

PARASITIC INFECTION OF SHEEP AND GOATS IN QUETTA AND KALAT AREAS OF BALOCHISTAN

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ABSTRACT

Per-rectal faecal samples from sheep and goats were collected from Quetta and Kalat (Kovak and Zarchi valleys) areas of Balochistan to assess the endoparasitism. The qualitative examination showed 87.7 (50/57) per cent prevalence of endoparasites. *Nematodirus spathiger* was the most prevalent species followed by *Trichuris globulosa*, *Marshallagia marshalli* and *Strongyloides papillosa*. A considerable segment of small ruminants in these areas has mixed infection. Average number of eggs per gram of faeces (EPG) ranged from 291-546. The infected animals were dull, depressed, weak and poor conditioned.

INTRODUCTION

Increased income and growing urbanization tend to increase the preference for food of higher quality and of animal origin such as meat, milk and eggs. In order to secure an adequate supply of animal products, the production has to be increased. Meeting this goal requires development programme which include a far greater uptake of improved technologies in a frame work of appropriate development policies. This seems to be not happening in Balochistan and new materials/technologies (diagnostics, vaccines, genetically resistant breeds, if any do exist) are not getting to the sheep/goats farmer's doors. Both endo and ecto-parasites are recognized as causing severe problems in Balochistan, inflicting heavy losses in the form of lack of thriftiness, retarded growth, anaemia and subsequent loss of milk, meat and wool production.

Production potential of livestock development programmes is plagued in tropical and sub-tropical areas as a result of prevalence of helminths cause countless deaths and insidious economic losses (Al-Qaisy *et al.*, 1987). The prevalence of gastrointestinal helminth parasites is related to the agro-climatic conditions like quantity and quality of pasture, temperature, humidity and grazing behaviour of the hosts (Pal and Qayyum, 1993). However, the incidence of nematodes in an area is directly related to the ability of the pre-parasitic stages of withstand the environmental conditions (Gupta *et al.*, 1987). The overall higher incidence of internal parasites in Quetta and Kalat area (Khan *et al.*, 1988a) could be attributed to lower immunity of hosts resulting from malnutrition

since the small ruminants in these areas, like other parts of Balochistan largely depend on grazing the deteriorated rangelands.

Limited information gathered in the past (Khan *et al.*, 1988b) is available regarding epidemiology of parasitic diseases in the Quetta and Kalat areas and this study was, therefore, conducted to document the available data and see any change in parasitic infection of small ruminants in these area over the last few years.

MATERIALS AND METHODS

Per-rectal faecal samples from 16 sheep and goats were carefully collected in polythene bags from a flock of 50 animals maintained at Animal Nutrition Research Unit (ANRU), Arid Zone Research Centre (AZRC), Quetta. Faecal samples were also collected from Zarchi (11 sheep) and Kovak (16 sheep and 14 goats) valleys in Kalat district.

The samples were scanned microscopically by adopting simple concentration method for qualitative examination. For quantitative examination, eggs per gram of faeces (EPG) method using McMaster counting technique (Soulsby, 1982) was employed.

RESULTS

The qualitative examination showed a 100 per cent prevalence in sheep and goats at Kovak and Zarchi, whereas 63 and 50 per cent prevalence in sheep and goats, respectively was observed for the Quetta site (Table 1). At Kovak and Zarchi, two parasitic species viz., *Nematodirus spathiger* (72.73%) and *Trichuris*

globulosa, (27.27%) were observed. *T. globulosa* (37.50%), *N. spathiger* (6.25%), *Strongyloides papillosa* (6.25%) and *Marshallagia marshalli* (6.25%) were noted at Quetta.

Table 1: Parasitic prevalence in sheep and goats in Quetta, Kovak and Zarchi areas of Balochistan.

	Source of fecal samples		
	AZRC, Quetta	Zarchi	Kovak
Total No. examined			
Sheep	8	11	16
Goat	8	-	14
No. infected			
Sheep	5	11	16
Goat	4	-	14
Percent infected			
Sheep	63	100	100
Goat	50	-	100

Average number of eggs per gram of faeces calculated, in the infected sheep and goats at Kovak were 546 and 425, respectively whereas this number for the sheep at Zarchi was 291. No difference among the two animal species within a site i.e., Kovak was noted. The sheep at Zarchi had lower ($P < 0.01$) EPG as compared to either of the two animal species at Kovak. The EPG at Quetta was negligible, therefore, not reported here. The animals at the Kovak and Zarchi sites looked weak, emaciated, dull, depressed, poor conditioned with stunted growth and prominent bone extremities.

DISCUSSION

Khan *et al.* (1988a) reported 100 per cent infection of sheep and goats in Kovak valley with endoparasites and *Nematodirus spathiger* was found to be the most prevalent (85.7%) nematode whereas, in the present study, prevalence of *N. spathiger* was 72.73 per cent at Kovak and Zarchi sites followed by *Trichuris globulosa* (27.27%). Whereas prevalence of *T. globulosa* at Quetta was comparatively higher (37.5%). Overall less parasitic infection at Quetta might be due to more regular deworming programme being applied at this Centre. *T. globulosa* prevalence is higher (27.27 and 37.5%) as compared to 3 and 8 per cent reported in the previous studies (Khan *et al.*, 1988a&b). This might be due to differential sensitivity of this parasite to a

particular anthelmintic drenched earlier. It is evident from this study that not much change has resulted in parasitic prevalence in the area over the last few years. A good discussion on the prevalence of sheep and goats gastrointestinal parasites in Pakistan including the four species encountered in this study has been given by Sarwar (1963), Siddiqui and Ashraf (1980), Durrani *et al.* (1981), Mohiuddin *et al.* (1984), Khan *et al.* (1988a&b), Marwat *et al.* (1988), Khan *et al.* (1989) and Pal and Qayyum (1993) with respect to their incidence under different environmental conditions in different parts of the country. Therefore, discussion is not focused much on this aspect of the study.

The EPG noted in this study seems quite low. These flocks had been a part of a nutritional management study previously, under which the animals were drenched with an anthelmintic a couple of times during the last few months. The existence of parasitic ova in spite of this treatment reflects that the control measures can not be restricted on target flocks only in an area if parasitic free animals are desired in a particular tract. Parasitic infection is one of the major small ruminant's health hazards leading to colossal economic losses in Balochistan and these losses are inflicted in the shape of lowered productivity, high morbidity and mortality. Martin (1983) also reported that in farm flocks, the most serious losses in sheep like other animals are often due to internal parasites. Parasitic burden of range-animals in an area can be attributed to a variety of factors like geo-climatic conditions, nutritional status, awareness/education of farmers and farm/livestock management practices. However, the forage availability from the rangelands and nutritional management seems to play a key role in this respect. The small ruminants in the area under discussion hardly get 45-50 per cent of their feeding requirements from grazing in poor years and 60-70 per cent requirements are met from rangelands even in good years under the present stocking rates (Rafique *et al.*, 1996). Therefore, it can be concluded that under nourishment is the main cause of parasitic prevalence in the area. Majority of the livestock farmers in the province migrate from temperate regions to the subtropical areas during winter in search of food, feed, fuelwood and labour (Ahmad, 1984) and this migration also leads to the spread of parasitic diseases making their control further difficult.

Improvement in nutritional management and deworming with a potent anthelmintic at least twice a year, and establishment of an Endo-parasitic Diagnostic Cell at least at a district level if not feasible at Tehsil level in these areas by the responsible government

departments with the collaboration of non-government organizations (NGOs) and other private agencies (pharmaceutical firms) is proposed. Furthermore, an educational program at a mass scale be initiated to inculcate awareness among sheep/goats farmers regarding damage being done by the parasites to the productivity of their animals. It can be of great help in elimination of endoparasites in these areas.

ACKNOWLEDGEMENTS

The financial support provided by the US-AID MART/AZR Project for the conduct of this research is acknowledged.

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