CLINICO-PATHOLOGICAL AND THERAPEUTIC STUDIES ON NATURAL PSOROIC ACAROSIS IN RABBITS

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ABSTRACT

The clinico-pathological and therapeutic studies in a natural outbreak of psoroptic acarosis in 10 New Zealand White rabbits of either sex and aged between 1 to 3 years were carried out during the period from July to December 2003. The diagnosis was made on the basis of clinical signs and examination of skin scrapings. Clinical signs recorded were severe itching and crust formation on ears, forehead, back, eyelids, feet, scrotum and back. Level of SCR, TEC, lymphocyte count, total protein and albumin were significantly (p<0.05) low while TLC, thrombocyte and eosinophil counts were significantly (p<0.05) high in affected rabbits. The disease was effectively controlled by Ivermectin [Ivermectin4, Al洵ec5] @ 0.2 mg/kg per kg bwt given SC once a week for 4 injections and Ivermectin [Ivomec6, Al洵ec5] Vet Atrox® @ 20 mg/kg per kg bwt given IM daily for 7 days for combating secondary bacterial infection. The complete clinical recovery and absence ofmite in the skin scrapings on day 10 onwards of starting of therapy was observed.

Key words: Rabbit, Psoroptes cuniculi, haematological changes, ivermectin

INTRODUCTION

In India with hot and humid climate, the incidence of skin infections specially mange among rabbits is very high (Aulakh et al., 2003). Psoroptic mange, popularly known as "ear mange" or "ear canker" is one of the most common and costly ailments of rabbits caused by the acarous parasite Psoroptes cuniculi (Okerman, 1994). It leads to intensive pruritus, emaciation, emaciation and even death (Pawar and Pannath, 2000). Though several acaricides are usually used for the control of mite infestation in rabbits, it still remains a serious problem in intensive rabbit rearing (Chocke et al., 1982 and Khan et al., 1988). Hence a study was undertaken to receive the haematological (Hb, TEC, TLC and DLC) and biochemical (serum total protein, albumin, globulin and A/G ratio) changes in natural psoroptic acarosis in rabbits. The present study also evaluates the therapeutic efficacy of ivermectin against the infected rabbit.

MATERIALS AND METHODS

Ten adult New Zealand White rabbits (Oryctolagus cuniculus) of either sex and aged between 1-2 years of Laboratory Animal House, I.A.H. & V.R. Govt. of West Bengal, Kolkata showing signs of severe itching and crust formation on the ears, forehead, face, eyelids, feet, scrotum and back were selected for this study during the period from July to December 2003. All the rabbits were maintained on balanced diet and same managerial practice. Skin scrapings of affected rabbits were collected in 10% potassium hydroxide for diagnosis. For haematological and biochemical examinations, 2 ml blood was collected [before and 14 days after treatment] from each rabbit, of which 2 ml was collected in EDTA sodium-anticoagulant and 3 ml for serum separation. Blood from 6 healthy rabbits was also collected for comparison. Haemoglobin, TEC, TLC and DLC were examined as per the standard procedures (Jain, 1964).

Serum total protein, albumin, globulin and A/G ratio were estimated colorimetrically as per the standard procedures (Greenberg, 1979). On confirmation of P. cuniculi infestation, all the rabbits were given 2 injections of ivermectin [Ivomec7, Al洵ec5] @ 0.2 mg/kg given SC at weekly interval and injection ivermectin [Ivomec7, Al洵ec5] Vet Atrox® @ 20 mg/kg given IM daily for 7 days for combating secondary bacterial infection. The rabbits were examined daily for clinical improvement. Skin scrapings were examined twice weekly for mange mites. The clinical recovery was evaluated on the basis of recovery in clinical signs (itching and scratching), lesions (stoppage of scar formation, smoothing of skin and hair growth in the affected area) and haematological and biochemical parameters were also estimated after the complete clinical recovery.

Data were analyzed using Student’s ‘t’ test according to the methods of Snedecor and Cochran (1947).

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Table 1. Haemato-biochemical changes in rabbits suffering from porcine aecariosis

<table>
<thead>
<tr>
<th>S / N</th>
<th>Parameter</th>
<th>Unit</th>
<th>Healthy control rabbits (n = 6)</th>
<th>Infested rabbits (n = 10)</th>
<th>Pre-treatment</th>
<th>14 days post-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Haemoglobin</td>
<td>g / dl</td>
<td>9.3 ± 1.2^a^</td>
<td>6.2 ± 4.5^b^</td>
<td>7.4 ± 10.7^b^</td>
<td>10.4 ± 1.7^a^</td>
</tr>
<tr>
<td>2.</td>
<td>Total erythrocyte count</td>
<td>x 10⁶ / μl</td>
<td>5.31 ± 3.15^a^</td>
<td>3.85 ± 5.73^b^</td>
<td>4.67 ± 6.94^b^</td>
<td>6.29 ± 0.95^a^</td>
</tr>
<tr>
<td>3.</td>
<td>Total leukocyte count</td>
<td>x 10⁹ / μl</td>
<td>5.23 ± 7.95^a^</td>
<td>7.65 ± 9.89^b^</td>
<td>6.04 ± 9.51^b^</td>
<td>6.05 ± 8.09^a^</td>
</tr>
<tr>
<td>4.</td>
<td>Differential leukocyte count</td>
<td>%</td>
<td>49 ± 63^a^</td>
<td>58 ± 72^b^</td>
<td>51 ± 68^b^</td>
<td>55.93 ± 3.29^a^</td>
</tr>
<tr>
<td>5.</td>
<td>Neutrophils</td>
<td>%</td>
<td>2 ± 6^a^</td>
<td>4 ± 9^b^</td>
<td>2 ± 8^b^</td>
<td>2.40 ± 1.32^a^</td>
</tr>
<tr>
<td>6.</td>
<td>Lymphocytes</td>
<td>%</td>
<td>35.67 ± 2.97^a^</td>
<td>18 ± 29^b^</td>
<td>25 ± 37^b^</td>
<td>35.67 ± 2.97^a^</td>
</tr>
<tr>
<td>7.</td>
<td>Total protein</td>
<td>g / dl</td>
<td>5.23 ± 8.04^a^</td>
<td>3.53 ± 5.02^b^</td>
<td>4.29 ± 7.35^b^</td>
<td>6.39 ± 1.02^a^</td>
</tr>
<tr>
<td>8.</td>
<td>Albumin</td>
<td>g / dl</td>
<td>2.83 ± 3.96^a^</td>
<td>1.06 ± 2.79^b^</td>
<td>2.31 ± 3.69^b^</td>
<td>3.42 ± 0.74^a^</td>
</tr>
<tr>
<td>9.</td>
<td>Globulin</td>
<td>g / dl</td>
<td>2.27 ± 3.65^a^</td>
<td>2.04 ± 3.39^b^</td>
<td>2.45 ± 3.65^b^</td>
<td>2.97 ± 0.94^a^</td>
</tr>
<tr>
<td>10.</td>
<td>A / G ratio</td>
<td>–</td>
<td>1.15</td>
<td>0.75</td>
<td>1.04</td>
<td>–</td>
</tr>
</tbody>
</table>

^aRange, ^bMean ± SD, *Significantly different at p ( < 0.05).

Biochemical changes revealed significant (p < 0.05) decrease in serum total proteins, serum albumin and insignificant decrease of A / G ratio. This might be due to the habit of the rabbits of chewing epidermal layer of the skin. Similar type of observations was recorded by Arian et al. (1988) during his studies on haemato-biochemical changes in sarcoptic mange in rabbits. After administration of ivermectin and ivermectin, there was marked reduction in the severity of scratching and itching. A significant clinical improvement was noticed 7 days after the 1st injection of ivermectin in majority of the rabbits. Skin scrapings were negative for developmental stages of mange mites or ova on day 10 onwards. Fresh hair growth resumed after 12 to 15 days. Ivermectin reduced the mite population by 100% recovery. Rai (1988) and Kurade et al. (1996) also reported similar observations regarding efficacy of ivermectin against sarcoptic mange in rabbits. All the treated rabbits resumed their luxuriant hair and skin coat after 20 days of treatment (Fig. 3). All the haemato-biochemical parameters improved towards the normal control values after 14 days of treatment.
Fig. 1. A mange infected rabbit showing crust formation on the ears, face, frontal, eyelids, and forelimbs.

Fig. 2. *Pseudopercnonyssus canadensis* under microscope (100X).

Fig. 3. The same recovered rabbit showing luxuriant hair and skin coat after 28 days of treatment.
REFERENCES