



Diagnostic Exercise
From The Davis-Thompson Foundation*

Case #:152 **Month:** October **Year:** 2020

Answer Sheet

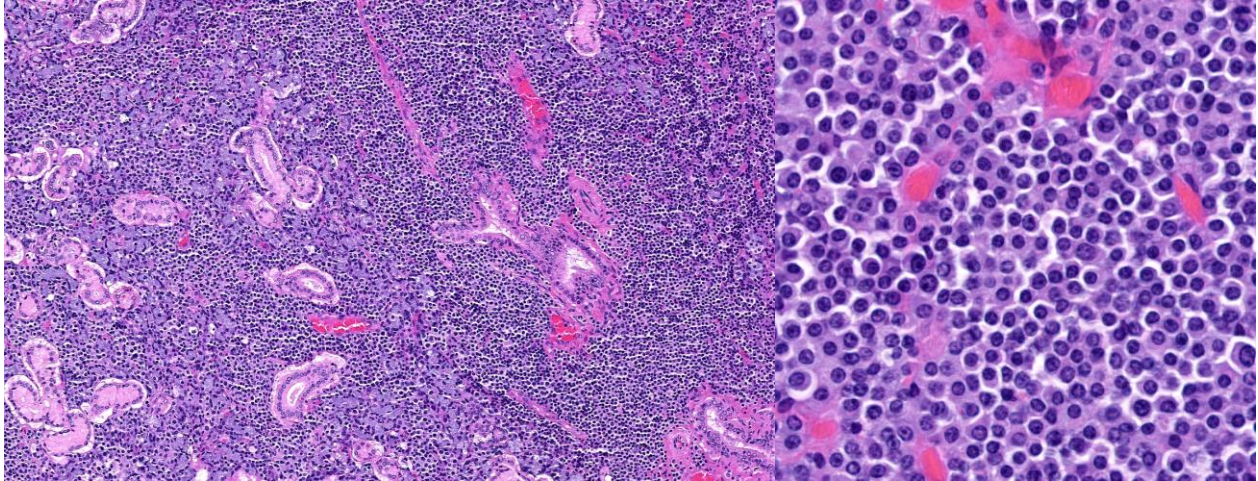
Title: *Submandibular salivary extramedullary plasmacytoma in a hamster*

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Clinical History: A 1.5-year-old, intact female Syrian hamster (*Mesocricetus auratus*) presented for bilaterally closed eyes, anorexia, adipsia, and lethargy with watery stool or vaginal discharge for the previous two days. The animal had been presented four months prior with similar clinical signs. At that time, there were no significant changes on bloodwork and radiographs were unremarkable; however, mild bicavitary effusion, a single cystic lesion of the liver and a single cystic abdominal lymph node were found on ultrasound. This time, physical exam revealed dehydration, weight loss (35% body weight), yellow vaginal discharge, a mass at the cranial thorax, and respiratory distress. A complete blood count revealed leukopenia with neutropenia. Due to poor prognosis, the hamster was humanely euthanized.

Necropsy Findings: The hamster was in thin body condition (3.5/9). A subcutaneous, round, loosely attached mass measuring approximately 1 cm in diameter was present in the ventral neck. The mass had raised, pale tan, nodular areas that were well demarcated from smooth, pale pink areas. On cut surface, the mass was diffusely pink.

Microscopic Images:



Figures 1+2

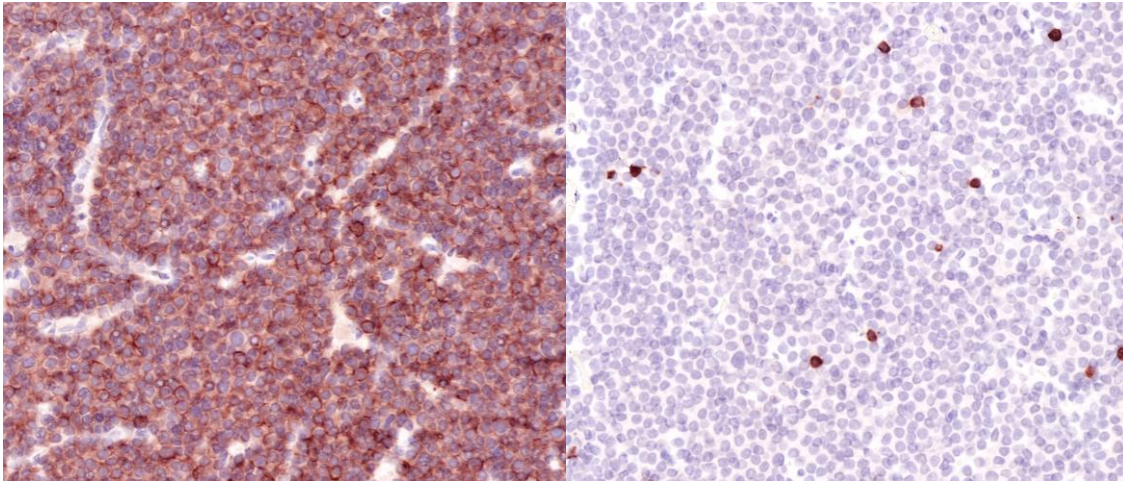
Morphologic diagnosis: Submandibular salivary gland: Extramedullary plasmacytoma

Typical gross findings: Large mass within the subcutaneous tissues of the ventral neck.

Typical microscopic findings:

- Non-encapsulated infiltrative neoplasm composed of dense sheets of round cells infiltrating and partially effacing the submandibular salivary gland (Fig. 1).
- Neoplastic cells are round with distinct borders, moderate amount of lightly basophilic cytoplasm with a perinuclear clear (Golgi) zone, and round eccentric nuclei with coarsely stippled chromatin in a "clockface" pattern (Fig. 2). Occasional binucleate and multinucleate cells are generally present.
- Amorphous eosinophilic material is present in the background of some tumors.

Immunohistochemical stains: The neoplastic cells have strongly positive perimembranous labeling with anti-CD79a antibody (B cell marker; Fig. 3). Only few individual cells have strongly positive perimembranous labeling with anti-CD3 antibody (T cell marker; Fig. 4).



Figures 3+4

Discussion:

Plasmacytomas are a proliferation of mature, differentiated B lymphocytes that originate primarily in soft tissue, oral and subcutaneous locations, and rarely in lymph nodes, organs, or bone. Plasmacytomas that arise in the bone marrow are named myeloma or multiple myeloma while neoplasms that involve sites other than bone are named extramedullary plasmacytoma (EMP).

Extramedullary plasmacytomas (EMPs) are most common in dogs, typically affecting the skin and oral cavity, but there have also been reports of EMP in other sites, including the gastrointestinal tract, trachea, and brain. EMPs have been reported in the cat, ferret, horse, and sheep with rare occurrences in other species. In all species, the neoplasm generally affects middle-aged to older animals. EMPs are usually benign, with a favorable prognosis, and are unlikely to recur particularly if excision is complete.

In Syrian hamsters (*Mesocricetus auratus*), hematopoietic tumors are the most common type of spontaneously occurring tumor, with lymphomas being regarded as most common and EMP as relatively rare. Interestingly, most of the EMPs previously reported in Syrian hamsters occurred in the ventral neck region with involvement of the submandibular salivary gland, suggesting that this species may be predisposed to developing tumors of this type in the salivary gland since this is otherwise a rare location for EMPs.

Most Syrian hamsters previously reported with EMP presented, as in this case, with anorexia, loss of body condition, and marked swelling on the ventral mandible or neck. A decline in condition eventually resulted in humane euthanasia and, on necropsy, the neoplasm was found to be associated with the submandibular salivary gland. In histologic sections, the affected salivary glands were infiltrated with densely packed sheets of neoplastic round cells. The cells had typical morphology of plasma cells with basophilic cytoplasm, prominent Golgi zones, and eccentric nuclei with a "clock face" appearance. Amorphous eosinophilic material described in the background of some EMPs involving the Syrian hamster submandibular salivary gland is Congo red negative, ruling out the presence of amyloid occasionally seen in other EMPs. The majority of neoplastic cells have positive immunolabeling with anti-CD79a antibody and none with anti-CD3 antibody, which is consistent with B cell lineage.

The clinical effect of the EMP in the Syrian hamster in this case was compounded by several concurrent disease processes. The animal also had suppurative bronchopneumonia, which possibly contributed to the clinically noted respiratory distress, hepatic and mesenteric lymph node cysts, considered common in hamsters in particular in the liver, chronic renal disease, and suppurative vaginitis and salpingitis, which accounted for the reported vaginal discharge.

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*The Diagnostic Exercises are an initiative of the **Latin Comparative Pathology Group (LCPG)**, the Latin American subdivision of The Davis-Thompson Foundation. These exercises are contributed by members and non-members from any country of residence. Consider submitting an exercise! A final document containing this material with answers and a brief discussion will be posted on the CL Davis website (http://www.cldavis.org/diagnostic_exercises.html).

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