

Effects of Fentazin administration to red deer hinds during late pregnancy on fetal viability

G.W. Asher, C.G. Mackintosh, I.C. Scott, K.T. O'Neill.

Abstract

Fentazin is presently contraindicated for use in red deer hinds during late pregnancy due to suspected abortifacient effects of the xylazine component. As this is based largely on cattle observations, we investigated the effects of Fentazin-induced anaesthesia/Contran-H reversal on subsequent fetal viability at ~ 150 and 200 days of pregnancy. Of 19 hinds treated on ~ Day 150, only one aborted 9 days later. Of 18 hinds treated on ~ Day 200, none aborted. All controls (n=19+19) and non-aborting hinds (n=18+18) carried their pregnancies to term. It is concluded that induction of short-term (~ 30 min) anaesthesia and reversal with Fentazin/Contran-H poses a low level of risk to the late term red deer fetus.

Keywords:

Red deer, pregnancy, anaesthetics, Fentazin, abortion.

Introduction

Fentazin 5 (Parnell Laboratories NZ Ltd, Auckland), a proprietary combination of xylazine hydrochloride (58.3 mg ml⁻¹) azaperone (3.2 mg ml⁻¹) and fentanyl citrate (0.4 mg ml⁻¹), is now used commonly in the induction of general sedation and analgesia of red deer. It is a neuroleptanalgesic and skeletal muscle relaxant specifically for use in deer, particularly when a high degree of analgesia and/or muscle relaxation is required (eg. velveting, semen collection, laparoscopic artificial insemination, and other surgical procedures). However, it is presently contraindicated for use in late pregnancy due to indications of an abortifacient effect of xylazine in cattle (Jones 1972). Such contraindication based on inferences across species may unnecessarily limit useful application, and it is important to establish biological efficacies and limitations within the target species. In the case of red deer, there may well be instances whereby hinds in late pregnancy require general anaesthesia/analgesia (eg. injury repair). The aim of the present study was to assess the effects of Fentazin administration to hinds at ~ 150 and 200 days of gestation on subsequent fetal viability.

Methods and Results

Forty mature red deer hinds, confirmed by ultrasound scanning in June to be pregnant to synchronised mating in April, were used in the trial. Late pregnancy belly scanning was

performed using a Toshiba SAL-32B (Toshiba (Australia) Pty. Ltd) with a 3.5 MHz linear array transducer as described by Bingham (1997). The scanner transducer was applied to the inguinal/mammary region following a liberal coating of the area with soya oil while the hinds were restrained in a Heenan workroom. Viable pregnancy was confirmed by visualisation of intact cotyledons, fetal extremities and, in many cases, fetal movement. Scans were performed -24 h, +24 h, +48 h, +72 h, +7 days and +14 days from application of treatment. Hinds were also closely observed daily at pasture following treatment to detect any signs of abortion.

Trial 1 : Day 150

On 16 September all 40 hinds were scanned. Two proved to be non-pregnant and were removed from the trial. On the following day, 19 of the hinds were allocated to receive Fentazin treatment. The remaining 19 controls were held in the yards throughout the treatment period. The two groups were balanced for hind age and fetal sire. Hinds in the treatment group each received an i.v. injection of 1.8 ml Fentazin per 100 kg liveweight (~ 1.9 ml per hind) to induce full recumbancy. They were monitored closely for 30 minutes, then reversed with an i.v. injection of 3.0 ml Contran-H (Parnell Laboratories NZ Ltd, Auckland). All 38 hinds were released to pasture together approximately 15 minutes after reversals had been completed. They were re-scanned as described previously.

Results of scanning and field observations showed that one treated hind aborted on 26 September, 9 days after Fentazin application. All remaining treated and control hinds maintained viable pregnancies (Table 1). The aborting hind showed no subsequent detrimental effects of treatment.

Trial 2 : Day 200

The remaining 37 pregnant hinds from Trial 1 were scanned again on 14 October and confirmed pregnant at ~ Day 200. On the following day they were reallocated by stratified randomisation so that 18 of the hinds were allocated to receive Fentazin treatment as described previously and the remaining 19 hinds served as the controls. The two groups were balanced for previous treatment.

In Trial 2, none of the 37 hinds aborted at any stage (table 1), and all carried their pregnancies to term (~ 230-240 days).

Table 1. Summary of results

	Treatment	No. hinds	Hinds aborting	Time from treatment
Trial 1 Day 150	Fentazin	19	1	9 days
	Control	19	0	-
Trial 2 Day 200	Fentazin	18	0	-
	Control	19	0	-

Chi-squared analysis of the results indicates no significant effects of Fentazin treatment on loss of fetal viability ($P > 0.05$).

Discussion

The abortion rate in the present study was, by any standards, low (2.7 % vs 0 % for treated vs controls) and it can be concluded that the moderate use of Fentazin during late pregnancy in red deer does not pose a major risk to the fetus. This is supported by anecdotal evidence from veterinarians conducting emergency surgery on hinds. In one recent case on Invermay, a hind in late pregnancy (ie. Days 130-200) was anaesthetised 5 times over a period of 5 weeks to facilitate surgical repairs to her severely lacerated hind leg. Despite prolonged anaesthesia on some occasions (> 1 hr) this hind maintained the pregnancy to term.

The one aborting hind treated on Day 150 in the present study had received an additional dose of Contran-H due to the animal's failure to respond within 5 minutes of the original dose. One other animal was also given a second dose of Contran-H without any adverse effects. Apart from this, there is no reason to suspect that the aborting animal was any different from the other treated individuals. At such a low rate of fetal loss, it is quite possible that the abortion was unrelated to treatment, being essentially a chance effect. However, it would be pertinent to consider that there is a low level of risk of fetal loss due to Fentazin/Contran-H treatment. Further consideration of the necessity of anaesthetising pregnant hinds needs to balance such risks against the welfare of the hind.

It is worth noting that a low level of fetal mortality occurs naturally in red deer, as indicated by the presence of two non-pregnant hinds at the Day 150 scan. These two individuals had been confirmed pregnant at Day 45-50 following synchronisation of oestrus but had subsequently lost their pregnancies. Furthermore, late term abortions have been detected sporadically on farms throughout New Zealand. While the contributing factors are largely unknown, it is unreasonable to expect any species to carry all post-implantation pregnancies to term. Having stated that, red deer exhibit remarkably robust pregnancies and the level of fetal loss is generally very low (< 5 %).

Acknowledgements

We thank the Invermay Deer Farm staff, namely Barry Martin, Aaron Cooper and Wayne Smaill, for their help with animal handling and observations.

References

- Jones, R.S. (1972). A review of tranquillisation and sedation in large animals. *The Veterinary Record* 90 (22) : 613-617
- Bingham, C. (1997). Abdominal ultrasonography in red deer. NZVA Deer Branch Conference Proceedings No 14 239-242.

