THESIS ABSTRACT

Title of the thesis	:	Epidemiological studies on diarrhoea in calves with particular reference to diagnosis and treatment of cryptosporidiosis
Name of the student	:	Dr. Bollam Shobhamani
Name and address of the advisor	:	Dr. N. Alaha Singari Department of Clinical Medicine, Ethics and Jurisprudence, College of Veterinary Science, Tirupati
Degree awarded	:	Ph.D. (Veterinary Medicine)
Year of submission	:	2004
Name of the university	:	Acharya N.G. Ranga Agricultural University.

The prevalence of cryptosporidiosis was studied by screening 651 faecal samples from calves belonging to 5 different dairy farms and calves brought to 9 veterinary hospitals in and around Tirupati, Andhra Pradesh, during the period from March 2000 to July 2003. The overall prevalence of cryptosporidiosis in calves was 31.80%. In dairy farms and veterinary hospitals the rates of prevalence were 32.89% and 17.39%, respectively.

The prevalence was higher (48.69%) in 31-60 and (43.24%) in 1-30 day-old calves than the older calves. Significantly ($P<0.01$) greater number of calves (39.06%) from Holstein Friesian breed were found infected with *Cryptosporidium* with no sex preponderance.

For diagnosis of cryptosporidiosis 3 different techniques were employed. Sheather's sucrose centrifugal floatation + dimethyl sulphoxide staining found to be superior, followed by enzyme-linked immunosorbent assay and formal ether sedimentation + dimethyl sulphoxide. Rapid staining procedure was also equally effective as that of Sheather's sucrose centrifugal floatation + dimethyl sulphoxide in oocyst detection.

Two species of *Cryptosporidium viz., C. parvum* and *C. muris* were identified on the basis of micrometry of oocysts. The shape varied from spherical to oval. The oocysts stained pink, usually with a clear halo around the oocyst and up to 4 centric or excentric dark spots representing naked sporozites were observed.

Calves infected with *Cryptosporidium* alone manifested profuse watery or pasty diarrhoea, mixed with blood, mucus and undigested milk clots and some calves had mild to moderate dehydration, mild fever or subnormal temperature, depression, lethargy and varying degrees of anorexia or inappetance. All the above symptoms were noticed in calves with mixed infections with greater severity.

Four therapeutic studies, 30 clinical cryptosporidic calves were randomly divided into 3 groups each containing 10 animals. Ten healthy calves served as healthy controls (Group 1), cryptosporidic calves belong to Group 2 were not given any treatment and served as infected untreated controls. Calves of Group 3 were treated with azithromycin while that of Group 4 with tylosin. Dehydrated calves in Group 2 and 4 were infused with Ringers lactate solution.

In cryptosporidic calves, the mean haemoglobin (Hb) concentration, packed cell volume (PCV) and total leukocyte count (TLC) were significantly ($P=0.01$) decreased and relative differential leukocyte count (DLC) revealed mild neutropenia, lymphocytopenia, monocytosis and eosinophilia, when compared to healthy control. Investigation on serum biochemical constituents revealed significant ($P=0.01$) decrease in serum glucose, total proteins, albumin-globulin ratio, serum sodium and potassium levels. Infected calves exhibited mild anaemia, eosinophilia hypoglycemia, hypoproteinemia, hyponatremia and hypokalemia and the infected untreated calves failed to regain haemato-biochemical levels to normalcy even on 42nd day of observation. Following treatment with the above chemotherapeutic agents clinical recovery was much faster in azithromycin treated calves than in tylosin treated calves. Azithromycin could clear oocyst excretion much earlier than tylosin. The magnitude of improvement and reversal to normalcy in certain clinical and in various haemato-biochemical parameters was far greater after azithromycin treatment than tylosin. It is therefore concluded that the azithromycin is the drug of choice against cryptosporidiosis followed by tylosin.

J. Vet. Parasitol. 200-0064-480/$2.50 © IAAVP, India