

The impact of *Neospora caninum* seropositivity in the fertility and in the abortion rates in sheep during consecutive pregnancies

Neospora caninum is a protozoan parasite, which is considered the main cause of abortions in cattle worldwide. The involvement of *N. caninum* in abortions in sheep is not entirely clear. Several scientific works have proven that there is a relationship between infection with *N. caninum* and a decrease in conception/abortions in sheep. In infected farms in Israel, low and/or decreased fertility was found associated with sheep neosporosis. In addition to this, a high prevalence of antibodies was found in infected sheep farms, among pregnant and aborting ewes. The lack of clarity regarding the effect of the parasite in the herd, together with different types of management in Israel, raises the question regarding the involvement of *N. caninum* in the decrease of fertility indices in Israeli herds. Since the etiology of infertility is normally multifactorial, the possibility that other factors are involved cannot be ruled out. In this study, we performed serological (IFAT) and clinical follow-up on lambs from 4 intensive farms in Israel, with the aim of testing the effect of carriers of *N. caninum* on fertility rates in consecutive pregnancies. Ewes were sampled at the beginning and end of the first pregnancy as well as at the end of the second and third pregnancy. The results of the study show widespread antibody findings to *Neospora caninum* in all farms. The seropositivity of *Neospora* in lambs in the different farms varies between 24% and 93%. This prevalence gradually increased in all farms until the end of the third pregnancy from an overall prevalence of 50% at the beginning of the first pregnancy to 96.6% at the end of the third pregnancy. Horizontal infection was observed in all farms with serological reversal in 56 and 59% of the negative sheep in the first and second pregnancy. Comparing negative ewes to ewes with a *Neospora* titer of 1:50 or more, the abortion rate was lower ($P=0.004$) in positive ewes in the first pregnancy. In subsequent pregnancies, the abortion rate was higher in positive sheep, but not statistically significantly. Seropositivity and seroconversion during pregnancy were not found to be associated to the abortion rate. *Neospora* exposure/infection was not found to be associated with subsequent abortions, but many of the ewes that aborted were removed from the flock. In conclusion, there is no doubt that the parasite *N. caninum* is endemic in Israel. The effect of being infected with the parasite varies between pregnancies and between different farms and it is possible that the clinical effect depends more on the management breeding and general condition of the herd than in the serostatus of the ewe.