Age susceptibility of red deer (*Cervus elaphus*) to paratuberculosis

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**AIM**
To measure the relative susceptibility of three age classes of red deer to paratuberculosis, using experimental challenge with MAP.

**MATERIALS AND METHODS**
Three groups of seronegative female deer (30 three-month-old weaners, 20 fifteen-month-old yearlings and 20 adults) received four oral doses of \(~10^9\) cfu of a bovine MAP. They were paddock-monitored daily, weighed at 1-4 week intervals, blood sampled regularly and faecal sampled over the 50 week study. Clinically affected animals were promptly euthanised and necropsied. The remaining deer were killed at the end of the study and necropsied. Gross findings were recorded, faecal samples taken for culture and samples of intestine and associated lymph nodes were taken for culture and histopathology from all deer.

**RESULTS**
Ten weaners developed clinical paratuberculosis and were euthanased 20-28 weeks pi. No clinical cases occurred in the yearlings or adults (P<0.05). All 10 clinically affected weaners had severe gross and histopathological lesions of Johne’s disease. Three weaners died of misadventure. At slaughter, gross lesions were seen in jejunal lymph nodes of 8/17 weaners, 2/19 yearlings and 0/20 hinds (P<0.05). The histopathological lesion severity scores of deer slaughtered 50 weeks pi averaged 4.9, 3.5 and 1.1 for the weaner, yearling and adult groups, respectively (P<0.05).

MAP was recovered from faeces of 13/19 weaners, 6/19 yearlings and 1/20 adult hinds 24 weeks pi (P<0.05) and from faeces of 3/17 weaners, 4/19 yearlings and 1/20 adult hinds at slaughter (NS). MAP was cultured from samples of the intestine and/or lymph nodes from all 10 clinical cases and from 16/17 weaners, 19/19 yearlings and 18/20 adult hinds at slaughter.

**CONCLUSION**
Young deer are very susceptible to heavy oral challenge with MAP, but there is a strong age-related resistance against clinical paratuberculosis and subclinical disease, but not to infection.