Epidemiological Investigations on Bovine Neonatal Pancytopenia in Young Calves

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Introduction

Since 2006 an increased incidence of haemorrhagic diathesis in young calves has been observed in Germany and other European countries (Belgium, France, Hungary, Italy, Ireland, the Netherlands, Spain, UK), while it was never observed in Austria, Switzerland, or Denmark. The exact cause of the disease is still unknown. Some calves are noticed by their spontaneous bleedings of the skin or blood in the faeces, while others are treated due to neonatal disorders or disturbance of the general condition. Despite blood transfusions, most affected calves die or have to be euthanised.

Material and Methods

The Clinic for Ruminants has been involved in the research on BNP since 2007, and many cases have been presented to the clinic. From other animals blood samples were sent by the local veterinarians to the clinic if they had the suspicion of BNP. Post-mortem reports of some of these animals were also sent to the clinic.

Information on the animal and the farm of origin was asked via telephone and recorded on a questionnaire. Analysis of blood values is undertaken.

The diagnosis Bovine Neonatal Pancytopenia was based on following criteria:

- Multiple haemorrhages (blood in the faeces, skin bleedings, petechiae) (fig. 1 and fig.2)
- Age up to 4 weeks
- Thrombocytopenia (< 200 000/µ) and leucocytopenia (< 4000/µl)
- No indications of septicaemia
- Bone marrow depletion (Panmyelophthisis)

Figure 1: Skin bleeding of a BNP calf

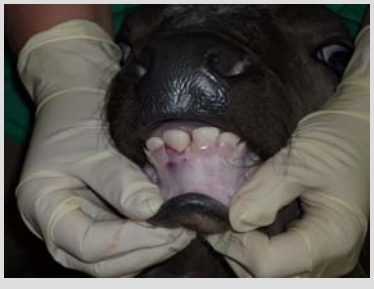

Figure 2: Petechiae in the mucosa

In a further study, a one-page questionnaire was mailed to all large animal veterinary practices in Bavaria (about 1000) in July, 2009, and July, 2010. Veterinarians were asked to state if they had observed the diseases in their practice and if so, at what time and in how many farms. The addresses of the veterinarians were provided by the Bavarian veterinary chamber. The questionnaire was also published in the German Veterinary Journal ('Deutsches Tierärzteblatt').

Discussion and Conclusion

Although the animals were presented on average at the age of 14 days, it has to be assumed that the disease has been present for some time prior to that already.

The number of affected calves per farm is most likely severely underreported, as not all cases are identified or confirmed, as there are most likely also subclinical cases, and due to the bad prognosis for affected calves new cases might not be reported again.

The link with a particular BVDV vaccine is getting stronger, although the exact mechanism is still unknown. However, this vaccine has been withdrawn from the markets in Europe in June, 2010.

Results

Up to the beginning of March 2011 in total 459 confirmed cases of BNP of 284 different farms were reported to the clinic of ruminants.

The gender of 308 calves was known, whereby 46% were male and 54% female.

Affected calves were between 2 and 28 days old, on average14 days (fig. 3).

Several breeds were affected; most cases were of German Simmental (72%) followed by Holstein Friesians with 15%. However, Red Holsteins, Brown Swiss and cross breeds were also affected.

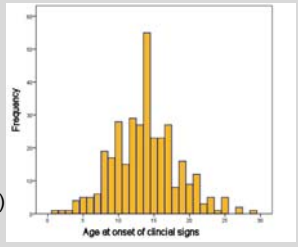

Figure 3: Age of affected calves

There is great variation in the number of calves being affected between farms – mostly only individual cases are reported, but in some farms up to 20% of their calves are affected. Also, numerous cows are reported, that have had affected calves for several consecutive years (up to four affected calves).

The date when the BNP cases were reported is shown in figure 4.

There is increasing evidence that the vaccination against BVDV is linked to the disease – the dams of 440 of 459 affected calves were vaccinated with one particular BVDV-vaccine.

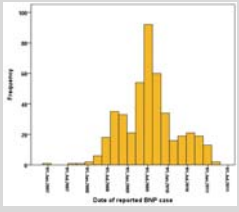

Figure 4: Date of BNP cases

In the questionnaire survey of large animal practices, in total 419 veterinary practices (that were servicing cattle farms) responded to the questionnaire in 2009, while it were only 199 in 2010. In 2009 87 (20.8%) veterinarians stated, that they have observed the disease on the farms of their clients.

Of 349 veterinary practices, the zip code was stated, of which 305 were in Bavaria. The regional distribution of these practices is shown in figure 5.
No regional clustering could be detected.

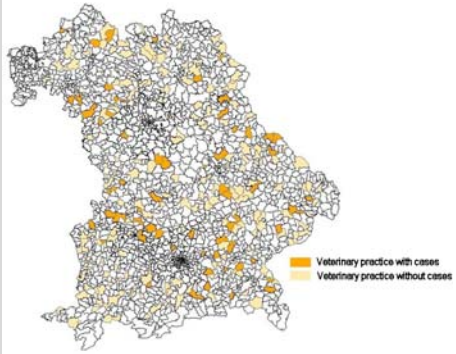

Figure 5: Geographical distribution of practices with and without BNP cases

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