

## **Osteosarcoma – Presentation and Treatment Options**

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My presentation will discuss osteosarcoma which is a cancer of the bones. It most commonly affects the long bones of the legs but sometimes affects the jaw and other flat bones. I will talk about how cancer develops (pathogenesis), the signs your dog may show, diagnosis of osteosarcoma, treatment options and what kind of survival times and quality of life to expect.

Cancer occurs when cells in the body begin to divide uncontrollably. We do not know what causes this to happen but several factors have been implicated in humans and in dogs. Genetics do play a part and certain breeds of dogs are more likely to develop certain types of cancer. Great Danes are one of the breeds more likely to develop osteosarcoma; a disease which most commonly affects large breed dogs.

### **Presentation**

Osteosarcoma normally presents as lameness. Dogs initially are only mildly lame and this becomes worse over a period of weeks. In some animals an obvious swelling is noticed on the limb. Often the dog seems better with pain relief from the vet, but inevitably will deteriorate quite quickly. The most common places for osteosarcoma to occur are the back legs above or below the knee, or the front legs, near the shoulder and ankle. Some dogs may seem to become suddenly lame and they can be in significant pain.

### **Diagnosis**

X-rays can give us a very good idea that a dog has osteosarcoma, but a biopsy is required for a definite diagnosis. Sometimes a diagnosis can be made on a needle biopsy, but other times a core biopsy is required. Frustratingly, sometimes biopsies are non-diagnostic and have to be repeated. Once the diagnosis is confirmed then we have to perform staging. This is when we determine if the tumour has spread or not. We take x-rays of the dog's chest to look for any nodules suspicious of tumour spread. We also normally ultrasound the abdomen and take samples from the local lymph node to check for any tumour cells and to make sure the dog does not have any other serious diseases.

### **Treatment Options**

Treatment is amputation of the affected leg. This removes the primary tumour and also the source of pain. The dogs normally do very well once they have learned how to balance on three legs and will cope very well without the missing limb in most cases. The dog normally stays in the hospital for a few days after surgery for pain relief and to have the wound dressed. Unfortunately amputation does not cure the dog as cancer cells will have already started to spread around the body and dogs will inevitably develop tumour spread, sometimes within months.

In order to minimise tumour spread we give chemotherapy with carboplatin, this slows down the rate of disease progression. Chemotherapy in dogs very rarely makes them sick, we use quite low doses of the drugs so that the dogs can stay at home and spend time with their family. They only have to come to the clinic every 3 weeks for 4-6 treatments.

Average survival times are 5-7 months with surgery only and 7-11 months with surgery and chemotherapy. Some dogs will do better or worse than this and around 20% of affected dogs live for a year or longer. The cost of treatment for a great dane in a specialist hospital would be in the region of £1000-1500 for staging, £1500-£2000 for surgery and £2000-3500 for chemotherapy.

The main objective in treating pets with cancer is to ensure they have quality of life. This means they should be free of pain and be able to enjoy their normal daily activities. Alternative treatment for osteosarcoma consists of pain relief which can be tablets/syrups. We can also use palliative radiotherapy to relieve pain, or a drug called pamidronate which is given as a drip. If a dog had tumour spread at the time of diagnosis we would not proceed with surgery or chemotherapy in normal circumstances because unfortunately the survival time once this has occurred is only weeks to months.

### **Outcome**

While osteosarcoma is an aggressive disease we can achieve good quality of life in most patients for around 5-12 months. While 6 months may not sound like a long time it is 10% of a 6 year old dogs life and the owners of most dogs who have amputation and chemotherapy for osteosarcoma are usually happy that they had the treatment.