

worm egg counts. Low worm egg counts are acknowledged as a main indicator of immunity to worms and have been successfully used to breed sheep with increased immunity to worm infection (Gray and Woolaston 1991). We then selected a sub-sample of these sheep for detailed parasitological and pathological studies. We demonstrated that these sheep had high numbers of mast cells and globule leucocytes throughout the gut. As noted in our discussion, mast cells and globule leucocytes are acknowledged as being indicative of a protective immune response against gastro-intestinal nematodes (Miller 1984). We further demonstrated that these sheep had low total worm counts and were susceptible to severe dag.

Thus, in the study, we comprehensively assessed the main parameters that are used currently to measure protective immunity to worms in sheep subject to natural infection. All of the above is detailed in the results and discussion sections of our paper and is summarised in the discussion by the statement: "The abundance of these cell types (mast cells and globule leucocytes), the low worm egg counts and worm counts in many of the sheep in the present study indicate that the immune response was well developed and functional in these sheep."

This evidence also contradicts the assertion of Adams, made without any supporting argument, that "... according to the parasitological observations provided, protective immunity to *Ostertagia* and *Trichostrongylus* spp was either poor or absent in the ewes under study." Adams' assertions regarding the immunity of the sheep are also internally inconsistent. On the one hand he argues that there are insufficient data presented in the body of the paper to make comment on the immunity of the sheep, yet on the other he makes a definitive conclusion about immunity based on the data we present.

We reject Adams' inference that reasonable grounds have not been demonstrated to implicate an immune mechanism for the syndrome of diarrhoea and severe dag in Merino ewes. As we summarise in the discussion: "The striking pathological feature in ewes with severe dag was higher numbers of eosinophils within the mucosa of the small intestine and pylorus. This finding was consistent between ewes from different farms and the cell counts were not related to worm burden." We also show in results that the difference in eosinophil numbers between ewes with severe dag and unaffected ewes is statistically significant. Is Adams suggesting that eosinophils are not part of the immune mechanism?

One of the major points of our paper seems to have eluded Adams; severe dag appears to be independent of protective immunity. However, it is associated with another aspect of the host immune response to trichostrongylid larvae, namely a hypersensitivity type reaction. We further demonstrate that sheep with low worm egg counts, low worm counts and high numbers of mast cells and globule leucocytes are susceptible to severe dag, and that treatment of these sheep with a controlled-release capsule containing albendazole is highly effective in controlling the occurrence of severe dag. That is why we can say: "This study provides strong evidence that the main cause of diarrhoea among Merino ewes grazing winter and early spring pastures is the ingestion of trichostrongylid larvae even by sheep that have a well-developed protective immune response to these parasites."

Dohoo IR and Waltner-Toews D (1985a) *Compend Contin Educ Pract Vet* 7: S513

Dohoo IR and Waltner-Toews D (1985b) *Compend Contin Educ Pract Vet* 7: S473

Gray GD and Woolaston RR (eds) (1991) *Breeding for Disease Resistance in Sheep*, Wool Research and Development Corporation, Melbourne

Larsen JWA, Anderson N, Vizard A, Anderson GA and Hoste H (1994) *Aust Vet J* 71: 365

Miller HRP (1984) *Vet Immunol Immunopathol* 6: 167

Rothman KJ (1986) *Modern Epidemiology*, Little, Brown and Co, Boston

## ***Neospora caninum* – request for specimens for research**

Department of Veterinary Pathology,  
University of Sydney,  
New South Wales 2006

GH COLLINS  
D McMILLAN

*Neospora caninum*, a recently discovered protozoan parasite related to *Toxoplasma gondii*, is an important pathogen in young puppies in Australia. The organism commonly invades both nerves and muscles, and neonatal neosporosis is frequently seen as an ascending motor paralysis. Infection is thought to take place *in utero*, however, the life cycle of this parasite has yet to be elucidated. The same parasite is believed to be a major cause of abortion in Australian cattle. Information on neosporosis was reviewed by Dubey and Lindsay (1993).

During 1995, we will be collaborating with Dr John Ellis of the University of Technology Sydney, in the development of diagnostic tests for this disease in dogs. We are interested in obtaining samples of serum and infected tissues from suspected cases of neosporosis. Blood, preferably at least 5 mL, should be collected into a plain tube, allowed to clot at room temperature for 1 hour, and then centrifuged, or stored at 4°C overnight, before removal of serum. Biopsy specimens, which will need to be removed before treatment, should be rapidly frozen. Samples should be sent as soon as possible with details of the dog: age, sex, and breed; and the illness: history, clinical signs and results of any diagnostic tests. Where more than one puppy in a litter is affected, a sample of serum from the bitch would be especially useful. If an infected dog is to be euthanased without treatment, we would appreciate receiving the whole body immediately after death, or as soon as possible after chilling at 4°C. All submissions will be reported on.

Enquiries by phone: (02)351 3102, fax: (02)552 6526 or Email: hcollins@extro.ucc.su.oz.au.

Dubey JP and Lindsay DS (1993) *Parasitol Today* 9:452

## **Treatment of superficial tumours on horses with dimethyl sulfoxide and cisplatin**

Sydney University Veterinary Teaching Hospital, ANNE PEASTON  
Department of Pharmacology, JILL MADDISON  
University of Sydney, New South Wales 2006

We have recently become aware that some veterinary practitioners have been dispensing solutions of dimethyl sulfoxide (DMSO) and cisplatin to clients for local application to superficial tumours on horses. This practice is unsound for 2 reasons. Firstly, it is an unproven treatment. Secondly, there is a very serious potential human health hazard to the client due to cisplatin exposure via skin or mucous membrane contamination.

The notion of using local cisplatin as an adjuvant to surgery was supported by a recent publication in a widely read journal<sup>1</sup> describing successful treatment of locally recurrent superficial equine tumours by intra-tumorous injection of cisplatin in oily emulsion. Other publications also report useful activity of intra-tumorous cisplatin in dogs and cats<sup>2,3,4</sup>. The reported investigations were executed under strictly controlled clinical circumstances. Protective gowns, gloves and goggles were worn by the operators. The animals were immobilised chemically to prevent movement and hence drug spillage or inappropriate drug administration, and to facilitate cleaning up drug leaking from the injection sites. The drug was freshly prepared before

each administration with appropriate biological safety containment. In at least one report<sup>1</sup>, prior studies established the dwell time and concentration of drug within the tumour.

Although these reports are encouraging, intra-lesional therapy is still far from accepted as a standard treatment.

In the case of DMSO-cisplatin mixture, no such investigations have been reported or are being undertaken to our knowledge. It is likely that cisplatin-DMSO solutions do not remain stable for more than about 20 minutes, but the rate of decay is not known<sup>5</sup>. We have no information on the depth of penetration of cisplatin into the tumour after superficial application in DMSO nor do we know for how long the drug would be retained in the tumour. This information is needed in order to devise rational treatment schedules.

Most importantly, if we make the reasonable assumption that DMSO permits rapid carriage of cisplatin into equine tissues, then it will do the same for human tissues. Cisplatin is a known cytotoxic agent reasonably expected to be a carcinogen<sup>6</sup>. Thus, by instructing owners to administer the drug, veterinarians are potentially exposing their clients to repeated doses, possibly much greater than maximum exposure recommendations<sup>6</sup>. Even if owners are instructed to wear latex gloves when handling the solution, there is the distinct risk that they will be exposed to droplets of the solution, or that they may have accidental skin contact through failure to follow instructions or through accidental spillage or splashing. Finally, horses are unlikely to be restrained adequately at home, thus increasing the risk of accidental spillage.

1. Theon AP, Pascoe JR, Carlson GP and Krag DN (1993) *J Am Vet Med Assoc* 202:261
2. Theon AP, Madewell BR, Ryn J and Castro J (1994) *Int J Rad Oncol Biol Phys* 129:1027
3. Kitchell BE, Brown DM, Luck EE *et al* (1994) *J Am Vet Med Assoc* 204:229
4. Orenberg EK, Luck EE, Brown DM and Kitchell BE (1991) *Clin Dermatol* 9:561
5. Dr T Hambley, School of Chemistry, The University of Sydney. Personal communication
6. *Seventh Annual Report on Carcinogens, Summary 1994*, US Department of Health and Human Services, Public Health Service, National Institute of Environmental Health Sciences, Research Triangle Park, NC, p 134

---

## BOOK SHELF

---

***Feline Medicine and Therapeutics, 2nd edn, edited by EA Chandler, CJ Gaskell and RM Gaskell, Blackwell, Oxford, Melbourne, (Orders: tel 03 347 5552), 1994, pp 705, \$190.00, ISBN 0 632 03361 4***

This is the second edition of the British Small Animal Veterinary Association's book, first published in 1985. It has been enlarged by nearly 50% and over a hundred good to excellent colour plates added. There are 28 British and European contributing authors, most of whom are well known for their contributions to current veterinary literature.

Unlike many other books on small animal medicine, this book includes chapters on nutrition, skin, eye diseases and abnormal behaviour. With such a large amount of material to cover in one volume, there is not a lot of detail in many sections with often only thumb nail sketches of some diseases. However, this is variable and some chapters do include a short discussion on anatomy and physiology of the system. The chapters on infectious diseases are concise and complete. While chapters on rabies and feline poxvirus infection may be of little interest to Australian readers, those on feline immunodeficiency virus, leukaemia virus, coronavirus, upper respiratory infection and chlamydia contain most of what anyone, except a laboratory-based scientist, would want to know about the subjects.

Although the title of this book suggests a greater emphasis on therapeutics, the detail of treatment for individual diseases varies from short statements on which drugs to use, sometimes without dosages, to occasionally several paragraphs on treatment strategies. There is a chapter on clinical pharmacology and therapeutics, with some emphasis on the cat. The use of British or European brand names for drugs is not always consistent with what is marketed in Australia.

The stated purpose of this book is to help veterinary surgeons and students practise the art and science of feline medicine. It achieves this by providing a reference for most diseases known to occur in cats. Many students and practitioners would probably want greater detail about the more common and serious non-infectious diseases and would need to refer to other sources of information.

Virginia Studdert

---

***Equine Reproductive Physiology, Breeding and Stud Management, Mina CG Davies Morel, Farming Press, Ipswich, UK, 1993, pp 450, \$69.95, ISBN 0 85236 255 2 (Orders: Butterworth-Heinemann, North Ryde, tel 02 335 4444), ISBN 0 85236 255 2***

As the blurb on the back cover explains, this book is written for studmasters, owners, veterinary students and equine studies students. Dr Morel is a lecturer and head of equine studies at the Welsh Agricultural College, and she has fulfilled the aim of the book admirably. The book is divided into 2 sections (reproductive anatomy and physiology, and breeding and stud management), consisting of 21 chapters.

Several chapters in the first section do not fit neatly into the classification, but there is a comprehensive overview of the reproductive anatomy of the mare and stallion, with chapters devoted to the endocrine control of the oestrous cycle and reproductive activity in the stallion. There are line drawings and coloured photographs, which break the text nicely, although some of the photographs are redundant. The information contained in this section is accurate and Dr Morel has used references appropriately so that the information is as current as could be reasonably expected. A reference section is placed at the end of the chapter and this is a useful addition for students with access to a library.

The second section comprises about two-thirds of the book. It commences with a chapter on selection of the mare and stallion for breeding, and includes chapters on mating management, management of pregnant and non-pregnant mares and weaning and early education of foals. There are chapters on stallion management, infertility, artificial insemination and embryo transfer. The information contained in this section is oriented towards the English management system, some of which does not apply to Australia. However, most is relevant to our horse breeding industry and is well referenced and up to date. There are some useful feeding charts included in the chapters on the pregnant and lactating mare and on management of young stock. Although these are in the calorie and % DM mode, they are easily converted to MJoules and g/kg of feed, respectively. There is some repetition of material covered in the first section, but this is not extensive and reinforces the information covered previously. There are occasional lapses in accuracy, such as the description of non-surgical embryo flushing with the catheter "... passed as high up into the uterine horn as possible ...". However, such criticism seems pedantic as the book is a well-written and extensive text.

The book fulfils its stated aims in being a useful text for lay people and veterinary students. It is the sort of book practising veterinarians could recommend to clients wanting easily understood information on the horse and its reproductive vagaries.

John Hyland