

Post mortem muscle and nerve biopsy.

Tim Bley, Dr. med. vet.

Intorduction

The diagnosis of neuromuscular disease is made by clinical-neurological examination, electrodiagnosis and biopsy of muscle and nerve.

The histopathologic examination is the most sensitive method although it is an invasive procedure.

A distal symmetric polyneuropathy (PN) which can affect related Leonbergers between of the age of 1 and 9 was first described in 2003 by Shelton et. al. in the USA.

The key to the diagnosis in dogs with typical gait problems (hypermetric paws), atrophy of the distal limb muscles, activity induced weakness and possibly respiratory stridor lies in the below mentioned procedure.

Large breed dogs often show signs of gait problems with age that are due orthopaedic problems (such as arthrosis) and/or neurological problems (for example discopathy, cauda equina syndrome, polyneuropathy) and remain indifferent.

It is very important to differentiate these problems from polyneuropathy to be able to learn more about hereditary Leonberger polyneuropathy.

It is therefore mandatory to perform biopsies post mortem in Leonbergers even if they only had subtle gait problems that is even if they only limp slightly.

Muscles and nerves of the rear leg are suitable tissue for biopsy. The area of the lateral knee and caudal distal thigh area are shaved, loose hair removed and washed.

Nervus peroneus:

This nerve can easily be reached from laterally (Fig.1). Between the head of the fibula which can easily be palpated and the lateral condylus of the knee the prominent peroneal nerve can be located. After dissection of the skin, subcutis and the museie fascia the nerve is visible (Fig.2).

At least 2 cm of nerve should be harvested. The non traumatized nerve is put in a container which is completely filled with 10 % formaline. A label with tissue identification, patient name/number and date are recommended.

Cranial tibial muscle: (musculus tibialis cranialis):

This muscle lies on the cranial aspect of the tibia and can be located via the route discribed by the nerve biopsy or a separate route.

After dissection of the fascia several at least 2x2 cm muscle specimans should be harvested. The excision with a scalpel avoids artefacts.

The specimen should be held with the forceps only on the very edges, again to avoid artefacts.

Formaline should also be used in a large enough and marked container.

In general: the sooner the biopsy is taken, the better. If the animal is cooled right away the tissue specimens can be harvested up to 24 hours post mortem. Later it is not possible due to autolysis (autolytic processes). Frozen tissue is not suited due to artefacts which limit analysis.

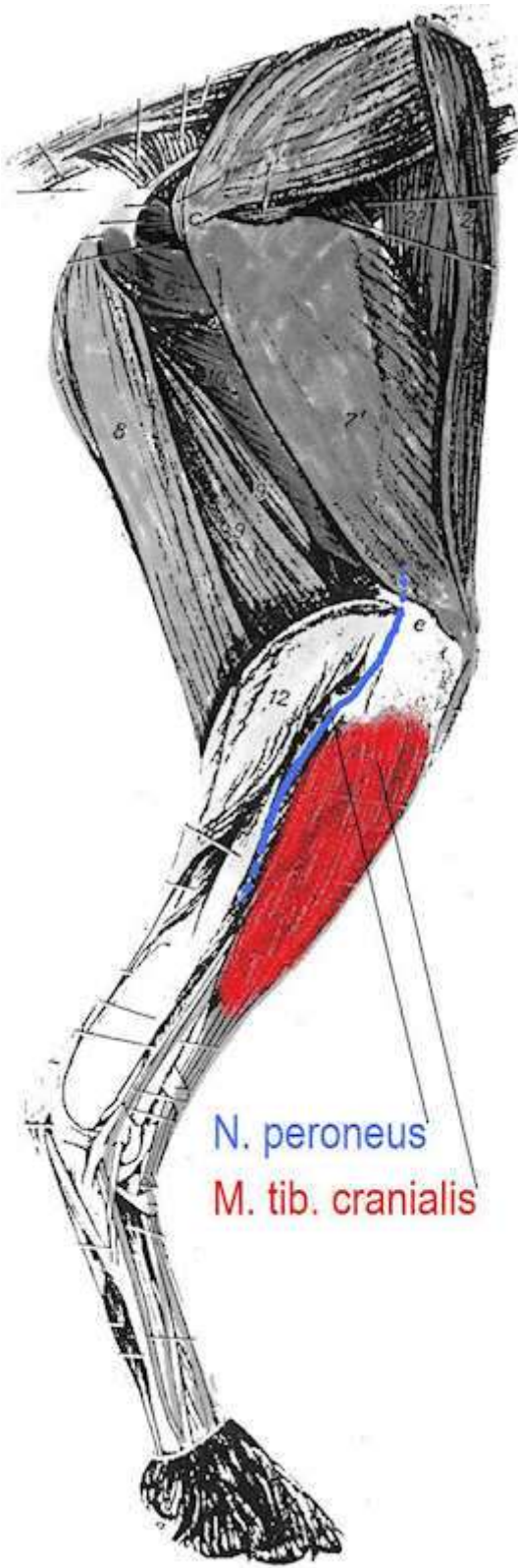


Figure 1.

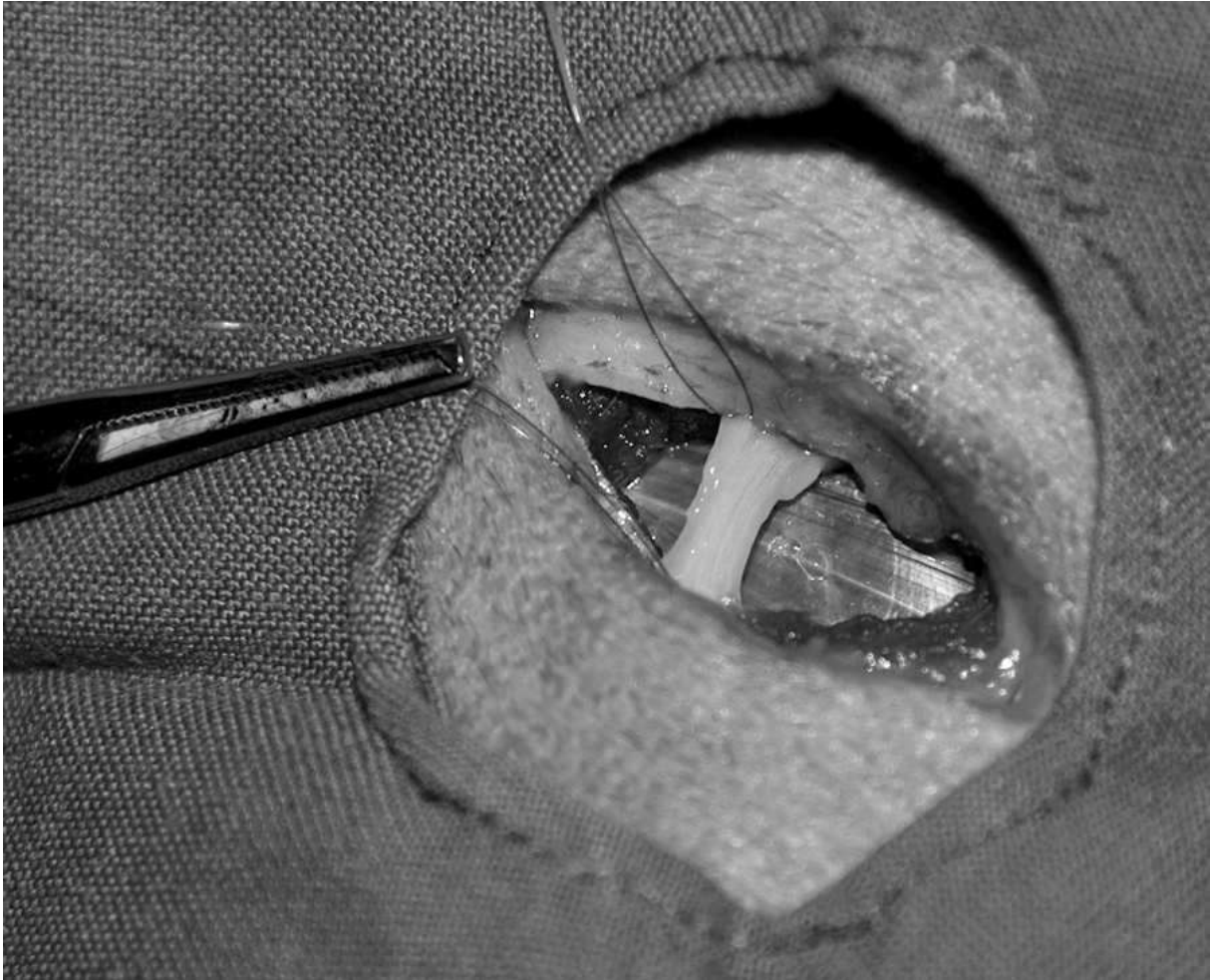


Figure 2: N. peroneus after preparation through Kutis, Subkutis and muscles

Correspondence address:

G. Diane Shelton, D.V.M., Ph.D.
Department of Pathology
University of California, San Diego
La Jolla, CA 92093-0709

Phone: 858 534-1537

Fax: 858 534-0391

Email: gshelton@ucsd.edu

<http://vetneuromuscular.ucsd.edu/>