Like mother, like (grand)daughter

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HISTORY AND BACKGROUND

A call from a small hobby beef farmer was received on our veterinary practice. The oldest of his four cows suffered from progressive diarrhea. The appetite decreased slowly while the diarrhea increased in the last two weeks. Only his oldest cow (7 years old) had clinical signs at this moment.
The farmer keeps his cattle as a hobby and for grazing his pastures during summertime. The farm is extensive and consists of two adult blonde'd Aquitaine cows, one 6 months old calf (3 generations) and a Norman cow. The 'granny' blonde 'd Aquitaine has been purchased as 2 year old cow. The 'mommy' and calf are both born on the farm. The farm had a history of *Mycobacterium paratuberculosis* before the 'granny' arrived on the farm. The farm did not participate in health programs for infectious diseases.

CLINICAL DESCRIPTION AND DIFFERENTIAL DIAGNOSIS

The 'granny' was in poor condition and had watery diarrhea, but was alert and clinical examination showed just minor abnormalities. The temperature was 37,9°C and the borborygmi were watery. The diarrhoea was watery without blood or mucus. The problem definition: 'A 7 year old Blonde 'd Aquitaine cow with watery diarrhoea without blood or mucus and without fever.' The differential diagnosis and pros (+) and cons (-);
Infectious: (1) *M. paratuberculosis*: +age, clinical signs, + farm history of *M. paratuberculosis*; (2) *Winter dysentery*: + clinical signs, - only one animal with clinical signs, progressive since more than 2 weeks; (3) *Bovine Virus Diarrhoea /Mucosal Disease*: - cow has no fever (acute infection), - other cows no clinical signs, - old for a PI, no mucosal disorders, healthy daughter and granddaughter; (4) *Salmonella spp*.: - cow has no fever, no blood or mucus in diarrhoea; (5) *Clostridium spp*.: - slowly increasing clinical signs; (6) *Malignant Catarrhal Fever*: - cow has no fever and not the typical clinical signs of Malignant Catarrhal Fever; (7) *Parasite infections*: - only oldest cow with clinical signs; (8) *Enteromycosis*: - not common, no provocative treatments; Non-infectious : (9) *Intoxication* (plants like horsetail, senecio spp.); + clinical signs, extensive pasture contains some weeds, - only one animal with clinical signs, clinical signs started in the stable; (10) *Copper or Cobalt deficiency*: + clinical signs, but no pale mucous membrane.

ANCILLARY TESTS AND DIAGNOSTICS

At first, a blood antibody ELISA for *M. paratuberculosis* was performed in the laboratory. The cow was treated with Buscopan Compositum® and Fytostop® powder. Surprisingly, the antibody ELISA for Johne's disease was negative and the cow was still sick. To differentiate we decided to do a blood screening on inflammatory cells, blood protein, haptoglobulin and liver enzymes. To exclude BVD the serum was checked for BVD-virus and antibodies. At the same time we performed a McMaster on faeces for excluding parasites and cultured the faeces on a BGA-plate for Salmonella in the laboratory of our veterinary practice. The faeces sampling did not show any parasites. The culture for Salmonella remained negative. Waiting for the blood test result, the farmer called in a worry. The cow was getting weaker and her only calf (granddaughter of the sick cow) had watery diarrhoea since one day. Was the cause an infectious disease or was an unknown risk factor affecting the whole farm?

Clinical signs of the 6-month-old calf were the same as for the adult cow. We started oral fluid therapy awaiting for the lab results of the cow. First, the outcome of the general blood examination came in and showed just minor abnormalities. A mild lymphocytopenia and leukocytopenia and a slightly increased LDH and haptoglobulin did not give a definite answer, but increased the possibility of BVD. 'Thankfully' the next laboratory result was clear: BVD virus positive

FINAL DIAGNOSTICS AND CONTROL ACTIONS

The BVD virus ELISA positive blood sample was a shock for the farmer. Especially because we expected the granny was a PI (persisted infected) cow, the daughter and granddaughter were also probably PI's. Blood samples of the three cows and one calf were (re)tested for BVD. The result was not truly surprising, but it was confrontational. 'Granny', 'mommy' and the calf tested BVD virus positive, while the Norman cow only had antibodies against the BVD virus. Three generations persistent BVDV infected animals, unbelievable but true!

FOLLOW-UP, CONCLUSION AND DISCUSSION

The 'granny' was tested BVD virus positive with an interval of 3 weeks to exclude an acute virus infection. Unfortunately the 'granny' had to be euthanized for welfare reasons. The 'mommy' and 'calf' are fattened for slaughter.