PATHOLOGICAL ANOMALIES IN MOOSE OF NORTHWESTERN ONTARIO

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Abstract: Single cases of oral myxoma and fibrinous pericarditis in wild moose and pyelonephritis in a captive moose are described.

Published reports of anomalous disease conditions in moose are relatively meagre (see most recent review of infectious and parasitic diseases by Anderson and Lankester, 1974). Numerous descriptions however, of interesting and diverse conditions no doubt exist in the field notebooks of most moose biologists. Unless such accounts periodically are published it is impossible to determine which are merely rare oddities and which may have wide geographic distribution and be of general significance to the health of moose.

The purpose of this paper is to describe the gross pathology evident in single cases of an oral neoplasm and fibrinous pericarditis in wild moose of northwestern Ontario and a case of pyelonephritis in a 2-year-old captive moose.

MATERIALS AND METHODS

Case No. 1 originated from a moose-hunter check station, operated annually at Thunder Bay by personnel of the Ontario Ministry of Natural Resources (M.N.R.). Case No. 2, a road-killed moose, was submitted by Mssrs. G. Eason and W. East, M.N.R., Wawa District. Case No. 3 was captured as a calf (1.5 months old) and reared by Mr. Stephan Dudzinski at the Kakabeka Falls Game Farm.

RESULTS AND DISCUSSION

Case No. 1

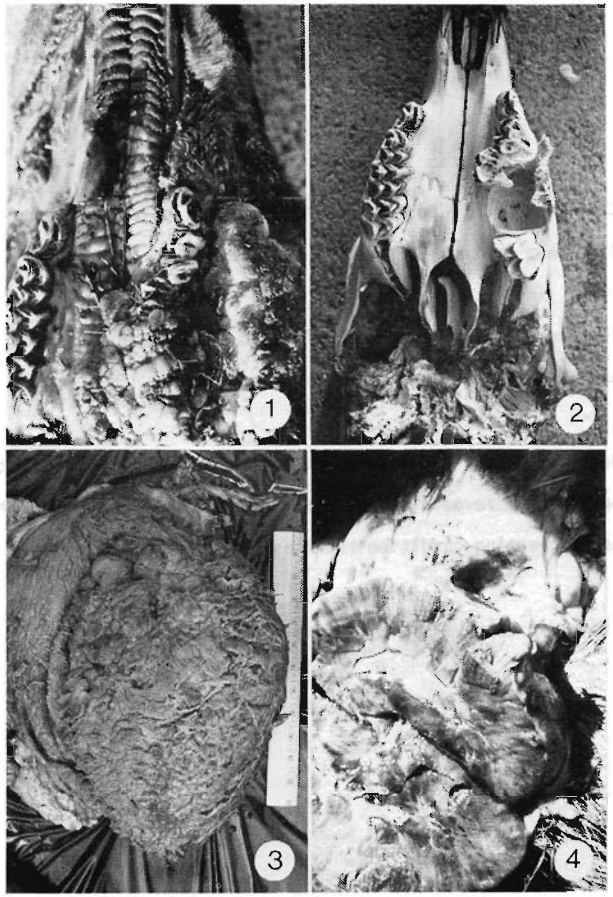
A male, calf moose, shot October 20, 1980, south of Nolalu, Ontario, was of usual size and, in the opinion of the hunter, in good body condition. It was accompanied by an adult female (also shot) which appeared normal. A large, bi-lobed, whitish, cauliflower-like mass protruded from beneath the left maxilla (Fig. 1). A cavity in the centre of the mass was lightly compacted with food. When cleared of food, the cavity was 2 cm in diameter, extended dorsally 4 cm into the maxilla and was lined with soft pinkish tissue. The cauliflower-like mass originated from tissue at the rim of the cavity. One portion of the mass (7 x 9 cm) was soft and extended from the lingual side of the cheek teeth to the mid-line of the palate; a larger portion (7 x 12 cm)

Fig. 1. Calf moose (Case No. 1) with large, whitish, cauliflower-like mass protruding from the left maxilla.

Fig. 2. Cleaned skull of calf moose (Case No. 1) with bone erosion and tooth displacement caused by neoplasm.

Fig. 3. Heart of 4-year-old male moose killed by a vehicle. Resected pericardium reveals spongy, fibrinous material covering entire heart creating condition known as "shaggy heart."

Fig. 4. Kidney of captive moose calf with pyelonephritis.



extended laterally into the buccal cavity and had hardened areas internally.

When the skull was cleaned of tissue (Fig. 2) all of the expected milk teeth were present. However, the 4th pre-molar was displaced medially and the 1st molar was displaced posteriorly by the cavity eroded deeply into the maxilla.

Histologically, soft regions of the mass appeared as a loose myxomatous matrix with fingers of epidermis extending throughout. Organization of the tissue elements resembled a tumour of tooth-germ origin (adamantinoma) but extensive pallisading of the epidermis was not in evidence. Alternatively, since all of the teeth were present, the neoplasm may most accurately be described as a myxoma originating in the gingiva from connective tissue of undetermined type.

Case No. 2

A 4-year-old, male moose was killed in collision with a vehicle 9 June, 1981, near Wawa, Ontario. The antlers were developing, each with a palm and 2 brow tines. The animal was judged to be in good body condition.

At necropsy, the heart and thickened pericardium appeared greatly enlarged (total length 30 cm, weight 6.5 kg). Only these organs were submitted; the remainder of the carcass was not available for examination.

No excess fluid was apparent in the pericardial space although the sac had been incised before submission. The opposing surfaces of the heart and pericardium were completely covered with a layer of pinkish-

yellow, spongy, fibrinous material (Fig. 3). Thin strands of the material spanned the pericardial space resulting in the so-called "shaggy-heart" appearance when the lightly adherent pericardium was resected. The fibrinous material adhered firmly to the surface of the heart and contained vesicles of serous fluid immediately adjacent to the myocardium.

Although the entire heart appeared enlarged, the relative thickness of the ventricular walls was normal. A long (14 x 5 cm), firm thrombus was present in the right heart extending from the ventricle into the auricle and entangled in the chordae tendinae. The valves of the heart appeared normal on gross inspection.

Fibrinous pericarditis is usually the result of a haemotogenous infection (Jubb and Kennedy, 1970). Some causes of the condition in cattle include contagious bovine pleuopneumonia, pasturellosis, blackleg and neonatal coliform infections which enter via the navel.

Case No. 3

A male moose calf was captured 2 July, 1980 and reared on a diet of prepared pellets supplemented with alfalfa and hay. In September, 1980, the animal was experimentally infected with rumen flukes (Paramphistomum liorchis). There were no identifiable sequellae associated with the parasitic infection, a possible exception being loose faeces passed during most of 1981.

In December, 1981, the animal was noted to be fairly inactive and adopted a peculiar stance; much of the body weight was positioned forward over the front legs while the hind legs were slightly crouched.

Urination was frequent with only small amounts of urine being passed each time. On 8 May, 1982, the animal was euthanized and examined (whole weight = 270 kg.).

Significant lesions were seen in the urinary bladder and in both kidneys. A large abscess (4 cm diameter) in the ventral bladder wall contained a pasty, yellowish exudate. The capsule covering each kidney was thickened, partially opaque and firmly adherent to the underlying cortex. Irregular, raised, yellowish-white areas on the surface of the kidneys were visible through the capsule.

The cut surface of both kidneys revealed wedge-shaped, yellowish-brown areas interspersed by darker red regions extending from the cortex into the medulla. A few large areas (2 - 3 cm) of liquifaction necrosis and enclosed yellowish exudate were confined to the cortex (Fig. 4).

Necropsy findings suggest an ascending urinary tract infection, hence properly described as pyelonephritis. The primary invasion likely occurred in the bladder. Extensive involvement of the cortical region as opposed to the pelvis and medulla of the kidney is not typical of an ascending infection, but may be explained in part by the long duration of the condition (December - May).

Although attempts were not made to isolate an infectious agent from the urinary tract of this moose, Corynebacterium renale is a frequent participant in pyelonephritis of domestic cattle (Jubb and Kennedy, 1970).

It might be concluded that the rather spectacular cases of oral myxoma and shaggy heart are rather rare and isolated instances that cannot be considered of widespread significance to the health of moose. Only by periodically recording such occurrences however, will it become

evident which concert of disease agents and anomalies contribute to that enigmatic catch-all termed "natural mortality."

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