, saline diuresis and antiemetics etc.

In case of one dog, the first cycle of chemotherapy successfully prevented the recurrence up to six months after surgery and there after recurrence was noticed and after giving second cycle of chemotherapy growth disappeared and dog was reported to be healthy till the study was over. Two more dog were successfully received first cycle of chemotherapy without showing signs of recurrence of tumor.

Therefore it can be concluded that VDM combination was effective to increase the disease free interval in 60% of cases suffering from malignancy, however 40% cases died during course of study.

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