FidoCure®
Case Study:
Scout Shiratori

Telangiectatic Osteosarcoma

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With a combination approach that included FidoCure® therapy, Scout has lived for 1.5 years after his initial diagnosis of telangiectatic osteosarcoma.

History and Initial Therapy

Scout Shiratori, an almost 9-year-old male neutered Golden Retriever mix, was seen on June 3, 2020 for a mass found under his right forelimb. Physical examination and radiographs confirmed a mass possibly associated with the fifth rib. Cytology was diagnostic for a sarcoma, likely osteosarcoma or chondrosarcoma. CT scan confirmed the osteolytic lesion on the distal aspect of the right fifth rib, and there was no evidence of pulmonary metastasis. Scout had surgery to remove the mass and associated rib. Histopathology was diagnostic for a telangiectatic osteosarcoma removed with clean margins.

Following surgery, Scout completed a course of Carboplatin on August 31, 2020. At that visit, a metastatic pulmonary nodule was found on radiographs. He then received the Yale vaccine and was started on metronomic cyclophosphamide on September 21, 2020. At that time, tissue was submitted for FidoCure® analysis.

FidoCure® Analysis

Genomic analysis of Scout's tumor revealed 8 mutations, 4 of which were considered actionable. These alterations included CDK4, P53 (2), and SETD2. CDK4 is the gene encoding cyclin-dependent kinase 4. CDKs are kinases that regulate progression through the cell cycle. CDK4 is specifically involved in the transition from G1 to S phase. Loss of G1 control in the cell cycle appears to be an important contributor to tumorigenesis.

TP53 encodes a protein called tumor protein p53 which has become one of the most well published tumor suppressor genes in both human and canine cancer. This protein helps to regulate cell growth and damaged cells by controlling signals for pausing the cell cycle and cell death.

SETD2 is a gene that encodes a lysine methyltransferase which has been described for tumor suppressor properties in human cancer literature. Mutations in SETD2 contribute to epigenetic regulation and interact with or modify the activity of histone deacetylases (HDAC).

FidoCure® Treatment

Based on the FidoCure® recommendations, Scout was started on Vorinostat at a dose of 15 mg/kg every other day in October 2020 concurrently with the Cyclophosphamide. After 2 weeks of therapy, Scout was increased to a daily dose of Vorinostat. Thoracic radiographs were repeated one month after starting the new therapy and the previously noted pulmonary nodule was less defined and stable in size.

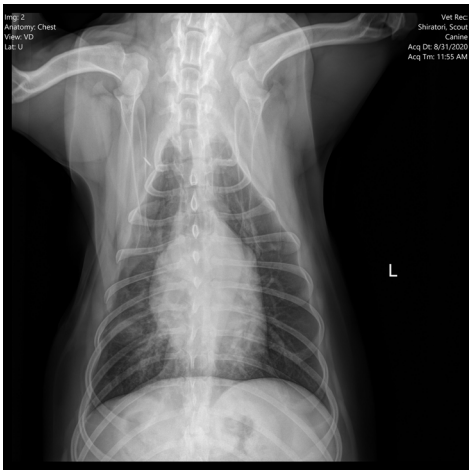
Scout had thoracic radiographs performed again two months after starting Vorinostat. The pulmonary nodule was no longer visible on the lateral projection. The outline of the nodule could be seen on the VD projection but was ill-defined. No other pulmonary nodules were seen. When radiographs were repeated in February 2021 and there was no evidence of pulmonary metastasis. The previously noted nodule was no longer present.

His cyclophosphamide dose was tapered to every other day in May 2021. Thoracic radiographs performed in June 2021 showed a sustained complete response to therapy. His cyclophosphamide was discontinued on July 30, 2021 due to thrombocytopenia. Radiographs at that time showed no pulmonary metastasis. Scout was seen two weeks later for sneezing and epistaxis. His thrombocytopenia was persistent, so it was elected to stop the Vorinostat. At his recheck in November 2021, Scout maintained good health and there was no evidence of pulmonary metastasis.

Conclusion

On a combined treatment plan resulting from recommendations from DNA sequencing, Scout has done well for 1.5 years following his initial diagnosis of telangiectatic osteosarcoma. This subtype of osteosarcoma typically carries a poor prognosis, but Scout has done very well despite this.

2020



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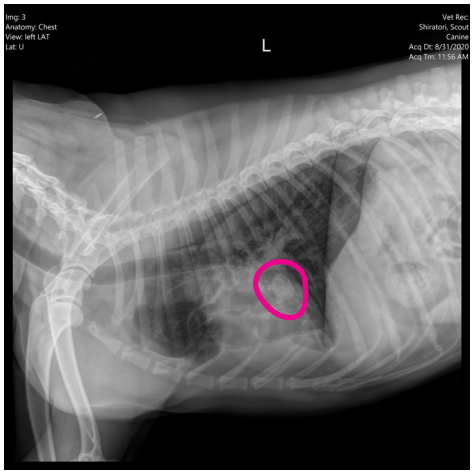

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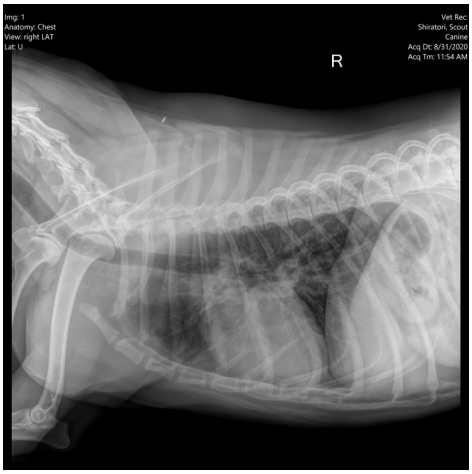

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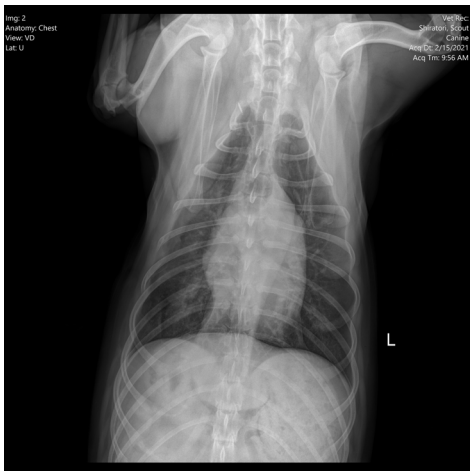
2021



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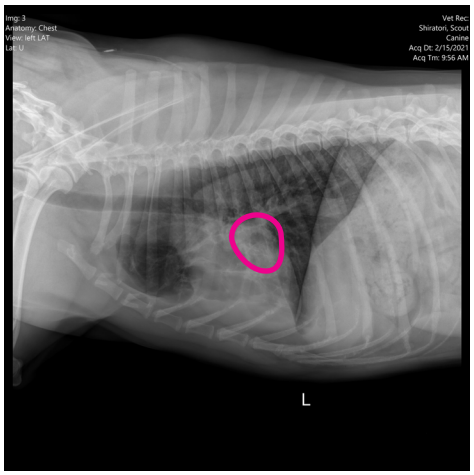

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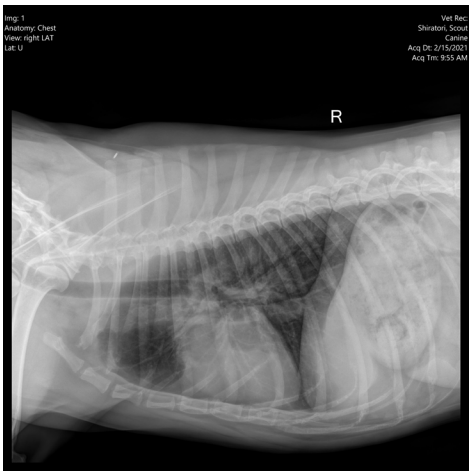

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What Scout’s Oncologist Said

During his routine carboplatin chemotherapy, a lung nodule was identified. We wanted to pursue all options for Scout... he was given immunotherapy and started on Vorinostat through FidoCure®. His tumor was analyzed for a number of mutations and came up with a CDK4, P53 and SETD2 mutation. The HDAC inhibitor Vorinostat was suspected to be of benefit for him. He completed 6 months of Vorinostat and metronomic cyclophosphamide and has since been screened with no visible disease within his chest. Scout’s owners are pleased with his success story and hope other patients can benefit as he did! He is 1.5 years out from his diagnosis and going strong!

— Dr. Chelsea Tripp, DVM, MS, DACVIM