

**Diagnosis of Malignant Histiocytosis (MH)
in Bernese Mountain Dogs
and other predisposed breeds**

I. Take a history of the dog. Does the dog belong to one of the following?

- A) Bernese Mountain Dog (**Malignant Histiocytosis** occurs 250 times as often in this breed as in others)
- B) Golden Retriever
- C) Flat coated Retriever
- D) Rottweiler

II. Does the dog show one of the following signs?

A) Fatigues easily, Tired?

A1) Eliminate Cardiomyopathy as a cause (Auscultation, X-rays, ultrasound)

Cardiomyopathy Treat for heart failure

No cardiomyopathy Investigate Hemopoietic system

A2) Do complete blood count, serum chemistry for liver, pancreas, kidney

B) Does blood count and blood smear show

B1) Ehrlichia canis in white blood cells?

YES Do Ehrlichia titer test to confirm. Treat.

NO Go on to B2

B2) Babesia canis in red blood cells?

YES Treat for Babesiosis

NO Go on to B3

B3) Was the dog in Spain, Portugal, Southern France, Italy or other Mediterranean sea country?

YES Eliminate Leishmaniosis.

NO Is the dog anemic?

YES Do Coombs test for Autoimmune hemolytic Anemia

Positive Look for primary cause

Can be **Malignant Histiocytosis** !!! Do bone marrow biopsies

Negative Do bone marrow biopsies. Does bone marrow smears show phagocytosis of red blood cells by larger round to pleomorphic cells with a pale cytoplasm or the presence of many of these cells?

YES Erythrophagocytic histiocytic sarcoma (a form of **Malignant Histiocytosis**.)

NO Are many lymphocytes or neutrophils present?

YES Look for viral disease, Lymphoma.

NO Does bone marrow show few cells or are cells obliterated?

YES Erythrophagocytic histiocytic sarcoma (a form of **Malignant Histiocytosis**.)

NO Do a laparoscopy. If there are small or large or diffuse nodules on the spleen: Take biopsy. Go on to Biopsy results.

C) Does the dog show:

C1) Lameness with joint swelling?

a) Take synovial samples for Borrelia/Leishmaniasis tests (best test is PCR > Western Blot > Tites)

b) Do X-rays, Take biopsy of tumor masses:

b1) Pleomorphic round cells and X-rays show increased tissue density around the joint, not in the bones

☒ Histiocytic Sarcoma, a localized form of **Malignant Histiocytosis**

b2) Osteoclasts, cartilage and X-rays show changes in bone structure

☒ Probably Osteosarcoma

C2) Lameness in the back legs?

Take X-rays: a) Eliminate possible HD, joint disease, Osteosarcoma, Degenerative myelopathy (Cauda Equina Syndrom)

b) Do X-rays show; Tumor mass in the vertebrae?

☒ May be **Malignant Histiocytosis**. Take samples for pathology at Post Mortem.

D) Do X-rays of thorax and abdomen show

D1) Masses in mediastinum, on the heart, in the lungs? (75% of Berners with **Malignant Histiocytosis** show thoracic tumors)

D2) Masses in the liver, spleen, intestinal lymphnodes, kidneys, urethra? (60% of Berners with **Malignant Histiocytosis** show tumors in one of these organs) -

Send biopsy of spleen/liver to a good veterinary pathologist

Biopsy results:

a) Dark, red to black appearing tumors ☒ Possible Haemangio-sarcoma, Malignant Melanoma.

b) Pleomorphic round cells with pale cytoplasm engulfing erythrocytes

☒ Erythrophagocytic histiocytic sarcoma (a form of **Malignant Histiocytosis**.)

c) Round cells with cytoplasm, typical lymphoblast appearance

☒ Do immunotyping of cells (special laboratory)

CD1, CD11, CD45+ cells ☒ **Malignant Histiocytosis**

CD3, CD4+, CD8+ cells ☒ T-cell lymphoma

Reference: Terril Eckart Dr. med. vet.
Weilburg, Germany