



## Osteosarcoma in Dogs

What is osteosarcoma?

Osteosarcoma is a bone cancer. It can occur in any dog, of any ages, but large-breed dogs are at greater risk. In most cases, there is no specific cause – just genetics and bad luck.

Osteosarcoma causes pain and lameness sometimes with a visible swelling over the bone. In a small number of cases, the osteosarcoma weakens the bone, and the bone can fracture.

Diagnosis

Osteosarcoma is usually diagnosed with an X-ray. The cancer creates a characteristic pattern in the bone. If there is any doubt, then a biopsy may be taken, but in most cases this is not necessary.

Outlook

Unfortunately, osteosarcoma is a cancer that spreads through the body very quickly. In most cases, the cancer has already spread through the bloodstream before the symptoms in the bone begin. This means that even if we act immediately to treat the cancer in the bone, the cancer will remain inside the body, and will reappear in the future. When this happens, the cancer usually reappears in the lungs.

In general, our aim for dogs with osteosarcoma is to take away the pain associated with the bone cancer to give them a good quality of life. We also have treatments to slow down the spread of cancer, so that dogs have a longer period of feeling well, before the cancer returns.

Treatment

- Surgical removal of the cancer

The main treatment is to remove the bone cancer. This takes away the pain straight away. In most cases, this involves amputating the affected leg. The surgery usually involves one night in hospital and stitches are removed 10 days later. Most dogs learn very quickly to get around on three legs and are instantly happier after the surgery because the painful bone has been removed. Amputation might not be suitable if your dog is very heavy or has problems with other legs, such as severe arthritis.

It is sometimes possible to remove the section of bone affected by the cancer, and replace it with a metal implant so that the dog does not actually lose the leg. This is known as 'limb sparing' surgery. It is not widely available, and the costs and recovery

times are higher than for amputation, but referral to a specialist such as Noel Fitzpatrick, the 'Supervet' can be arranged if you would like to pursue this route.

If we carry out amputation or limb sparing surgery but then give no further treatment, dogs are likely to live for 3-4 months before the tumour returns and affects the lungs.

- Surgery followed by chemotherapy

For this reason, our recommendation is to start chemotherapy 10 days after amputation. The chemotherapy can mop up the cancer cells in the bloodstream and delay the reappearance of the cancer. Dogs tend to live 12-18 months on average if they have an amputation and then chemotherapy.

Chemotherapy involves an injection into the vein every 3 weeks for up to 6 doses. We need to carry out some blood tests and a repeat X-ray during this time. Most dogs spend around 40 minutes at the surgery having their blood tests and chemotherapy each time – owners generally wait in the waiting room rather than leaving their pet for the whole day.

We do not use chemotherapy at the same high doses as are used in human medicine, because it is not ethical for us to deliberately make pets feel unwell – they do not understand this and they cannot give consent. So we use chemotherapy at lower doses, and aim to suppress the cancer rather than clearing it completely. The chemotherapy used for osteosarcoma will allow dogs to live a normal lifestyle and we would aim for them not to feel unwell during this time. There is, however, a risk of lowered immune system and vomiting/diarrhoea – if this occurs, the chemotherapy will be stopped until your dog is better and then restarted at a lower dose to avoid any further side effects.

- Radiotherapy

Radiotherapy does not cure bone cancer in dogs but it can be used to shrink the tumour and relieve the lameness and discomfort. One study showed that dogs lived an average of 4-10 months after having this type of palliative radiotherapy to treat their osteosarcoma

If you decided against surgery, chemotherapy, and radiotherapy you may wish to see if you can keep your dog comfortable for the time he or she has left. The main concern is controlling pain in the bone at the site of the cancer. Tablet medications that can be given at home and may be of help are:

- Non-steroidal anti-inflammatory painkillers
- Paracetamol-based painkillers
- Painkillers that act on the brain and nerve cells such as amitryptiline and gabapentin
- Bisphosphonates – these are drugs that are toxic to bone cancer cells, so reduced the bone pain and slow down the progression of the disease (e.g. pamidronate)
- Euthanasia

Unfortunately, it is likely that most dogs with osteosarcoma will eventually develop cancer spread. When this happens, dogs tend to find it difficult to breathe and are not interested in food or walks. At this point we may need to consider euthanasia. For dogs not having surgery or radiotherapy, euthanasia may also need to be considered if it is not possible to manage the bone pain with medication. Our vets and nurses are available to talk to you through these decisions and there is further information available on our website.

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