Vine snake (Thelotornis capensis) bite in a dog

J Otto and R Blaylock

ABSTRACT
A vine snake bite in a dog is reported. There was continued minor bleeding from the assumed nose bite site for 4 days. Currently manufactured snakebite antivenom is not effective against vine snake bites and treatment is supportive.

Key words: canine, consumption coagulopathy, dog, Thelotornis spp., vine snake.

INTRODUCTION
Vine snakes are a small group of highly specialised arboreal snakes that have very elongated bodies, lance-shaped heads and cryptic colouration. The savanna vine snake (Thelotornis capensis) can easily be mistaken for a dead twig or vine, averages 600–800 mm in length and is distributed KwaZulu-Natal, Mpu malanga and the Limpopo Province, South Africa, and Swaziland, Botswana, northern Namibia, Angola, Zimbabwe, Zambia and Mozambique, and extends along the east coast of Africa to Kenya and Somalia. A venom enzyme with a molecular weight of 56 000 D is procoagulant by activating prothrombin and factor X, and dissem inated intravascular coagulation occurs.

Venom has no direct fibrinolytic activity, but accelerates fibrinolysis by activating plasminogen. Active bleeding occurs if venom haemorrhagins cause loss of capillary integrity and leaks.

The snake is reluctant to bite. Of 9 reported human bites, mild, local, painless swelling was noted in 5, 3 did not bleed (although 1 had incoagulable blood), and the onset of bleeding, in 4 cases, was immediate (from fang punctures) and did not stop, soon, 1 hour 30 min, and 15 hours, respectively. In the same 4 cases bleeding improved at 40 hours, days 10, 30 hours and 40 hours. Two patients died, one at 36 hours from internal or external bleeding, including a urinalysis and occult blood examination of all stool specimens. The laboratory findings are not reported in Table I. Further studies were not performed in view of expense.

DISCUSSION
All the above-mentioned 9 human vine snake bites were on the fingers, hand or wrist. Eight patients were handling the snake, while the other was disturbing it with a stick. As these snakes are reluctant to bite unless handled it would be expected that dogs would be bitten mostly on the head while holding the snake in their mouths. This was probably the case in this instance.

Venom toxicity is dependent on snake species and the venom volume to prey mass ratio. All 9 human bites involved adults, while dogs are smaller and would be expected to be more severely envenomed. However, it is well known that venom sensitivity is dependent on animal species.

It is assumed that the persistent unilateral nose bleed was due to a combination of fang trauma and a bleeding diathesis. The haematological abnormalities are compatible with what occurs in humans. Early platelet sparing may occur as venom-induced thrombin is different to physiological thrombin and does not easily aggregate platelets, while circulating fibrin degradation products tend to prevent aggregation.

A 2-year-old female pug dog (8 kg) was bitten by a 90 cm vine snake during the afternoon of 18 March 2002. The following day the owners noted that the dog bled persistently from its nose. The dead snake (identified by a herpetologist), assumed to have bitten the dog, was found in the garden and both were taken to a veterinary practitioner. Examination showed an alert and excitable dog with continuous unilateral nose bleeding (exacerbated by sneezing) assumed to be the bite site, and no other abnormalities. Particular attention was paid to signs of internal and external bleeding and disseminated intravascular coagulation, including organ failure. Coagulation studies showed a haemostatic disturbance (Table 1). Supportive treatment was not necessary and the dog was observed for 3 days until the nasal bleeding stopped. There were never any other clinical signs of internal or external bleeding, including

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<tr>
<td>Haemoglobin</td>
<td>12.0–18.0 g/dl</td>
<td>16.5</td>
<td>14.5</td>
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<td>Haematocrit</td>
<td>0.37–0.55</td>
<td>0.473</td>
<td>0.434</td>
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<td>White cell count</td>
<td>6.0–17.0 x 10^9/l</td>
<td>14.91</td>
<td>15.88</td>
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<tr>
<td>Platelets</td>
<td>200–900 x 10^9/l</td>
<td>251</td>
<td>204</td>
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<tr>
<td>Reticulocytes</td>
<td>0.0–1.5 %</td>
<td>0.4</td>
<td>0.2</td>
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<tr>
<td>INR</td>
<td>0.8–1.20</td>
<td>2.6</td>
<td>Failed to clot</td>
<td>0.9</td>
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<tr>
<td>APTT</td>
<td>11.0–9.0 sec</td>
<td>&gt;120</td>
<td>14.4</td>
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<tr>
<td>Urea</td>
<td>3.6–8.9 mmol/l</td>
<td>9.1</td>
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should not be prevented with fibrin-stabilising drugs. Heparin is of no value in preventing thrombin formation which suggests that antithrombin III administration would probably be of no benefit, although the latter potentiated the effectiveness of antivenom given to Thai Russell’s viper and Malayan pit viper envenomed rats. Boomslang (Dispholidus typus) venom produces a consumption coagulopathy by the same mechanism, but boomslang antivenom does not neutralise vine snake venom. Vine snake antivenom is not manufactured, as bites are uncommon.

Management of vine snake bites in animals with a coagulopathy would comprise maintenance of normovolaemia, and replacement of blood coagulation factors and haemoglobin by means of fresh whole blood, fresh plasma, fresh frozen plasma and platelets. Antibiotics are unnecessary in snakebite, unless there is a deep haematoma or necrosis, due to a paucity of snake mouth bacteria and the antibacterial properties of snake venom. The bites are painless but a headache may develop. Should an animal be suspected of having been bitten by a snake in southern Africa and there is evidence of external or internal bleeding, a coagulation profile is helpful in treatment and identifying the snake. In humans, puff adder bites lead to non-tender swelling with an associated thrombocytopenia, anaemia and occasional associated active bleeding. Boomslang and vine snake bites may lead to non-tender swelling and a consumption coagulopathy evidenced by falling haemoglobin, fibrinogen and platelets, the latter occurring only after the coagulopathy is well established. Fibrin monomers, fibrin degradation products and D-dimmers are positive. Thrombo-elastography is a useful aid in diagnosis and management.

REFERENCES
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