RESEARCH NOTE

Reproductive Disorders and Seroprevalence of Brucellosis in Yak

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ABSTRACT

A study on reproductive disorders among yaks in Mustang and Solukhumbu districts and seroprevalence of brucellosis among yaks in Mustang and Myagdi districts was conducted. Eleven farmers having 383 female and 72 male yaks in Mustang and 129 female and 27 male yaks in Solukhumbu districts were taken by purposive random sampling for the study on reproductive disorders. Likewise Sixty- seven serum samples were also collected from adult female yaks having history of abortion and retained placenta, and from male yaks used for breeding purpose from Mustang and Myagdi districts. An average of 12.63% of female yaks aborted, 7.26% had had retention of placenta and 6.6% repeat breeders in Mustang district. Similarly, 6.3% had abortion, 2.09% retained placenta and 6.5% repeat breeders in Solukhumbu district. However, all the 67 serum samples examined were found negative to the *Brucella abortu*s antibody on ELISA test suggesting that the yak population was free from brucellosis in these areas. Thus abortion and retention of placenta in Yak in Mustang district may not be due to brucellosis. A detail study should be done to find the specific cause of abortion and repeat breeding to recommend preventive and control measures.

KEY WORDS: ***BRUCELLA ABORTUS*, BRUCELLOSIS, REPRODUCTIVE DISORDERS, SEROPREVALENCE, YAK**

INTRODUCTION

Yaks are important high altitude dwelling animals of Nepal. They are hardy and strong, can thrive well under very cold (-50°C) climatic condition (Cheng 1984). It has a high economic value as pack animal, source of milk, meat and fiber in Himalayan region of Nepal. Unfortunately the population of yak is decreasing every year. Various reproductive problems may also be one of the reasons for the decline in population. Brucellosis is one of the important reproductive diseases of cattle, buffalo, sheep and goats, pig and horses caused by infection with *Brucella* spp. and characterized by abortion in the second half of pregnancy and a subsequent high rate of infertility in the female and varying degrees of sterility in male (Radostits et al 1994). It is a zoonotic disease and also causes economic losses to the animal industry (WHO 1971). This disease has been incriminated in various species of animals in Nepal such as cattle, sheep, goat, buffalo, yak, nak and chauri (Pyakurel and Mishra 1977). AHRD (1991) detected brucellosis serologically in cow, buffalo, goat, sheep and pig in Nepal. This disease is regarded as one of the occupational and public health hazards for veterinarians, animal attendants, dairy- man, slaughter- house workers, butchers and meat sellers. AHRD (1998) serologically detected 1.52 percent brucellosis in cattle. Pradhan (1996) found 3.37% brucella antibody positive in Chitwan. Khanal (1996) reported 4.62% abortion in cross-bred cattle of Kathmandu valley. In a study AHRD (1997) found 4.72% abortion and 9.26% repeat breeding in cattle and 2.07% abortion and 0.37% repeat breeding in buffalo. Thus this study was conducted to find the reproductive problems in general and to investigate if brucellosis is the cause of the problem in yak.

MATERIALS AND METHODS

Eleven farmers having a total of 72 male and 383 female yaks in Mustang district and eight farmers having a total of 27 male and 129 female yaks in Solukhumbu districts were interviewed individually for obtaining information on reproductive problems observed and felt by them.

Likewise a total of 67 serum samples from adult female, having history of abortion and retained placenta, and male yak used for breeding were collected from Mustang and adjacent places of Myagdi districts. Blood samples were collected from the jugular vein using a plain vacutainer. The serum was separated and collected in a sterile serum vial. The serum samples were given identification number and transported in ice to Animal Health Research Division, Kathmandu for examination. The serum samples were kept at –20°C until examination. The samples were examined using Enzyme Linked Immunosorbant Assay (ELISA) technique. Brucellisa –800 kit was obtained from Central Veterinary Laboratory (CVL), UK, for the detection of antibodies to *Brucella abortus*.

RESULTS AND DISCUSSION

Based on information obtained from the farmers 12.63% of pregnant female yaks had abortion, 7.26% had retention of placenta and 6.6% had repeat breeding in Mustang district. Likewise 6.3% of pregnant female yaks had abortion, 2.09% had retention of placenta and 8.65% had repeat breeding in Solukhumbu district (Table 1). The number of repeating time on an average was found 1.7 times in Mustang and 2.25 times in Solukhumbu districts.

Table 1. Reproductive disorders of Yak

Disorder	Percent disorder in Mustang/Myagdi	Percent disorder in Solukhumbu
Abortion	12.63	6.30
Retention of placenta	7.26	2.09
Repeat breeding	6.60	8.65
Brocelosis	0	not done

Fifty four percent of female came into estrus within 3 months of parturition and 46% came into estrus 3-12 months post calving in Mustang district. In Solukhumbu district, approximately 31.25% of yak came into estrus within 3 months after parturition and 68.75% came into estrus 3-12 months post calving. The reason of such variation between two districts was not known. The postpartum oestrus period in yak cows varies from 60 to 125 days and it has been reported to be influenced by a variety of factors including age, parity, nutritive environment and season of calving (Sarbagishev et al 1989). In India, Nivsarkar et al (1997) reported that the interval between calving and post partum estrus in yak cows varies from 85-120 days. However, in present study 46% yak cows in Mustang and 68.75% yak cows in Solukhumbu came into postpartum estrus longer than normal time suggesting problem of infertility in yak cows in these districts. No further studies on identifying the specific cause for reproductive problems were undertaken except serological examination for brucellosis. However, attempt was made to relate the cause for abortion and retention of placenta with respect to management practices. Transmigration temperature stress of yaks in lower river belt seems to be one of the influencing factors for abortion and retained placenta. According to the farmers, in Mustang district, the more- longer period the pregnant animal comes down to river belt from their normal high altitude pasture the cases of abortion are more. Under controlled heat stress, several studies have showed that progesterone concentrations were reduced during the luteal phase (Stott and Wiersma 1973, Rao and Pandey 1982, Bahga and Gangwar 1988) which is necessary for the maintenance of pregnancy. Nutritional deficiency, especially, mineral deficiency may also be one of the reasons for repeat breeding as none of the farmers were using mineral mixture in the feed.

All the 67 serum samples subjected to ELISA test in this study were found negative to the *Brucella abortus* antibody. Paykurel and Mishra (1977) have reported 16.66% and 8.33% of brucellosis in yak, nak and chauri in Jumla by plate test and tube test respectively. In Maiwa yaks the incidence was reported to be 12.6% (Yaun 1979 as cited by Nivsarkar et al 1997). Pan and Labaduoji (1984 as cited by Nivsarkar et al 1997) collected 59 *Brucella* isolates from aborted foetuses of yaks, sheep and goats in various parts of Tibet and China. This disease has been incriminated in various species of animals in Nepal such as cattle, sheep, goat, buffalo, yak, nak and chauri (Pyakurel and Mishra 1977). AHRD (1991) detected brucellosis serologically in cow, buffalo, goat, sheep and pig in Nepal. AHRD (1998) serologically detected 1.52 percent brucellosis in cattle. Pradhan (1996) found 3.37% brucella antibody positive in Chitwan. Khanal (1996) reported 4.62% abortion in cross- bred

cattle of Kathmandu valley. In a study AHRD (1997) found 4.72% abortion and 9.26% repeat breeding in cattle and 2.07% abortion and 0.37% repeat breeding in buffalo. The result of this study indicates that brucellosis does not appear as cause of abortion and retention of placenta among female yaks in Mustang district. It may be due to other causes such as temperature stress, nutritional deficiency or other bacterial diseases such as Campylobactor, however, this investigation was beyond the scope of the present study.

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