

## CLINICAL AND HAEMATOLOGICAL FINDINGS IN BOVINE CYSTICERCOSIS\*

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### Introduction

Experimental studies on Bovine Cysticercosis have shown controversial results regarding clinical & haematological findings. Some authors, like Ershov (1933); Alferova (1968); Kazakiewicz (1977) recorded clear clinical signs associated with the disease in calves of different ages experimentally infected with different doses of eggs of *Taenia saginata*. In contrast, McIntosh and Miller (1960) and Mocina (1965), observed only mild or no clinical response of calves to infection with bovine cysticercosis.

The present work records the clinical and haematological findings as a further contribution towards a complete understanding of some important aspects of experimental cysticercosis in calves.

### Materials and Methods

Eight calves aged 3-5 months were dosed with eggs of *Taenia saginata*. Methods and doses of infection were previously described (Zain El Din, 1980).

Prior to exposure, all calves were examined clinically. During the experiment, both the experimental and control calves, were subjected to thorough observation and clinical examination. Their blood and sera were sampled at weekly intervals throughout the experiment.

Haematological analysis included: Red blood cells (RBC) & White blood cells (WBC) counts, packed cell volume (PCV) and haemoglobin concentration (Hb). Blood films were prepared and stained with Giemsa's for differential leukocytic count. Total serum protein was determined by the Biuret method according to King (1964).

After slaughter, skeletal muscles & internal organs of each animal were examined by slicing into sections to detect the cysticerci present. Surfaces of stomach and intestines were thoroughly searched for cysticerci.

### Results

#### Clinical findings and haematological data obtained

\* This work was presented in partial fulfilment for the award of a Ph. D.

before infestation revealed no deviations from normal values in the eight experimental and two control calves. 3-7 days post infection (p.i.), all animals showed rise in temperature, arrhythmia and dyspnea. These symptoms intensified by the 10-12th day and continued to be manifested up to the 18-20th day p.i. During this period, body temperature rose to 40-41.5°C. Some of the animals showed weakness of the hind & front limbs, staggering gate and painful response to muscle palpation. One of the infected calves (No. 10) died 15 days p.i. Another calf (No. 11) showed another phase of marked clinical symptoms on the 32nd day: p.i., lost appetite and was recumbent. It died on the 45th day p.i. The reinfected calves (No. 1 and No. 80) showed only mild clinical symptoms after the second infection.

At necropsy, numerous cysticerci (*C. bovis*) of different sizes were found in all infected calves, while no cysts were revealed in control ones. Besides the skeletal muscles, heart, liver & tongue, cysticerci were detected in the lungs, kidney, brain, lymph nodes and on surfaces of stomach and intestines.

Results of haematological values showed no significant differences in Hb, PCV, or RBC counts of experimental animals before and after infection, compared to the control (Table 1). Up to the 7th week of infection, the WBC count of infected animals significantly increased ( $p < 0.05$ ). All experimental calves showed highly significant eosinophilia ( $p < 0.01$ ), increase in number of lymphocytes and monocytes. Total serum protein of all infected animals significantly increased during the whole period post infection ( $p < 0.05$ ).

### Discussion

Clinical examination of experimentally infected calves showed that bovine cysticercosis was accompanied by clear symptoms. Two of the infected calves died post infection, which suggested that severe invasion with *C. bovis* may be fatal to calves. Detailed examination of muscles and internal organs revealed that cysticerci (*C. bovis*) in such infections may occur almost in all organs and tissues.

Clinical response, varying in severity, to bovine Cysticercosis was also recorded by Ershov (1933), Alferova (1968) and Kozakiewicz (1977). In contrast, McIntosh and Miller (1960), and Mocina (1965) found no such clear clinical signs to infection with *C. bovis*.

Blood picture of experimental animals showed no

remarkable changes in haemoglobin content, PCV or RBC counts after infection. This was in agreement with the findings of Chikhov and Punchyk (1973); Gallie and Sewell (1976) and Kozakiewicz (1977). On the contrary Dewhirst et al (1960); Alfevova (1968) have reported various haematological changes following the infection of calves with eggs of *T. saginata*. Leukocytic count showed a significant increase in WBC, with an analogous increase in eosinophils. Oesinophilia associated with bovine cysticercosis was also observed by Alferova (1968); Soule et al. (1971) and Gallie and Sewell (1976). Peripheral oesinophilic reaction in parasitic infestation is said to be indicative for the allergic response of the host to the living parasite (Ershov, 1968).

The increase in serum total protein of infected calves indicates an immune response of these animals. Such a consequent increase was also observed by Mocina (1965); Gallie and Swell (1974). They found that a rise in total protein of infected animals was concurrently accompanied by an increase in globulin fractions.

#### Summary

Eight calves 3-5 months old were orally infected with eggs of *Taenia saginata*. The manifested post infection clinical signs were rise in temperature, arrhythmia & dyspnoea. Other observed clinical symptoms were weakness and pain of limbs, Staggering-gait, recumbency and death. Haematological changes included increased leukocysts and peripheral oesinophilia. Serum total protein was significantly increased.

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