

## Clinical update no. 549

27 November 2019

**Case vignette:** 37yr-F presents, being a victim of domestic violence. She has been punched with strangulation injury. There was no LOC and no neurological findings, however there is bruising and pain to the neck. The social worker asks when the CT-angiogram will be done as that is what other patients have had. What is the role of CT angiogram?

ARTICLE IN PRESS

TRAUMA/ORIGINAL RESEARCH

Evaluation of Nonfatal Strangulation in Alert Adults

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Annals of Emergency Medicine 1

Little evidence exists to optimize emergency department imaging for alert, adult victims of strangulation.

Data are insufficient to guide imaging algorithmically. Physicians, knowing that important injuries are rare and are seldom associated with pain alone, will need to exercise clinical judgment in regard to imaging.

*"All patients with neck injuries had concerning findings besides neck pain"*

A retrospective chart review of 349 cases seen in a trauma centre in the USA with near hanging (21) and manual strangulation (328). There were 260 exclusions from an initial 609 (147 had no asphyxiation; 43 transfers, 59 with GCS <13 and 11 were <16yr age).

The practice was to undertake imaging if any of the following were present: loss of consciousness; visual changes; facial, intraoral or conjunctival petechiae; neck contusions or ligature marks; soft tissue swelling; carotid tenderness; incontinence; neurologic symptoms; dysphonia; dyspnoea; or subcutaneous emphysema. There is a limited evidence base to support those criteria

There were no clinically important injuries among 21 near hangings (all were imaged).

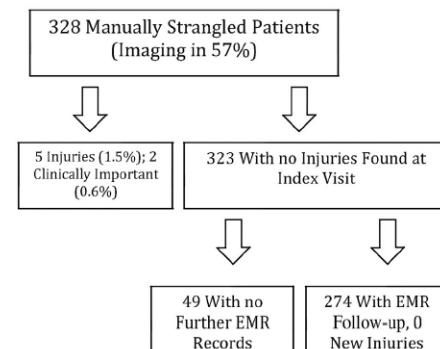
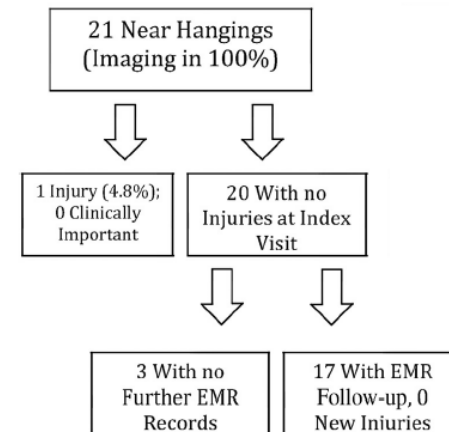
57% of strangled patients were imaged, 44% with CT angiogram, with 6 injuries identified. There were 2 small subdural haematomas related to head injury, and 2 patients with contusion to neck; none required intervention. There were 2 vascular injuries.

Left vertebral artery dissection 10/10 neck pain; dysphagia

Treated with aspirin; no neurological sequelae

"Findings consistent with bilateral short segment dissections of the proximal carotid arteries" Neck pain; loss of consciousness; dysphagia; anterior and posterior neck tenderness

On review it was not clear whether this was a dissection or normal variant. Treated with aspirin; no neurological sequelae.



Total (n=349)	
Neck CT angiography	164 (47)
Presentation GCS score* <15	8 (2.3)
Loss of consciousness	91 (26)
Neck pain	201 (58)
Ligature mark	8 (2.3)
Dysphagia	98 (28)
Dysphonia/voice change	61 (17)
Petechiae above clavicles	19 (5.4)
Scleral hemorrhage	15 (4.3)
Focal neurologic deficit†	4 (1.1)
None	60 (17)

The variable with greatest variance between hanging and stragulation was LOC in 2/3 strangulation and 1/4 with strangulation. Otherwise the % in the strangulation group was essentially the same as for the total.

Triage Category	BIBA WITH ? SNAKE BITE. NAUSEAS AND DIZZY. R LEG BANDAGED. NKA				
<b>1</b>					
Date:	06/				07,
Time:	*UNK*	01:30	02:15	06:30	12:40
Hospital:	CAL	CAL	CAL	CAL	CAL
<b>COAGULATION PROFILE</b>					
PT	18H	>200H	>200H	>200H	16H
INR	1.5H	>10.0H	>10.0H	>10.0H	1.4
APTT	67H	>300H	>300H	>300H	39H
Fibrinogen	0.6L	<0.3L	<0.3L	<0.3L	0.4L
XDF	>50.00H	>50.00H	>50.00H	>50.00H	>50.00H

REVIEW ARTICLE

Review article: Let us talk about snakebite management: A discussion on many levels

A 70-yr woman was found unwell in bed, with a 1 m long snake on the bedroom floor. A detection kit was +ve for tiger snake. She was symptomatic with motor findings and had developed VICC.

She was given 2 vials tiger snake antivenom at 3.5hr post bite. After clinical improvement, at 7hr she became unstable and died 19hr post bite. Post mortem showed widespread haemorrhage. The coroner concluded that further dosing of AV would not have changed the outcome.

A 27yr man died after tiger snake bite, with VICC, myotoxicity, neurotoxicity and renal failure. He received 1 vial tiger snake AV.

The coroner sought 3 expert opinions and got 3 different responses as to whether a single vial AV was enough. A subsequent review of the recommendations was for "... *no change to the number of vials of AV used*". Although the severity of envenomation varied, identifying "outliers" required further research.

VICC occurs in about 95% of tiger snake envenomations but major haemorrhage in 2%. Toxins act quickly and are rapidly eliminated, and VICC self corrects in 24-36hr regardless of AV administration. Use of FFP is not recommended routinely.

There was VICC, likely from tiger snake. Of note the initial testing showed only raised d-dimer with other changes on serial testing about 2 hours later. It shows signs of reversing at 12 hours.

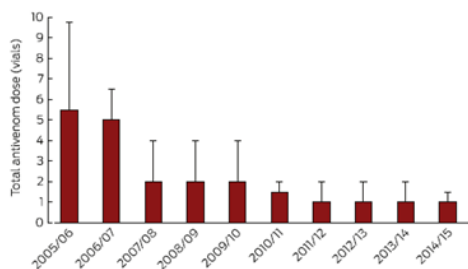
In SE Australia, tiger and brown snake antivenom is recommended if positive identification can't be made. The snake escaped into the dark; no one went looking.

How much antivenom should be given?

Historically multiple vials were given based on ongoing VICC, however this takes time to correct. The 2013 ASP study recommended 1 vial, and practice has changed.

5 Median total dose of antivenom

A. Brown snake



EDITORIAL

Do we know the correct dose of tiger snake antivenom?

The Victorian coroner held an inquest into 2 snake bite deaths.

Guidelines recommending 1-2 vials of antivenom (AV) as a sufficient dose are controversial. A key problem area is the patient who receives a very high venom dose and might need several doses of AV. Of patients in the ASP study only 20% had just 1 vial of AV given.

Perspective

Risks and realities of single vial antivenom recommendations for envenoming by Australian elapid snakes

Antivenom dosage for Australian elapid envenoming should be decided by clinical evaluation of individual patients

MJA 2019. A further discussion highlighting that there is no consensus agreement that one vial is all that is ever required, and that there is no dose related adverse effect from higher doses of AV. However it does not suggest how to identify patients who should be given more than 1 vial AV, nor if doing so would improve outcome.

These updates are a review of current literature at the time of writing. They do not replace local treatment protocols and policy. Treating doctors are individually responsible for following standard of care.