Canine Urothelial Carcinoma

Review

Causes of Stranguira

- Mechanical obstruction, calculi, neoplasm or stricture
- Detrusor atony from overdistention of bladder
- Neurologic disease

Causes of Hematuria

- Uro or nephrolith, infection, neoplasia
- Renal cyst, coagulopathy, toxins, idiopathic renal hematuria

Differentials for a Bladder Mass

- Neoplasia
- Polypoid cystitis
- Blood clot
- Foreign body

Start Lecture Content

Differential Diagnoses for Bladder Tumors

- Urothelial Carcinoma *formerly Transitional Cell Carcinoma
- Adenocarcinoma (prostate)
- Rhabdomyosarcoma
- Squamous Cell Carcinoma
- Lymphoma
- Undifferentiated Carcinoma
- Sarcoma (leiomyosarcoma/leiomyoma… etc.)

If a dog presents for LUTS and a bladder mass, what are some next steps?

- Minimum database (CBC/Chem/UA)
- +/- urine culture
- Abdominal US already performed
- Thoracic labs to check for metastasis

How can we confirm a diagnosis (with a bladder mass)?

- Urinalysis with cytology
- Ultrasound-guided aspirate and cytology
- “Diagnostic catheterization” – minimally invasive

- Cystoscopy with biopsy
- Surgery with biopsy *20% risk of seeding
- BRAF

BRAF Mutation Detection Assay

- Genetic mutation in epithelial cells shed in voided urine
- Single mutation in 75-85% of urothelial carcinoma / prostatic carcinoma
- CADET (Antech)
- 100% specific
- ~20% UC negative
- BRAF oncogene (protein B-Raf)

On cytology, what may you see from a UCC?

- Cellular
- Cohesive
- Criteria of malignancy

Biologic behavior or UCC

- Trigone
- >78% T2 muscle-invasive – we find this later than in humans
- Metastasis
    - Draining LN (16%)
    - Distant (lungs, bone, etc) 14%
    - At death (on necropsy)
    - Local disease is the life limiting factor, most of the time there is invasion into the urethra or a ureteral obstruction that cause the pet to decompensate rather than the metastasis

Recap

- Most patients with UC will have LUTS
- Most UC are invasive and trigonal
- Basic staging involves US and thoracic rads
- Breeds at risk – screening
- Field effect – environmental toxins may play a role in the development of disease
- Lifestyle – green leafy veggies have been seen to have some protective effect

Predisposed Breeds

- Scottish terrier
- Shetland sheepdog

- West Highland White Terrier
- Beagle
- Eskimo dog
- Keeshond
- Samoyed
- Dalmatian

Treatment

Non-steroidal anti-inflammatories	**Chemotherapy and NSAIDS**	**Local Treatment Surgery +/- NSAIDS**	**Radiation + NSAIDS +/- Chemotherapy**
Cox-2- induced in inflammation and expressed in carcinomas Piroxicam, deracoxib, and Firocoxib are the NSAIDS of choice 17% of tumors respond 48% have a clinical response for 3 months Overall survival 6 months	Prioxicam + Chemotherapy Vinblastine, mitoxantrone, Carboplatin, Lapatinib 33-58% tumor response rate for 4-6 months ~75% clinical improvement for 4-6 months Median survival 8-11 months *Prostate <6 months due to location	Field effects (usually return) Complications Solitary non-trigonal Partial full thickness cystectomy Staging with cystoscopy Median survival ~2 years Recurrence median 8 months in 76% of dogs, 11% seeding	Field effect, location Intensity modulated radiation therapy ~60% tumor response rate Median survival time 1-2 year Time to locoregional progression 317-343 days (10-11 months) 60% Survival 17-22 months Clinical signs and prostate are worse

Tumor Embolization + NSAIDS +/- chemotherapy

- Prostatic location
- Good tumor volume reduction at 1-2 months
- No long-term data yet

Overview regarding treatment

- Patients will fail and develop progressive LUTS, possibly urethral obstruction and/or ureteral obstruction, hydroneprosis, and AKI

Salvage therapy for UCC

- Laser ablation + NSAIDS +/- Chemotherapy
- Stenting + NSAIDS +/- Chemotherapy
    - Fluoroscopic guidance
        - Self-expanding nitinol stent
    - 97% obstruction alleviation
    - Survival 2-8 months

- Incontinence, UTIs
- Need to have full bladder for accurate measurement
- Cystotomy tube

Treatment summary

Treatment	**MST**
NSAIDs alone	6 months
Chemo/NSAIDS	8-11 months
Multimodal therapies	1-2 years
Surgery high recurrence rate w/complications	Variable
Stage and location determine the prognosis (Prostate is much worse)	Variable