INFORMATION SHEET (ONCOLOGY)

BLADDER TRANSITIONAL CELL CARCINOMA

Transition cell carcinoma (TCC) is a malignant tumour typically arising from the lining of the bladder or other similar structures (transitional epithelial cells). Transition cell carcinoma is most commonly found in older dogs, and is more common in females. It is rarely found in cats. Like most cancers in animals we do not know why TCC occurs. It is usually locally invasive and can involve other structures such as the prostate, vagina, uterus or rectum.

Clinical signs

The most common presenting complaints for animals with transitional cell carcinoma of the bladder are usually blood in the urine, with or without, straining to urinate and increased frequency and urgency of urination. These signs are identical to the signs that are seen with urinary tract infections. It is also common for the signs to temporarily or partially improve with antibiotics, but this does not signify that an infection or inflammation is the root of the problem, as bladder tumours can make dogs more susceptible to infection as a secondary problem.

Diagnosis and staging

A presumptive diagnosis of bladder transitional cell carcinoma can be made on the basis of urinalysis and ultrasound findings. It is rare that a bladder tumour can be felt by palpating the abdomen. Urinalysis may rule out the presence of an infection and occasionally cancer cells will be present in the urine but this is not common. An ultrasound may detect abnormalities of the bladder wall which may appear thickened or irregular. These changes can also be seen in animals with chronic urinary tract infections and further testing is usually necessary to differentiate between these causes. Alternatively, radiographs of the bladder can be performed using contrast agents or dye— these are chemicals that appear white on a radiograph and are used to highlight the bladder wall. This often requires sedation or a general anaesthetic. Ultrasonography is more accurate at assessing the bladder wall than radiographs and often can often be performed without the need for sedation. It is the preferred test for imaging the bladder.

For a definitive diagnosis of bladder cancer a biopsy of the bladder wall is necessary. There are three main ways to obtain a biopsy and each has advantages and disadvantages. The most common method is called urethral catheterisation. This involves heavy sedation or general anaesthesia and is performed by passing a catheter into the bladder via the urethra. The catheter is directed at the bladder wall (using ultrasound guidance) and suction is applied to retrieve a small sample of the abnormal tissue. Because these samples are very small, unfortunately not all will be diagnostic (approximately 15% are not) in which case the procedure can be repeated or an alternative method is used. The second method is via a surgical biopsy. This involves a general anaesthetic and retrieval of a small piece of bladder wall via laparotomy (an opening of the abdomen). This is more invasive; however, it is more likely to get an accurate diagnosis and uncommonly can remove part or all of tumour at the same time (see later). Finally, a fine needle aspirate of the bladder wall can be taken with a needle and syringe through the body wall. This can be done with minimal (if any) sedation. The disadvantages, however, are that the samples are very small and may not be diagnostic and more importantly there is a risk of seeding some cancer cells from the bladder tumour into the abdomen or onto the body wall. When this occurs the cancer that develops is often very aggressive and difficult to control. For this reason fine needle aspiration is not recommended.

Staging involving screening the body for evidence of cancer spread (metastases). For transitional cell carcinomas this may include screening the rest of the abdomen with ultrasound and chest radiographs, as these are places that TCC tend to metastasise (spread) to. A blood test is also taken and allows us to assess the animal's general health and organ function.

Treatment

Treatment options for transitional cell carcinomas include chemotherapy, surgery and symptomatic treatment. Unfortunately, most TCCs arise from the trigone or the back part of the bladder where the urethra connects and removing the cancer is usually not possible. Also, many dogs appear to develop many TCCs in the bladder or the whole bladder wall is affected. For this reason chemotherapy is recommended in all bladder TCC patients. The most commonly used chemotherapy drugs for TCC are mitoxantrone and gemcitabine. These are given by intravenous injection in three week cycles and typically 4–6 cycles or treatments are given. Chemotherapy is generally well tolerated in animals, for more information please see the 'Chemotherapy in animals' information sheet. In rare cases, with very small tumours located away from the trigone (neck) of the bladder, surgery could be considered, however it is usually not curative and follow up chemotherapy is recommended. Debulking (removing the majority of the tumour, but not all of it) may improve the outcome in some cases.

Transition cell carcinomas are also often managed medically in conjunction with chemotherapy with a non-steroidal anti-inflammatory drug called piroxicam. This is a human drug and studies have shown piroxicam to have anti-cancer properties, particularly with bladder TCCs. Piroxicam improves the signs of straining, bleeding and urgency in approximately 75% of dogs, and approximately 20% of dogs will actually experience meaningful tumour shrinkage. Provided it is well tolerated by the patient, we typically recommend indefinite treatment with piroxicam including in patients on chemotherapy. The most common side effects of this drug are gastrointestinal upset and kidney damage, therefore we recommend regular blood tests to assess kidney function.

Prognosis

Unfortunately, most dogs that develop TCC ultimately die of the disease. However, many dogs can live several months to years with a good quality of life. Chemotherapy is moderately effective for TCCs and approximately 40% of patients will show a response to treatment. The average survival time with chemotherapy is approximately 11–12 months. Piroxicam alone can alleviate clinical signs and may result in an average survival time of approximately 6–7 months, with approximately 20% surviving longer than one year. Using piroxicam and chemotherapy together appears superior to either treatment alone and may decrease the formation of new tumours within the bladder.

Follow up

Several problems can develop secondary to progression of bladder tumours. These may include signs related to tumour spread to the lymph nodes, liver or lungs; kidney failure as a result of blockage of the ureters (the tubes connecting the kidneys and bladder); or an inability to urinate due to blockage of the urethra. In the case of urethral blockage, temporary measures such as a cystostomy tube (a tube that allows the bladder to drain through the body wall) can be placed, which relieves the blockage. Dogs with TCC are also at high risk for secondary bladder infections and regular urinalysis and monitoring of urination habits is necessary.

We recommend follow up rechecks one month after chemotherapy then every three months. This may involve a repeat ultrasound of the bladder, checking for tumour progression and changes, and repeat blood tests and/or urinalysis. Further chemotherapy may be indicated the bladder cancer appears to be progressing or growing.

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