VCA Hollywood Animal Hospital

MEET PATCHY – THE KITTY IN A BASKET

A CASE OF ACUTE FELINE LEUKEMIA OR STAGE V LYMPHOMA

BY **IRENE VAZQUEZ,** DVM, DACVIM (Oncology)

Patchy is a 16-year-old, female spayed, Domestic Shorthair cat that presented to the Oncology Service in August, 2019 for further evaluation of a suspected diagnosis of leukemia. Prior to being evaluated by the Oncology Service, Patchy was evaluated by the Emergency and Critical Care service for lethargy, decreased appetite, hind-limb weakness, and an increased respiratory rate. Blood work was performed during this visit, which revealed she had a lymphocytosis, non-regenerative anemia, neutropenia, and thrombocytopenia. A pathology review of her CBC was requested to evaluate the abnormal lymphocyte population and these were classified as "large" and "lymphoblastic," which are lymphocyte changes commonly seen with acute lymphoblastic leukemia or stage V lymphoma.

During Patchy's initial evaluation with the Oncology Service, thoracic radiographs and flow cytometry were performed to better characterize the phenotypic expression of the neoplastic lymphocyte population, with the goal of differentiating whether she had acute leukemia or stage V lymphoma. Ideally, full staging exams would have been performed, however, because Patchy was in critical condition at the time of presentation and diagnosis these tests were not performed. Her thoracic radiographs were normal. Patchy was hospitalized on oxygen supplementation, given a blood transfusion, and treated with cytarabine chemotherapy administered via constant rate infusion (CRI) on days one and two, and given vincristine chemotherapy on day three. After her cytarabine CRI was completed, Patchy's lymphocyte and platelet counts normalized and she was no longer oxygen dependent. Because she was still neutropenic and this was suspected to be secondary to her disease, she was given vincristine chemotherapy and sent home until her flow cytometry results became available.

Patchy's flow cytometry results were unable to differentiate leukemia from lymphoma, but her neoplastic lymphocyte population lacked expression of mature cell surface markers, suggesting an acute neoplastic process. Based on her flow cytometry results and blood work abnormalities, Patchy was presumptively diagnosed with acute leukemia. She was started on a modified 12-week CHOP chemotherapy protocol and entered complete remission after several doses of chemotherapy. Unfortunately, Patchy came out of remission in December, 2019 and was transitioned to treatment with chemotherapy drugs used in the rescue setting. Her response to therapy and remission duration lasted five months, compared to the reported survival time of less than one to three months when patients with leukemia are treated with chemotherapy. While receiving chemotherapy, her quality of life was excellent and she experienced minimal to no side effects. Patchy was humanely euthanized in January, 2020.

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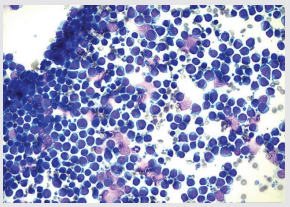
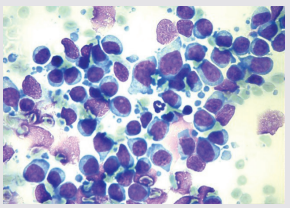


LYMPHOMA CYTOLOGY



LYMPHOMA CYTOLOGY

MEET PATCHY – CONTINUED

Lymphoma is the most common hematopoietic tumor diagnosed in cats. Acute leukemia, on the other hand, is rarely diagnosed and its true incidence is unknown as veterinary studies for this disorder are lacking. For the most part, COP-based chemotherapy protocols that include the use of cyclophosphamide, vincristine, and prednisone, are used to treat cats with these diseases. Cytarabine and doxorubicin, as well as other chemotherapy drugs, are also routinely used and incorporated into protocols. In cats with large cell lymphoma, the reported median survival time in treated patients is approximately six months. There are some cats, however, that can experience longer survival times with treatment. Compared to lymphoma, acute leukemia is considered to be an extremely aggressive disease with poor survival and chemotherapy response rates. Reported survival times in treated cats with acute leukemia range from less than one to three months.

In patients with leukemia or lymphoma, staging exams generally include thoracic radiographs, an abdominal ultrasound with fine needle aspirates of the liver and spleen, and a bone marrow evaluation via an aspirate or biopsy, in addition to blood work. In clinical practice, however, it is not always possible or feasible to perform all of these tests. Two questions I always ask myself are (1) “Will the results of these tests change the way I treat my patient?” and (2) “Will the results of these tests give me any information on my patient’s prognosis?” In Patchy’s case, the results from these tests would not have changed the treatment I recommended for her, but they would have given me information about her prognosis, life expectancy, and expected response to therapy.

Flow cytometry is a non-invasive diagnostic technique used to detect and measure the physical and chemical characteristics of a population of cells, such as cell surface receptors. Because B-lymphocytes and T-lymphocytes, as well as mature and immature lymphocytes, express different cell surface receptors, flow cytometry is a very helpful, sensitive, and specific test used to diagnose and characterize lymphoproliferative disorders in both cats and dogs. Flow cytometry can be performed on blood and samples obtained via fine needle aspirates. Ideally, full staging exams would have been performed. As previously mentioned, because Patchy was in critical condition at the time of presentation and diagnosis these tests were not performed.

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