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EPIDEMIOLOGY OF EPIZOOTIC RABBIT ENTEROCOLITIS IN RABBITS RAISED WITHOUT CHEMICAL TREATMENTS

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ABSTRACT

Weekly mortality from *epizootic rabbit enterocolitis* was recorded in a small rabbit unit. Since it was producing organic meat, no pharmacological treatment was introduced notwithstanding the observed high mortality. Weekly mortality was registered and unbiased trends were thus obtained. Cumulative mortality ranged from 29% to 56%. A typical curve of cumulative mortality was described (y= 9.1 + 15.92 ln x; where *y* is the cumulative value and *x* the week after weaning). A seasonal influence ($P<0.05$ in comparison to spring), was considered as possible. In a small commercial farm rabbits were protected with antibiotics till the beginning of the fourth week after weaning. Cumulative mortality after suspension of the treatment showed a trend similar to the one previously observed, but range was only from 4% to 31%. The possible effect of season was confirmed ($P<0.001$). Summer appears as a season less favourable to diffusion and/or pathogenicity of the sickness.

INTRODUCTION

Antibiotics are nowadays utilised as an unavoidable mean to control the new disease called "epizootic rabbit enterocolitis" (ERE) that developed since the end of 1996. Nevertheless results are not concordant and sometimes are even negative (LEBAS AND COUDERT, 1998; RAFEL, 1998; CERRONE et al., 1999; CHICO, 1999). Main symptom is bloat, related with cecal paresis, followed by high mortality rates (COUDERT, 1998; LEBAS et al., 1999; LICOIS AND COUDERT, 1999). Data from literature are referred to industrial units under pharmacological control. As a consequence it was considered useful to report records from a small unit raising rabbits free from any medical treatment to produce organic meat. When the virus infection first appeared in the unit, in late 1997, it was decided not to introduce any therapy, hoping the epidemic would pass by or some vaccine should be prepared. At the end of 1998, persisting the sickness, it was decided to record analytical data. They should indicate the "natural" evolution of the sickness, offering some consideration when records are compared with data from industrial units.

MATERIAL AND METHODS

The unit is composed by 35 does kept in open-air cages. Litters, weaned at 33 days, are moved to a small building naturally ventilated. In the ambient, animal density was very low (live weight kg 2.1/m^2) and windows are permanently opened. A pelleted not medicated feed 16% protein, 15% fibre and 2500 kcal DE/kg is utilised both in reproduction and growing section.

A small farm (60 does) was also considered. General conditions were the same, but fattening was in the open air. To reduce the heavy losses by ERE, the farm was obliged to adopt a medicated feed after weaning (tiamuline: 60mg/kg; apramicyn: 70mg/kg). This was administered until the beginning of the fourth week.

Weekly mortality of any weaned litter was registered separately to get a better recording of the evolution of the epidemic. The aim was to utilise the records to try to identify some factor correlated with the pathology. Anyway data should be a useful reference when field observation have to be evaluated.

RESULTS AND DISCUSSION

In figure 1 the monthly curves of cumulative mortality are shown. A quick increase was observed in the second week after weaning, as constantly reported by field technicians in Italy. Mortality was losing intensity in the third week and later on it showed a clear tendency to reach a plateau. The general trend can be significantly expressed by the logarithmic curve: $y = 9.1 + 15.92 \ln x$ ($R^2 = 0.94$).

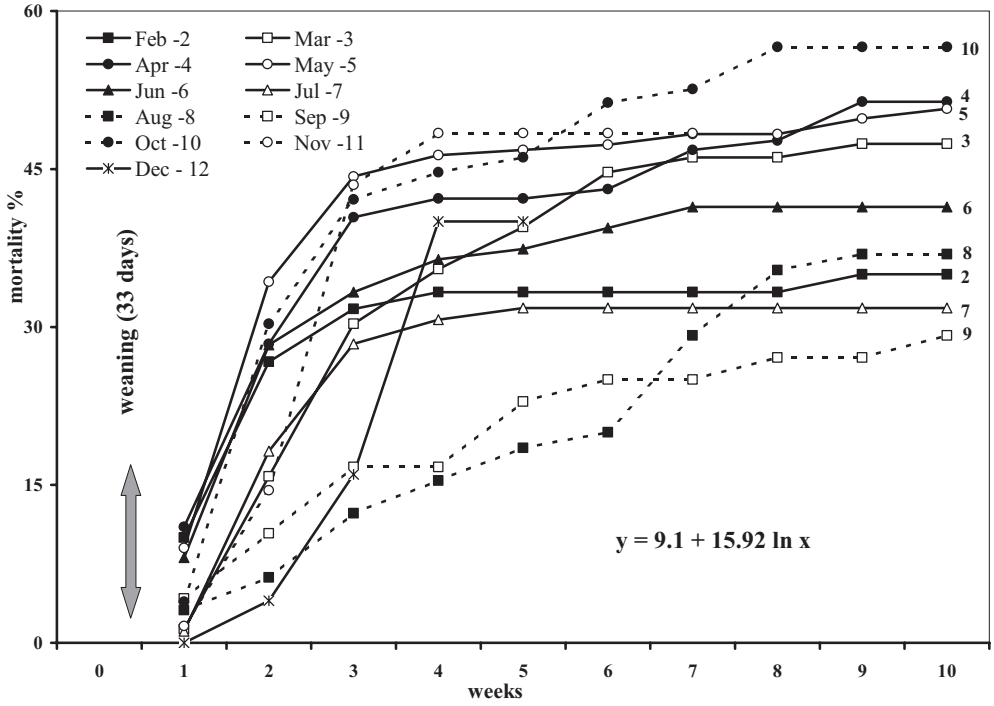

Figure 1. Cumulative mortality related to weaning month in not pharmacologically treated rabbits.

Variability was rather high and not always the trend was the same. Sometimes, for instance in the months 8 and 9, cumulative mortality grew more slightly, reaching final values among the lower observed. At slaughter time, total observed mortality ranged widely between 29.2% and 56.6%. These values are mainly higher but intersect with the percentages >25-30%, observed in industrial units pharmacologically protected (LEBAS et al., 1999; LICOIS AND COUDERT, 1999). They are, as a mean, comparable with records (40-43%) observed from weaning to slaughter time in growing rabbits kept as a control in experimental conditions (DUPERRAY, 1999). Anyhow the observed data are lower than values (60-80%) recorded at the origin of the ERE blow-out (COUDERT, 1998).

Mortality began immediately after displacing the animals, showing that rabbits arrive yet infected from the mother cage. Considering that weaning was delayed for 5 days, in comparison with industrial management (33 vs. 28 days), data indicate that the pathology is not depending on the age of the animals. Clinical symptoms appear after leaving the mother,

which is able to contaminate the litter while developing a certain degree of immunity (COUDERT, 1998). This is showing that there is a lag between the passive immunity offered by the mother milk and the developing of an active immunity that tends to be reached in the fourth week after weaning, when curves stabilise.
Weekly mortality is shown in figure 2. The pick in the second week after weaning ranged from 3 to 30%.

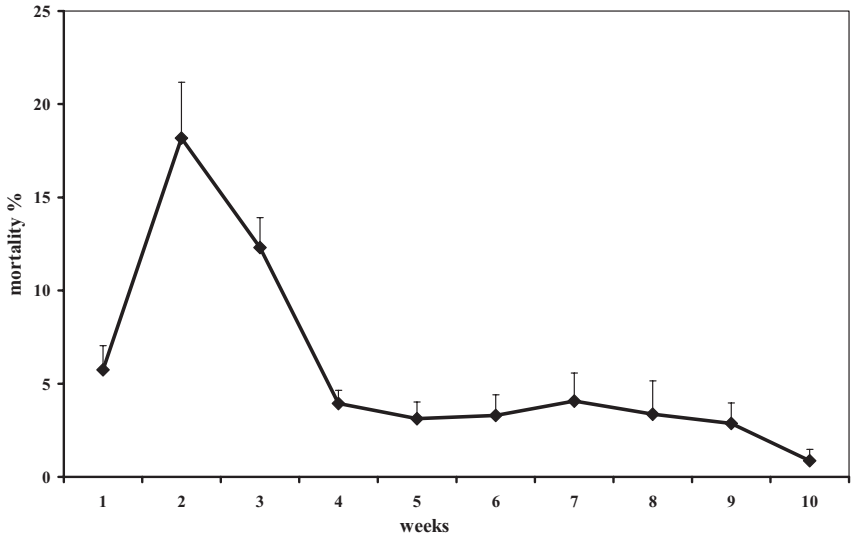

Figure 2. Weekly mortality from weaning (mean and SEM), in not pharmacologically treated rabbits.

The pathology appears as having constant traits. It had neither a tendency to a spontaneous remission nor to a cyclic evolution. Looking to figure 1, it was observed only a possible seasonal influence. In figure 3 spring and summer mortality are reported. Differences were significant ($P<0.05$), thus indicating that there is a possible seasonal effect. In spring the mean of maxima temperatures was 19.0°C, while in summer it was 30.2°C. That is an ambient temperature relatively high. Apparently, while it is already stressing for rabbits (FINZI, 1990), it is probably also unfavourable to diffusion and pathological action of the enterocolitis agent. No references have been found in literature at this purpose.

Data from the commercial farm showed a good protection due to antibiotics, followed by a quick increase of mortality (fig. 4). Increasing of mortality after suspension of antibiotic treatments is well known and still unexplained (LEBAS et al., 1999; LICOIS et al:, 1999). The trend of cumulative mortality, though dilated, was similar to the one observed in the not protected unit. But the intensity was lower and cumulative mortality ranged from 4.3% (August) to 31.6% (January). Also in this case a seasonal effect seems possible. When data were elaborated as in figure 3, a lower incidence of the sickness in summer was again observed (fig.5). The difference was significant ($P<0.001$) thus confirming that summer climatic conditions are less favourable to the spreading of the sickness or, at least, that some other unidentified factor was acting in the area in coincidence with summertime.

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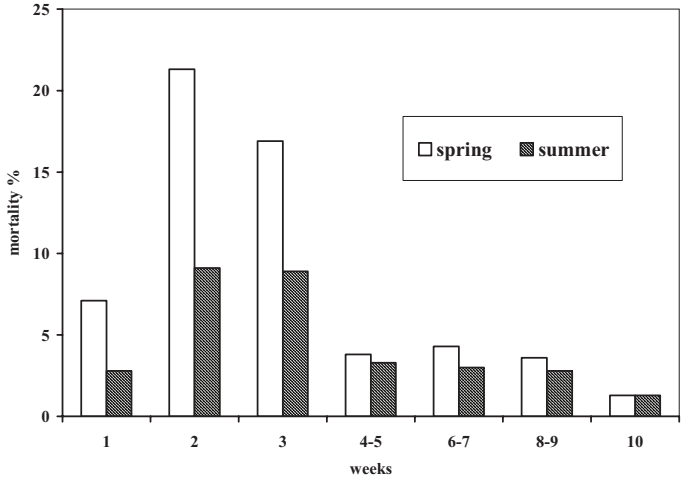

Figure 3. Spring and summer weekly mortality from weaning in not pharmacologically treated rabbits.

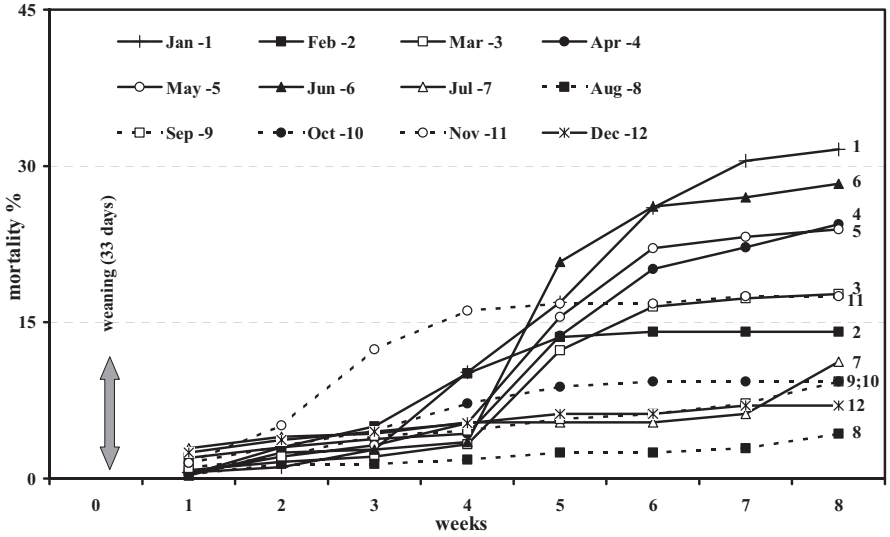

Figure 4. Cumulative mortality related to weaning month in rabbits protected with antibiotics till the beginning of the fourth week.

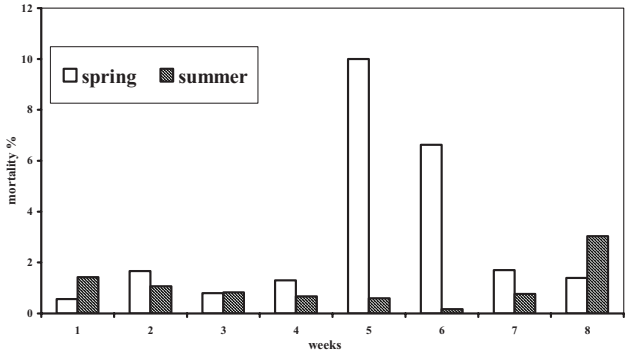

Figure 5. Spring and summer weekly mortality from weaning, in rabbits protected with antibiotics till the beginning of the forth week.

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