DEMOCIDOSIS IN DOGS AND ITS THERAPEUTIC MANAGEMENT

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Dogs are prone to many systemic & specific diseases of which skin diseases are very problematic & obstinate. Amongst the dermatological complications, demodectic mange infection is very common in them, showing alopecia, erythema, pustules and pruritus etc. which ultimately leads to concomitant bacterial and fungal infections. This study was undertaken to observe the clinical and haematobiochemical changes in demodectic mange infections in dogs and the effectiveness with treatment of some allopathic and herbal preparations.

Materials and Methods
The study was conducted in the Dog ward under the Department of Veterinary Medicine, Ethics and Jurisprudence and in some private veterinary clinics in and around Kolkata. The dogs which were brought to the clinics with skin lesions were selected and examined clinically. Their skin scrapings were taken and examined directly or by sedimentation method with 10% KOH solution.

Blood samples were collected from the affected dogs showing demodicosis for detailed haematological and blood biochemical analysis and estimations were done by standard techniques.

The demodectic dogs with concomitant bacterial and fungal infections were treated with antibiotics and antifungal therapy and with antipruritic drugs. Twenty four clinical cases of generalised demodectic mange infected dogs were divided in 2 groups (Gr-II) and Gr.-II) comprising 12 each. Another 12 normal healthy dogs were also taken as healthy control group (Gr-I).

The Gr-II animals were treated with Inj.Mectin1 given S/Cly @ 1 ml/20Kg b.wt. at 7 days intervals for four occasions, Petben shampoo2 for bathing at 5 days intervals for 6 occasions and topical applications of Ridd3 by sponge on the body @ 3ml/lit. of water at 5 days intervals for 6 occasions.

The Gr-III dogs were treated with herbal medicines like topical application of Zerokeet lotion4 @ 1:2 dilution with water once daily for 10 days and then on alternate days for another 20 days, Charmaid capsule5 @ 1-2 caps. orally once daily for 15 days and then 1-2 caps orally on alternate days for another 15 days along with local application of Newcharm ointment6 once daily for 15 days.

Results and Discussion
Out of 1240 dogs examined, 122 dogs (9.83%) had skin lesions and 38 dogs (3.06%) were positive for demodicosis and simulated with the findings of Chakrabarti and Pradhan (1985) who recorded 3.76% cases of canine demodicosis. The incidence was more in female than the male dogs and highest in Dachshund breed followed by other breeds of dogs. Higher incidence of demodicosis was noted in the younger age group of dogs and corroborated with the observations of Reddy and Rao (1992) and Kim and Kim (1997) and might be due to more stimulation of sebaceous glands by the sex hormones during puberty and the mites which get more opportunity to grow and multiply since they are sebophillic (Schwartzman, 1962).

1. Mectin (M/S Alembic) contain 1% (W/V) Ivermectin
2. Petben (M/S Pet care, Tetragon Chemie Pvt. Ltd.) contain 2.5% (W/V) Benzoyl Peroxide
4. Zerokeet a herbal product of M/S. Ayuvet Ltd.
5. Charmaid a herbal product of M/S. Ayuvet Ltd.
6. Newcharm a herbal product of M/S. Ayuvet Ltd.
The demodectic dogs showed erythema, pruritus, papules and alopecia etc. before treatment showed gradual improvements and the skin became glossy and regained its normal texture and colour within 30 days of treatment in both Gr-II and Gr-III dogs.

### Table 1: Haematological and blood biochemical changes of Demodectic mange infected dogs before and after treatment.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Healthy control (n=12) (Gr. – I)</th>
<th>Before treatment (Demodectic dogs) (n=24)</th>
<th>After treatment Allopathic treatment (n=12) (Gr. – II)</th>
<th>After treatment Herbal treatment (n=12) (Gr.-III)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin (gm/dl)</td>
<td>12.51 ± 0.561</td>
<td>9.45 ± 0.482***</td>
<td>12.32 ± 0.417**</td>
<td>12.19 ± 0.236**</td>
</tr>
<tr>
<td>TEC (10⁶/cmm)</td>
<td>5.98 ± 0.628</td>
<td>3.94 ± 0.112**</td>
<td>5.64 ± 0.409**</td>
<td>5.72 ± 0.327**</td>
</tr>
<tr>
<td>TLC (10³/cmm)</td>
<td>11.42 ± 0.121</td>
<td>11.57 ± 0.012</td>
<td>11.06 ± 0.318</td>
<td>11.17 ± 0.610</td>
</tr>
<tr>
<td>Neutrophil (%)</td>
<td>68.51 ± 0.597</td>
<td>72.29 ± 0.612**</td>
<td>67.28 ± 0.387**</td>
<td>68.79 ± 0.414**</td>
</tr>
<tr>
<td>Lymphocyte (%)</td>
<td>21.96 ± 0.484</td>
<td>15.41 ± 0.591**</td>
<td>23.16 ± 0.271**</td>
<td>22.13 ± 0.306**</td>
</tr>
<tr>
<td>Monocyte (%)</td>
<td>4.34 ± 0.351</td>
<td>4.19 ± 0.492</td>
<td>4.49 ± 0.327</td>
<td>4.15 ± 0.210</td>
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<tr>
<td>Eosinophil (%)</td>
<td>5.19 ± 0.315</td>
<td>8.11 ± 0.250**</td>
<td>5.07 ± 0.126**</td>
<td>4.93 ± 0.301**</td>
</tr>
<tr>
<td>Serum total Protein (gm/dl)</td>
<td>6.84 ± 0.341</td>
<td>6.45 ± 0.197</td>
<td>6.72 ± 0.219</td>
<td>6.61 ± 0.192</td>
</tr>
<tr>
<td>Serum albumin (gm/dl)</td>
<td>3.17 ± 0.212</td>
<td>2.38 ± 0.152**</td>
<td>3.08 ± 0.209**</td>
<td>3.19 ± 0.176**</td>
</tr>
<tr>
<td>Serum Globulin (gm/dl)</td>
<td>3.67 ± 0.126</td>
<td>4.07 ± 0.117</td>
<td>3.64 ± 0.107</td>
<td>3.42 ± 0.154</td>
</tr>
<tr>
<td>A:G ratio</td>
<td>0.86 ± 0.218</td>
<td>0.58 ± 0.109**</td>
<td>0.84 ± 0.262**</td>
<td>0.93 ± 0.248**</td>
</tr>
</tbody>
</table>

** Significant at 1% level (P<0.01) in comparison to healthy control group.

*** Significant at 1% level (P<0.01) in comparison to before treatment values.

From the table – 1, it is revealed that both the mean haemoglobin (Hb) % and total erythocytic (TEC) count reduced significantly (P<0.01) in the demodectic dogs in comparison to the healthy control dogs and it might be due to anaemia developed due to loss of protein from the skin. But following treatment with ivermectin and amitraj etc. in Gr.II, both the Hb and TEC levels increased and simulated with the observations of Roy et al., (1991) and Mukhopadhyay (1999) who treated the demodectic dogs with amitraj and ivermectin. Similarly in Gr.III with herbal therapy, the said values also improved significantly (P<0.01), but the values could not be compared due to non-availability of similar data. However Roy et al., (1996) and Sharma and Paul (2002) also noted clinical improvements in demodectic dogs with treatment of Zeroket and Charmaid.

The mean total leucocytic count (TLC) of the demodectic dogs was found slightly higher than the healthy control dogs and is might be due to pyoderma which is generally associated with demodicosis in dogs (Nesbitt, 1983). However following treatment with antibiotics and the allopathic medicines in Gr.II, it declined and agreed with the observations of Mukhopadhyay (1999) who also treated with antibiotics, ivermentin and amitraj. The TLC level also declined in Gr.III, might be due to antibacterial effects of Zeroket, Charmaid and Newcharm herbal preparations.

The table-I, also showed, that there was significant increase (P<0.01) of neutrophil count and significant decrease (P<0.01) of lymphocytic count in the demodectic dogs in comparison to the healthy control dogs. Similar observations were also noted by Toman et.a., (1997) in dogs with D.Canis infection. Neutrophilia is due to pyoderma and lymphopaenia which could be due to T-Cell suppression resulting from certain blastogenesis suppressing factors present in the sera of demodectic dogs (Scott et al.,1974). But following therapy with antibiotics, Mectin, Petben shampoo and Ridd in Gr.II, both the
Values became almost normal and agreed with the observations of Mukhopadhyay (1999). In Gr.III, the values also became almost normal, but could not be compared due to nonavailability of similar report.

Eosinophil percentages in the demodectic dogs was significantly higher (P<0.01) than the healthy control dogs. Dimri et al., (2000), opined D.Canis causes irritation of the skin tissues and stimulates the mast cells for release of more histamine and since histamine is chemotactic for eosinophils, an elevated histamine level attract eosinophils from the bone marrow to the circulation leading to eosinophilia. Besides eosinophilia is assumed to be also due to liberation of protein or secretary products of the parasite. But following treatment with Mectin and Ridd, the level became normal and corroborated with the observations of Mukhopadhyay (1999) who also treated with ivermectin and amitraj. In Gr.III, the level also became normal with the herbal therapy.

From the table-I, it is also evident that the total serum protein level decreased moderately in the demodectic dogs in comparison to healthy control dogs as also noted by Gupta et al., (2001) and it might be due to loss of protein from the skin as remarked by Muller et al. (1989). But following treatment in Gr.II, the level increased as also observed by Sarkar (2002) with treatment of amitraj in demodectic dogs. In Gr.III, with herbal therapy, the mean level also increased.

The serum albumin level decreased significantly (P<0.01) in demodectic dogs as also observed by Gupta et al., (2001) and Bera (1998), but following treatment at the end of the experiment, it became normal which was also observed by Sarkar (2002). However the mean serum globulin level was noted slightly elevated in demodectic dogs than the healthy dogs as also recorded by Dimri (1995) and Sarkar (2002), but became normal following treatment in both Gr.II and Gr. III.

There was significant (P<0.01) decrease of A:G ratio in the demodectic dogs in comparison to the healthy dogs and corroborated with the findings of Bera (1998) and Gupta et al., (2001), but following treatment in Gr.II, the value became normal and resembles with the observations of Sarkar (2002). It became normal in Gr. III also with herbal therapy.

Soclam et al., (1997) opined that the use of ivermectin, the ectoparacidal agent alone is 50% effective against D.Canis given S/Cly but when used in combination with amitraj locally and also with antibiotics is 100% effective. The Petben shampoo used in this study, contains benzoyl peroxide has a powerful follicular flushing activity, removes the scales, glandular secretions, crusts and tissue debris and thus it helps for better penetration of amitraj into the target tissues containing mites.

Therefore the gradual improvements of skin lesions as well as haematological and biochemical parameters in Gr.II, were due to synergistic effects of Mectin injection, Ridd lotion and Petben shampoo.

Similarly in Gr.III, there was also marked improvements in clinical signs as well as in haematobiochemical parameters with herbal therapy of Zerokeet lotion, Charmaid capsules and Newcharm ointment in the demodectic infected dogs.

Chhabra and Saxena (1998) recorded the effectiveness of Zerokeet in canine demodicosis and opined that the phytherapeutic constituents of Zerokeet act in synergism and enhances the insecticidal and repellent activities. They also opined, the herbal ingredients stops the growth, inhibits the reproduction of mites, stop development of eggs and sterilizes the adults.

Charmaid capsule contain Curcuma longa is very useful in scabies (Kirtikar and Basu 1996), Allium sativum has antiseptic effect (Anjria et al., 2002). Sharma and Paul (2002) opined Charmaid has an antimicrobial, anti inflammatory and antipruritic actions in skin infections and it helps in prompt healing. Besides the Newcharm ointment used in this study has the antimicrobial, antiparasitic and miticidal actions against the skin parasites as opined by Sharma and Paul (2002). Therefore the combined use of these three herbal preparations were found useful in healing of skin infections of demodicosis in
dogs as well as useful in haematobiochemical improvements in demodectic dogs of Gr.III.

References


