Long-bone disease in Scotland

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13.6.18

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Background

- Cases reported from 1980 in Scotland
- Distinct, recurrent, congenital anomaly
- Disproportionate dwarfism with deformity of the head, limbs, joints (and lower jaw)
- Variation in severity of affected calves
- Similar problem reported in Australia, Canada, Ireland, France

Calf presentation

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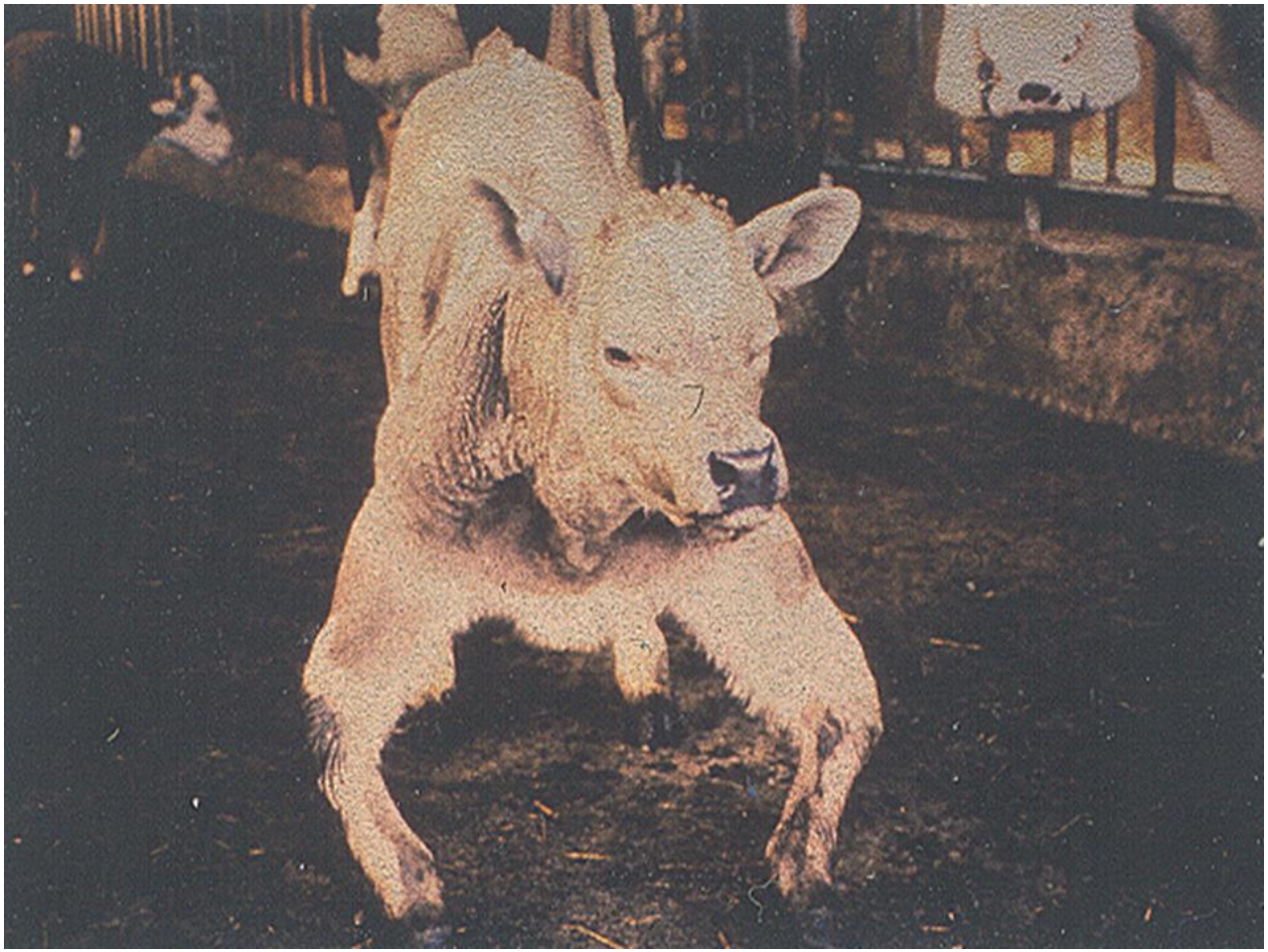

Cases in Scotland

- Practioner survey in 1992 identified more than 150 affected Scottish herds
- Small numbers of cases are diagnosed each year by SAC surveillance centres
- Concern that many / most cases go unreported by the farmer or practicing vet

Recent Scottish High Incidence Cases

Case 1 - 2006: 48 cows and 4 heifers calved spring 2006. Limb deformities were noticed at birth in 80% (38) of the calves born to cows. Calves born to heifers were unaffected. Beyond this there was no link between the age, breed, BCS of the cows and the birth of affected calves. Two CJLD calves had been born in spring 2004.

Case 2 - 2017 – 70 to the bull; 18 empty; 15 cases of longbone; all the affected calves were from heifers – bought in heifers from various sources. 2018 – Rotated bulls; three bulls; 88 cows to the bull; 23 empty; 13 cases of longbone (8 destroyed); across 1st, 2nd and third calvers

Case 3 - 2018: Submission of two calves from a herd of 28 breeding cows and 13 heifers calving for the first time. The cows have calved without incident. Ten of the 13 heifers have now calved, with all of the calves affected by abnormal limb formation and joint laxity. There is a spectrum of severity, with some of the older calves having very mild changes only, and the more recently born calves being more severe.

Cause

- The cause of this disease remains **unknown**
- Different causes in different herds possible
- Potential causes include:
  - Inherited or sporadic genetic defect
  - Toxin exposure (3rd – 6th month gestation)
  - Nutritional deficit (3rd – 6th month gestation)
  - Infectious disease

Risk factors

- Risk factors are **not** causes but the following practices have been associated with the disease:
  - Spring born calves
  - Feeding all silage ration in mid-gestation
  - Drought during mid-gestation
  - Dietary manganese deficiency
  - Dietary zinc deficiency
  - Poor diet quality generally
  - No grain in ration

Investigation

- Confirm diagnosis
- Check dam and herd history
- Ration analysis
- (Dam and calf trace mineral analysis)

Advice

- All advice should be given with the understanding that we have an incomplete understanding of the disease
- Generic advice given includes:
  - Replace 30% DM of the ration with non-ensiled feedstuff (months 3-6 of gestation)
  - Feed a mixed ration with some grain
  - Supplement all minerals adequately (to NRC guidelines) during pregnancy
  - Consider high manganese supplementation (1g/head/day)

References

- Gunn et. al. Congenital chondrodystrophy of calves in Scotland (BCVA, 1996)
- White and Windsor. Congenital chondrodystrophy of unknown origin in beef herds (TVJ, 2012)
- Dittmer and Thompson. Approach to investigating congenital skeletal abnormalities in livestock (Vet Path, 2015)
- Cave et.al. An extended outbreak of congenital chondrodysplasia in calves in South East Australia (AVJ, 2008)
- Ribble et. al. Congenital spinal stenosis and dam mortality associated with feeding moldy cereal straw (CVJ, 1993)
- Morgan et. al. Long bone deformity of calves associated with silage feeding (SAC Technical Note, 2009)
- Agerholm et. al. Lethal chondrodysplasia in a family of Holstein cattle is associated with a de novo splice site variant of COL2A1. BMV Vet Res 2016.

Acknowledgements

- SRUC
  - George Gunn
  - George Caldow
  - Colin Mason
  - Heather Stevenson
  - Sandra Scholes
- Edinburgh Vet School
  - Alastair Macrae