

icity in small ruminants. A frequent manifestation of copper deficiency in lambs and kids is enzootic ataxia. The similarities in the clinical presentation of enzootic ataxia and the neurological form of CAE in goat kids will be discussed. It is emphasized that CSF analysis and histopathology of the spinal cord usually aid the clinician in differentiating between the 2 diseases. In addition, there is mention of anemia, depigmentation, "steely wool," skeletal abnormalities, and decreased reproductive efficiency in copper deficient states. The management situations leading to chronic copper toxicity in sheep are demonstrated with the aid of clinical cases. The relationships between copper, molybdenum, sulfates, and heavy metals also will be mentioned.

(84) Livestock protection collars in predator control

Guy Connolly

The livestock protection collar is a new technique for delivering toxic or repellent liquids to coyotes that prey on sheep or goats. Coyotes tend to attack the throat region of these animals. When collared animals are attacked, the coyote usually punctures the collar and receives an oral dose of its contents. Collars containing nonlethal, noxious chemicals do not appear to deter coyote predation. With toxicants, however, the collars are lethal to attacking coyotes. No other lethal method is so selective for individual, offending predators.

Livestock protection collars were invented by Roy McBride, Alpine, Tex in the 1960s. After 10 years of research and development by the US Fish and Wildlife Service and others, collars are expected to be approved by the EPA in 1985 for use by certified ranch applicators. The active ingredient will be sodium fluoroacetate (compound 1080).

(85) Newer aspects of parasite control in sheep and goats

Norman F. Baker

This presentation will cover a potpourri of information gleaned from research, practice and extrapolation that bear on problems and concerns of the sheep and goat practitioner. Some topics to be considered are: (1) The role of arrested development (hypobiosis) of nematodes in epidemiology, disease and control; (2) Real and apparent anthelmintic failures; and (3) Prescriptions and/or procedures for control of specific internal and external parasites.

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**SECTION ON
LABORATORY ANIMAL MEDICINE**

(86) Targeted chemotherapy with magnetic microspheres

Ralph C. Richardson

Selective delivery of drug-bearing magnetic microspheres was evaluated in dogs with extremity neoplasms. Tumor-bearing dogs appeared to serve as excellent animal models for human beings. Vascular access, vascularity, microsphere localization, and preliminary response to therapy was evaluated in dogs with naturally occurring osteogenic sarcomas and soft-tissue sarcomas, as well as implanted transmissible venereal tumors.

(87) Active specific immunotherapy in tumors of the dog and cat

K. Ann Jeglum

Active specific immunotherapy, ie, immunizing with tumor antigens or vaccines, may be more efficacious than nonspecific immunomodulators. By modifying tumor cells in vitro, the immune system may be able to respond to tumor-associated antigens rather than nonspecifically as for bacteria, toxins, viruses, or chemicals. Two clinical trials have been conducted, using active specific immunotherapy in spontaneous tumors. First, cats with mammary adenocarcinoma were randomized following radical mastectomy to receive (a) no further therapy, (b) intradermal (ID) BCG, or (c) BCG: tumor cell vaccine ID. No improvement in disease-free interval or survival was observed in the immunotherapy groups. The second trial was in canine lymphoma with dogs treated with intralymphatic tumor cell vaccine following chemotherapy. Significant improvements in remission duration and survival occurred in the chemoimmunotherapy group as compared with chemotherapy alone.

(88) Response of canine spontaneous tumors to radiation therapy

Glen K. King

For many years, therapeutic cancer research has concentrated on human clinical trials and tumors in murine hosts. Although cancer affects a great variety of mammals, naturally occurring neoplasms are common in dogs, and studying them offers distinct advantages. The response of common canine solid tumors treated in radiotherapy procedures will be discussed.

(89) Hyperthermia treatment of spontaneous animal tumors

Andrew J. Milligan

Hyperthermia is becoming a valuable adjuvant for radiation therapy treatment of cancer. Numerous laboratory studies have documented the ability of heat to sensitize cells to radiotherapy and the major problems facing therapists today are technical in nature. It is difficult with external microwave beams to uniformly deposit energy in tissue. One technique to circumvent this problem has been developed which employs localized radiofrequency current fields delivered through interstitially applied electrodes. These local radiofrequency currents deposit heat in tissue according to the geometric pattern of the implant. The division of radiation oncology at the Medical College of Ohio has been involved in a treatment program of spontaneous canine neoplasms with localized current field hyperthermia. Data will be presented describing the equipment, techniques, and clinical evaluation of the program.

(90) Overview of environmental hazards and environmental carcinogens

James H. Steele

Environmental hazards and carcinogens are problems. The overview will cover a wide range of hazards, ranging from physics through chemistry to microbiology, including antibiotics. The review, if time is allotted, allows name dropping: solar and industrial radiation, man-made chemicals and pollutants, dioxins, PCB's, EDB's, asbestos, and tobacco. The microbials are many—retroviruses may be the principal carcinogen that is provoked by environmental factors from the sun and biproducts of our industrial society. These will be discussed as to their epidemiologic findings and methods needed to define the order of risk involved. Hard data is the answer to perplexing theoretical problems.

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