



Lice (*Haematopinus tuberculatus*) in water buffalo farms from central Italy

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An unidentified buffalo disease in Remote Mountains of Far West Nepal

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ABSTRACT: In the remote mountain districts of far west Nepal, an unidentified chronic debilitating disease has been recorded primarily in adult buffalo population since last 10-15 years. The disease locally known as “Khari disease” is characterized by weak, thin and porous hooves with chalky dust powder formation associated with general weakness, anorexia, dry and scaly skin with white patches, fatigue of brachial and major skeletal muscle. The symptoms are mostly evident in the lactating buffaloes particularly during dry winter months. The other symptoms are pruritus, emaciation, low production and dermal lesion above the hoof. The disease is recorded more in stall fed animal, which becomes lame and unable to walk. Although, accurate prevalence figures are unavailable, about 4-5% of the adult buffalo population is regarded to be affected with annual mortality of about 2% in clinically affected animals. Some therapeutic attempts with ivermectin injection and mineral supplementation have shown only temporary relief. This disease has seriously affected the livelihoods of farm families dependent heavily upon buffaloes. The disease has not been investigated properly so far, due to funding constraints, poor technical expertise, remoteness, inaccessibility and conflict situation and is in need of technical and financial support from the international community.

Key words: Buffalo, Chronic debilitation, Khari disease, Nepal.

INTRODUCTION - Livestock rearing is an important and integral component of mixed farming system in Nepal. Ruminant farm livestock species comprise of buffaloes, cattle, goats and sheep, of which buffaloes are the most important farm animal species contributing about 52% of livestock gross domestic production (APP, 1995) and provides about 70% milk and 65% meat production in the country. In the hills, about 58% of household keep buffaloes. Nepalese economy is primarily an agrarian economy with more than two third of country's population being dependent upon mixed agriculture for their livelihoods, and this dependency is even higher in rural areas. Buffaloes are the most important farm livestock species providing milk, meat, manure and farm power and an important source of cash income from the sale of milk and churned butter (*ghee*). These animals are reared along with other farm livestock species and are managed upon the crop residues and other farm produce. Thus, a complex and integrated farming system has evolved over the centuries, where the small holder crop livestock production system is interdependent upon each other and nothing is wasted in the system. In this complex farming system, buffaloes are the most preferred animal species due to their multi purpose use and high salvage value and are reared with highest possible care.

In the far west remote mountainous districts of the country, an unidentified chronic debilitating disease has been recorded since late nineties, which has now been seen in adult buffalo population of two districts, Baitadi and Darchula. The disease locally known as “*Khari*” which means “chalk powder” because of the formation of chalk like powder from the hooves of affected animals. The disease was initially confined to buffalo population mainly in the lactating animals, however, some recent report has also shown its presence in cattle population as well (Shrestha, *et al.*, 2005). Although, the actual prevalence figure have not been evaluated so far, it has been regarded that about one third of the adult buffalo population is affected by this problem in a total population of about 75000 heads, with high mortality in the affected animals (Singh *et al.*, 1996). However, the recent survey shows that the mortality in affected animals was about 0.35-2% of the affected cases (Nirmal *et al.*, 2000). The district clinical reports indicate that about 3-4000 animals are affected by this disease every year in these two districts. The disease was not found to be communicable even with close contact even within the same herd, yet the infected area is gradually expanding in the districts. There have been some attempts for symptomatic treatment of the ailing animals, which included treatment of skin lesion, incorporation of mineral mixture in the feed, however, the responses to these interventions are of temporary nature.

In the affected areas, as the livelihood of the farming community is primarily based on subsistence agriculture production, to which contribution from buffaloes is very significant, the chronic disease problem in buffaloes, creates a serious problem not only to the health and well being of animals and the overall household economy of the farm family but also a serious welfare issue for the affected animals and the caring individual. The present paper describes the disease situation of these animals and reports the responses of some therapeutic attempts against this problem so far.

MATERIAL AND METHODS - There has been some attempt to investigate this disease, though, the investigations are not very comprehensive. The sick animals were clinically examined by veterinarians and symptoms were recorded. Similarly, the skin scrapings and hoof samples were analysed for parasites and fungus and blood and serum samples from clinically ill and healthy normal animals from the same area were analysed for biochemical and haematological parameters and for blood parasites. Various therapeutic approaches were attempted to relieve the ailments of affected animals and their responses were recorded.

RESULTS AND CONCLUSIONS - Clinical symptoms: Clinical examination of sick animals showed general dermatitis, chronic wasting, abducted limbs and emergence of chalk like powder from the hooves of the sick buffaloes leading to recumbency, lameness and reluctance of affected animals to move. The disease is primarily confined to lactating animals managed under stall fed management. The affected animals show unthriftiness, partial anorexia, emaciation, and almost cease to produce milk. There is swelling of the joints, lameness and stiffness and animal tries to avoid weight on the affected legs. More than one foot is commonly affected, with thin sole and exposure of sensitive parts of hoof with the formation of chalky powder from the sole of the hoof. There is however, no febrile reaction and some animal recover naturally in the next rainy season. Nirmal *et al.*, (2000) recorded number of cases treated by veterinary hospitals and service centres of the two districts dur-

ing different seasons (Table 1), which shows that the number of cases increased during the autumn and winter months (October-May), and decreased during wet rainy season (June-September), yet with high case fatality rate in rainy season.

Table 1. Khari disease infected buffaloes between June 1996 and December 1998.

Period	Number of cases	Animals died	Case fatality %
June-September	342	7	2.04
October-January	3067	9	0.29
February -May	1756	12	0.68

This data however, does not include all infected animals in these districts because not all infected animals are being attended by the clinicians in the remote and inaccessible villages of the districts, yet it gives an indication of seasonality of clinical symptoms shown by animals.

Laboratory examination of skin samples showed the presence of *Psoroptes* and *Sarcoptes* mites and hoof powder cultured on selective media showed no bacterial growth but some fungus species of *Candida* and *Blastomyces* species (Shrestha *et al.*, 2005). The haematological and biochemical parameters of clinically ill and healthy buffaloes from the same locality did not show any characteristic differences between clinically ill and normal animals except high eosinophil percent and low phosphorus level in sick animals (Singh *et al.*, 1996).

Therapeutic response to ivermectin injection at 200 mcg/kg body weight and mineral supplementation showed some improvement in body condition and skin lesions of the animals but some of these animals again developed the disease condition during coming winter months.

Considering the importance of buffaloes in the small holder farming system and livelihoods of the farm families of these hill districts, chronic ailment of buffaloes without any therapeutic and preventive approach is a serious cause of concern not only for the overall health and well being of the affected animals but also a serious welfare issue of the important farm animal. The symptomatic therapeutic intervention so far has provided only temporary relief to the situation and no strategy could be developed so far for the control and prevention of this ailment on a permanent basis. It is thus important to study this complex problem in a more systematic and comprehensive manner, which could provide a permanent solution to this problem. Nepalese society is gradually recovering from the trauma of a decade long conflict in the country and is in need of economic and technical support from the international community to improve the socioeconomic condition of the nation. Proper study on this unidentified disease problem of buffaloes would also need some support from the international community to identify its causative agents/factors and to develop the appropriate prevention/control strategy against this complex disease condition, which will ultimately contribute not only to health and welfare of the most important farm livestock but also to the overall livelihoods of the farm families dependent upon these animals.

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