

AN EFFECTIVE METHOD FOR BIOPSY OF TISSUE FROM PHOCID SEALS

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Summary

The method of tissue biopsy described here may be used effectively to obtain small tissue samples for the purpose of histopathological studies, biochemical assays, or incorporation studies on a variety of radiotracer-labelled compounds. It allows for relatively routine single or repeated sampling, to yield samples of about 20 mg wet weight of tissue.

Method

Samples of liver, muscle, and blubber have been taken from harp seals (*Phoca groenlandica*) in captivity and in the wild.

All samples were taken with a disposable biopsy needle (Tru-Cut-Travenol Laboratories, Inc., Morton Grove, Illinois, USA). The needle has a cannula length of 15.2 cm, adequate for seals up to 100 kg in weight. Shorter versions are available and may be more suitable for smaller seals. In all cases, the tissue specimen is engaged in a 20 mm specimen notch within an obturator hub which is advanced into the sample tissue. An outer cannula is slid over the notch to cut off the specimen, following which the entire assembly with sample may be withdrawn. An advantage in the use of this particular type of biopsy needle is that, with a small amount of practice, the entire operation can be carried out using one hand, freeing the other for animal restraint. Also, specimen extraction is nearly always successful, which is not the case when some other types of biopsy needles are used on relatively fibrous seal tissues.

Each seal was securely restrained on its back during the sampling procedure in order to limit movement. When used, suitable anaesthesia can reduce the amount of restraint required. The site of needle insertion was prepared with alcohol swabs to decrease the chances of introducing external pathogens, and by local anaesthesia. The biopsy needle was directed perpendicularly to the body surface for liver and muscle biopsies, and held at about a 20° angle for blubber biopsies.

Samples of liver were taken by one of two approaches, each requiring localization of the xiphisternum by palpation. Using one technique, the biopsy needle was inserted below the tip of the xiphisternum, 5 to 10 cm to the right of mid-line. The second technique required the use of a right lateral approach, just ventral to the mid-frontal plane. The first approach was found to be more generally applicable, especially for fat seals. Depth of needle insertion varied with approach, and was gauged both by sensitive palpation and by position of the liver. Less careful placement of the biopsy needle would risk perforation of other organs or structures, the gut if posterior and hepatic blood sinuses if anterior to the xiphisternum tip, with concomitant complications.

Muscle samples were taken by manually extending either forelimb anteriorly. The seal would resist this action, tensing the flexor muscles of the forelimb, allowing easy

sampling. In addition, these flexor muscles may be considered as being representative of active skeletal muscles. Other muscles would be possible to sample also, but less readily localized.

Blubber sample sites were less specifically defined, and were usually taken from the ventro-lateral or -abdominal area of the seal. Blubber biopsies, as may be expected, caused the least trauma.

The risks in this procedure are minimal if carried out with care, but increase with the number of biopsies executed on an individual animal, particularly for sampling of liver tissue. Infection is a factor which may be minimized by the usual sterile procedures, as well as either prophylactic or therapeutic antibiotic administration, as required. It is recommended that the procedure be followed for several days by hematological monitoring of the sample animal. The technique has been used successfully by the author and by Dr. J. R. Geraci of the University of Guelph.

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ABSTRACT - PHOCID HEARTWORM, *Dipetalonema spirocauda*, INFECTIONS OF THE ATLANTIC HARBOR SEAL (*P. vitulina concolor*).

by J. L. Dunn, VMD* and R. E. Wolke DVM, Ph. D.**

Clinical and pathologic studies of captive and feral Atlantic harbor seals, *Phoca vitulina concolor*, have revealed new facts concerning the Phocid heartworm, *Dipetalonema spirocauda*. The intermediate host involved in the transmission of infective larvae has not yet been identified, but all available data suggest that it is a simuliid fly. Microfilaremia was not detected in four captive animals until at least six months after natural exposure to infection. A fifth infected animal never developed microfilaremia. The cause of death in three animals was determined to be occlusion of a branch of the pulmonary artery by a verminous embolus dislodged from the heart. The only other significant gross finding was the presence of numerous small areas of focal necrosis in the livers of all three animals. Transaminase levels (SGPT, SGOT) have not been significantly elevated in these animals or in three additional animals which have been infected for two years. Microscopic lesions were present in the lungs, liver, spleen and vascular system. Microfilaria were observed within the lumen of vessels, hepatic and splenic parenchyma. Hepatic lesions varied from foci of acute eosinophilic necrosis to chronic focal granulomas with foreign body giant cells. Microfilaria were often present in the acute lesions. Acute focal necrosis of the spleen was present in one animal. Vascular lesions were of two types. Vilous hypertrophy of the endothelium was observed in relation to adult parasites and vasculites and perivasculitis was present in relation to microfilarial migration tracts. An acute suppurative bronchopneumonia with bronchiectasis was present in two animals and an acute interstitial pneumonia in a third.

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