



Telangiectatic Osteosarcoma in a 2-year-old Brittany Spaniel

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Background

Aubie, a 2-year-old Brittany Spaniel, was presented in December 2021 for evaluation of a mass on her right shoulder with associated lameness. A thoracic CT showed an aggressive bone lesion on the right scapula and no evidence of pulmonary metastasis. A right forelimb amputation was performed 1/10/22, and histopathology of the mass revealed aggressive telangiectatic osteosarcoma. This subtype has a reported median survival time of 7 months. Aubie was referred to the oncology service on 2/11/22. SearchLight DNA testing was ordered, and her first dose of carboplatin was administered pending results.

Vidium Searchlight DNA Analysis

A tissue histology sample was sent to the Vidium lab. SearchLight DNA testing revealed 7 mutation biomarkers and two therapeutic options, including a PALB2 mutation that can predict sensitivity to platinum-based chemotherapy combined with PARP inhibition. PALB2-mutant tumors are deficient in double-strand DNA repair, and this synergistic chemotherapy approach has been successfully used in breast and ovarian human carcinomas. Olaparib (PARP inhibitor) and carboplatin were recommended for Aubie as a first-line therapeutic approach. The recommendation was based on the candidate driver status, published evidence to support the use of the medications in canine or human cancers, drug availability, as well as dosing, safety and toxicity data in dogs.

SearchLight DNA Report Excerpt

Therapeutically Actionable Genomic Findings

Pharmacogenomic Biomarkers

Gene	Alteration	Pharmacogenomic Association
ABCB1 (MDR1)	No ABCB1-1Δ - mutation detected	No extra precautions indicated: ABCB1-1Δ-related adverse reactions in this patient to doxorubicin, vincristine, and other chemotherapeutic agents are not expected. Note: ABCB1 germline genotype is determined based on tumor-only sequencing.

Treatment Options Based on Genomic Alterations*

Gene	Alteration	Therapeutic Options Used or Available in Dog Oncology	Other Therapeutic Options From Human Oncology	Indication
PALB2	Copy Number Loss	-	Olaparib	Sensitivity
TSC2	Copy Number Loss	-	Everolimus	Sensitivity

Treatment

Aubie was treated with carboplatin (285 mg/m²) intravenously every 21 days. Olaparib (2.8 mg/kg) once daily orally was administered starting at the second treatment cycle on days 1 through 7, given at home by the owner. The decision to pulse-dose olaparib was made due to carboplatin-induced thrombocytopenia at week 2 of treatment and human literature. Olaparib was increased to once daily (3.0 mg/kg) as maintenance therapy after completion of carboplatin. Aubie remained on olaparib side effect-free until it was discontinued 28 months after diagnosis following CT imaging showing no evidence of metastasis.

Outcomes

Since the initial treatment and after discontinuation of olaparib in May 2024, Aubie remains free from any signs of recurrent disease or metastasis. She will continue to be monitored with every 3-month thoracic radiographs and abdominal ultrasounds.

Conclusion

In Aubie's case, SearchLight DNA provided diagnostic, prognostic and therapeutic insights based on the identification of multiple mutations. This led to the use of a combined treatment regimen that has successfully maintained her in remission and far exceeded the expected survival seen with a carboplatin regimen alone.

Clinician's Perspective

Aubie was one of my first patients to undergo SearchLight DNA analysis, and I believe the combination chemotherapy approach with targeted therapy has played a role in her unexpected long-term survival. I routinely use SearchLight DNA analysis for my osteosarcoma patients to help guide treatment strategies for this aggressive disease.

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If you have a case you'd like to perform SearchLight DNA analysis on please call (833) 794-0318 to speak with one of our clinicians or email us at info@vidiumah.com