Case Study:
Bitten by a Gaboon Viper

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Me & My Love for Snakes
Outline

• About the Gaboon Viper
• History & Case Study
• Immediate First Aid & Medical Management
• Potential Effects of Envenomation
• Epidemiology
• Other Documented Cases
• Conclusion
The Gaboon Viper

- Usually located in the tropical rainforests & other moist areas of East & West Central Africa.

- The Gaboon Viper feeds on small mammals (particularly rodents), birds and amphibians such as frogs.

http://www.rainforestanimals.net/rainforestanimal/gaboonviper.html
The Gaboon Viper

- The average length of an adult Gaboon Viper can range from 4 - 6 feet.
- The Gaboon is a heavy snake with a weight of 15 - 18 pounds.
The Gaboon Viper

- The Gaboon Viper's fangs can be from 1 - 2 inches in length.
- The Gaboon is a venomous snake and its bite can be very harmful and possibly fatal to humans.
In my research...

• I came across a chat site of the United States Association of Reptile Keepers.

• “Gaboons are extremely fast strikers…The only way to tell if it is going to strike is by looking at it’s pupil”.

• “She will be definitely destining herself for a trip to the ICU and/or morgue….Gabbies are deceptive-they appear to be fat & lazy, but are among the most agile & fast strikers…they typically don’t bite & release either- they grab & hold”.
Facts of Gaboon Vipers

• **The Gaboon Viper does not let go after the bite.** It holds on until the prey is dead. This can be a problem when a human is bitten as the chance of heavy doses of venom being delivered is high.

• **The Gaboon Viper is generally sluggish and docile.** Some people that have been around the Gaboon Viper, say that it is tough to even wake up this snake during its sleep, but it can strike quickly.
Facts of the Gaboon Viper

• The Gaboon Viper (Bitis gabonica) is considered to produce more venom than any other venomous snake.

• A single adult animal may have enough venom to inject lethal doses into 30 individual men (up to 10 ml).

• The Gaboon Viper is noted for its docile nature and this may account for the very few reported bites in the literature.
Toxicity of the Gaboon Viper Venom

- 4 principal modalities involved;
  - DIC
  - Hemorrhage
  - Hypotension
  - Cardiotoxity
Case Study

- 31 year old male presented to the ER with c/o a snake bite.
- Had been drinking (~10 beers) & handling snake.
- Previous hx of appendectomy & had had a rattlesnake bite 8 years ago (requiring anti-venom).
- The bite occurred ~ 1800.
- The patient presented to ER ~ 1845.
1845 hrs- On Admission

- Vital signs were stable
  - RR=19
  - SR=93,
  - BP 108/53
- Afebrile, A & O
- 2 puncture marks to lower lip with lower lip, tongue & submandibular swelling.
- No difficulty breathing or swallowing
2000hrs
(1 hr post admission, 2 hrs post bite)

• 2000 hrs- Patient intubated for airway protection by anesthesia with a 8.0 armoured ETT.
• 2100 hrs-Pt transferred to ICU.
• WBC 9.4, HgB 169, Plt 265, INR 1.2 & PTT 29.2
• SAIMR ordered from Toronto- expected arrival 0230.
Who to Contact

- Poison Control Centre at HSC (787-2591).
- This unit in turn passes on the essential information (type of snake, time since the bite) to the Toxicologist.
- To access a Toxicologist directly (Dr. Tenenbein or Dr. Palatnick) call HSC paging 787-2071.
- Dr. Palatnick & Dr. Tenenbein have an up to date listing of the different anti-venoms and where they can be accessed.
- This particular anti-venom is available from only five sites across North America (three U.S. sites, Toronto Zoo, & the Indian River reptile Zoo near Peterborough, Ontario).
- [http://drdavidson.ucsd.edu/Portals/0/snake/intro.htm](http://drdavidson.ucsd.edu/Portals/0/snake/intro.htm)
Who to Contact (con’t)

• These are the same contacts for MB.

• The Toxicologists frequently get calls for rural sites & NW Ontario.

• One of the snake bites Dr. Palatnick was involved with was a S. African Puff Adder in Brandon (1997).
Assessment in ICU-2045
(2 hrs post admit, 3 hrs post bite)

- On Versed 2 mg/hr & Propofol started- received Versed & Propofol boluses d/t restlessness & gagging on ETT
- Afebrile 36.4
- Epinephrine .2ug/kg/min (2100-2220)
- ST 105
- 178/137 (148), CVP 4-9
Assessment in ICU-2045 (con’t)

(2 hrs post admit, 3 hrs post bite)

• A/C ventilated .4, rate12 (assisting up to 18), tidal vol.600ml, PEEP + 5.
• ++ clear ETT secretions
• ABG 7.22, CO2= 56, pO2= 161, HCo3= 19.
• A/C 7.7
• U.O since admission 700cc
• WBC 13.2, HgB 154, Plt 253, INR 1.1, PTT 28.1, Fibrin 2.5.
Admission Orders to ICU
(3.5 hrs post bite, 2.5hrs post admit to ER)

- PTT/INR now & q1h
- CBC, lytes, BUN, CR now
- Crossmatch 4 u PRBC’s, Cryoprecipitate, FFP.
- Request 2L FFP on standby.
- SCD’s
- D5 1/2NS @ 125/hr
- Blood C&S
- Central line & Art. Line inserted @ 2115

http://farm3.static.flickr.com/2049/2198128942_e808bd5644.jpg
ICU Orders & Assessment-0030
(6.5 hrs post bite, 5.5 hrs post admit)

- RL @250/hr
- Versed & Propofol for RASS -2 to -3
- Ranitidine & Heparin SC
- Tetanus shot .5cc IM x 1
- 36.7, sedate, swollen lip
- 95/60 (70), CVP 8, sats 100%
- A/C .4, 16 x 650, +5
- Chest sounds clear, min. clear ETT secretions
- BS present
- U.O 20-90/hr (425cc over 8hr), dark tea colored
0200 ICU Orders
(8 hrs post bite, 7 hrs post admission)

- Solumedrol 125 mg IV x 1
- Benadryl 50 mg IV x 1
- PTT/Fibrin q 2h x 12h
  - Then q 4h x 12 hrs
- WBC 10.1, HgB 132, Plt 159, INR 1.2, PTT 27.6, Fibrin 2.4
- Anti-venom (SAIMR polyvalent snake venom)
  - 5 amps (50 ml) in 250 cc RL over 75 min.
The Anti-venom

- The anti-venom was unable to arrive at the airport before the last scheduled commercial flight.
- A chartered flight had to be arranged to bring the anti-venom to Winnipeg in a timely manner.
- It arrived in a Coleman cooler lined with freezer packs.
- Until remaining anti-venom returned, Toronto zoo locks down all snakes to prevent bites.
The Anti-venom

• Manufactured by South African Vaccine Producers
• Marketed as SAIMR polyvalent anti-venom.
• SAIMR- South African Institute of Medical Research.
• Useful against the venom of 10 of S. Africa’s most dangerous snakes.
• Made up of pepsin refined immunoglobulins.
• Prepared from the serum of horses hyperimmunized with snake venom.
• Horses are innoculated with increasing high amounts of snake venoms until they develop very high levels of antibodies against the venom proteins & become immune to the venom.
Adverse Reactions to Anti-venom

• Has the potential to provoke early reactions (anaphylactic) or late (serum sickness).

• In a study of 17 patients receiving anti-venom, 13 (76%) developed reactions to the anti-venom
  – Urticaria with pruritus
  – Facial angio-edema
  – Bronchospasm
  – Hypotension (SBP<90)
Adverse Reactions to Anti-venom

- Treat with Benadryl®, Epinephrine, and/or Corticosteroids (ie. Solumedrol).
- Administer the diluted anti-venom at a rate as tolerated by the patient beginning at a rate of 120ml/hour (as opposed to the normal 240ml/hour rate). If the patient tolerates this, increase the rate up to 240ml/hour.
Serum Sickness

• 5% of cases
• A hypersensitivity reaction from the injection of heterologous or foreign protein or serum.
• After an antigen is introduced, an individual's immune system responds by synthesizing antibodies after 4-10 days. The antibody reacts with the antigen.
• Symptoms usually last 1-2 weeks before spontaneously subsiding. Long-lasting effects & fatalities are rare.
• Many anti-venom manufacturers have switched from horses to sheep & producing a more refined product with less S.E’s.

Serum Sickness S & S

• Fever
• Pain in joints (myalgia) & muscles (myositis)
• Lymphadenopathy
• Pruritus/hives
• Erythematous swelling at the injection site
• Chest pain
• Difficulty breathing
• Scarlatiniform rash
• Maculopapular or purpuric lesions
• Splenomegaly
• Edema, particularly about the face and neck.
• Proteinuria, hematuria, and oliguria
• Myocardial and pericardial inflammation.
• Peripheral neuropathy, optic neuritis, cranial nerve palsies, Guillain-Barré syndrome, and encephalomyelitis.

www.uptodateonline.com/online/content/images/prim_pix/Morbilliform_eruption.jpg
## Lytes-Trend

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<th>Day 1</th>
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0700 hrs

(12 hours post admit, 13 hrs post bite)

- Magnesium Sulfate 4 g over 4 h IV
- Sodium Phosphate 30 mmol IV over 6h IV
- U/A for free protein, HgB & Myoglobin
- 36.5, 130/75 (90), CVP 5, S.R. 95
- Sats 100% on A/C .4, 16 x 650, PEEP +5
- 7.40 CO2 35, pO2 160, HC03 22
- A.C 3.4
0925hrs
(14 hrs post admit, 15 hrs post bite)

- RASS -3, Restless @ times
- Swollen lip
- Chest sounds clear, BS present
- UO 35-225cc/hr
- PTT/INR q 4h
- D/C art. Line & CVL
- IVF= 125cc/hr
- INR 1.2, PTT 33.5, Fibrin 2.7
1355hrs

(19 hrs post admit, 20 hrs post bite)

• Propofol & versed D/C
• Extubated onto 50% A.M., sats 99%
• Afebrile 37, ST 105, 155/95 (110), A/C 7.7
• A & O, swollen lip
• 5 L NP, sats 99%, RR 15-20, clear chest sounds
• SR 95, 135/75 (90)
• DAT, BS present
• Foley D/C, U.O adequate
• WBC 5.6, HgB 130, Plt 156, INR 1.1, PTT 27.8
2130hrs
(26.5 hrs post admit, 27.5 hrs post bite)

- SR 90, 140/70 (95)
- RA 98%, RR 25
- D/C SCD’s
- Change lab work to O.D.
- Zopiclone 5 mg po @ HS
- Tylenol #3, Tylenol plain & Fentanyl q 4 h prn.
- INR 1.0, PTT 22, Fibrin 1.9 *
0000
(29 hrs post admit, 30 hrs post bite)

• 36.6, c/o throat pain 6/10
• Fentanyl 50 mcg IV given (& repeated @0400).
• S.R, 155/85 (105)
• RA sats 96%
0735hrs
(36.5 hrs post admit, 37.5 hrs post bite)

- 36.6, lip pain- received Tylenol #3, swelling had decreased
- SR 158/88 (112), RA sats 97% RR 15
- D/C ranitidine & SC heparin
- D/C monitor
- The unused anti-venom was returned to the Toronto Zoo via a commercial flight.
1105hrs

(40 hrs post admit, 41 hrs post bite)

- Dr. Schaeffer- Denver toxicology- felt safe to send patient home
- Likely very little venom injected
- D/C home
- Pt education- if SOB, tongue swelling, airway problems or bleeding, return to E.R or call EMS immediately.
- Repeat PTT 48-72 hrs post D/C with family Dr.
Labs

• Troponin <.01 (negative)
• All LFT’s elevated
  – AST 63 U/L (Normal=10-32 U/L)
  – ALT 69 U/L (Normal= <30 U/L)
  – LD 469 U/L (Normal= 63-200 U/L)
  – GGT 54 U/L (Normal= 5-38 U/L)
  – Alk Phos 53 U/L Normal (30-120 U/L)
  – Lipase 55-137 U/L in 2 hrs (Normal <60 U/L)
Labs- Liver & Kidney

- Gaboon Viper venom has been noted to cause transient increases in AST, ALT & LDH levels, suggesting damage to liver and kidney tissue.
Coagulation Typical Pattern

- Patients may have normal coags for days after anti-venom txt & then deteriorate suddenly with no warning.
- Fibrinogen levels fall d/t activation of fibrinogen-fibrin conversion by thrombin like enzymes in the venom.
- Platelets & HgB may ↓
- PTT/INR ↑
## Coagulation Trend

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<td>INR</td>
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<td>Fibrin</td>
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<td>2-4.7</td>
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</table>

* Insufficient blood
Risk of Infection

- In a snake’s mouth- complex mixture of germs.
- When exposed to oxygen- they die.
- Rod shaped bacteria ‘Aeromonas hydrophilia’.
- Antibiotics are not recommended prophylactically.
Labs

- Blood & urine cultures- all ‘-’
- Urine creatinine & protein= normal
- U/A
  - Hgb =+1 (Normal = ‘-’)
  - Occ’l WBC
  - 1-2 fine granulated casts
  - Uric acid crystals- moderate
  - Heavy mucus
  - Glucose, proteins & ketones= ‘-’ (normal)
In Summary

- Intubated for 12 hours post anti-venom infusion.
- Monitored in ICU for another 24 hours before being discharged home.
- Total time monitored = 40 hrs.
- It was likely the patient suffered a “dry bite” where no venom was injected by the snake.
- Could the patient have some resistance to the snake venom d/t his previous rattlesnake exposure & receipt of anti-venom?
- Cost?
Immediate First Aid

1) Contain the snake
2) Call for help
3) Keep the victim calm and reassured. Allow him or her to lie flat and avoid as much movement as possible. Allow the bitten limb to rest at a level lower than the victim's heart.

- Wrap a large crepe bandage snugly around the bitten limb starting at the site of the bite and working proximally up the limb (the full length if possible).
- Secure a splint to the bandaged limb to keep the limb rigid and immobile.
Immediate First Aid

- **DO NOT** remove the splint or bandages until the victim has reached the hospital and is receiving Anti-venom.
- **DO NOT** cut or incise the bite site
- **DO NOT** apply ice to the bite site
Medical Management

• Call Poison Control Centre at HSC (787-2591).
  – Begin a peripheral intravenous infusion (16 gauge catheter)
  – Administer RL at 200 to 250 mls per hour.
  – Draw samples and collect initial laboratory data.
Administering the Anti-venom

– Dilute the contents of 5 vials of SAIMR Polyvalent Anti-venom in RL solution to a total volume of 300ml.

– Administer the anti-venom I.V. piggyback over 75 minutes at a rate of 240 ml/hour (i.e. one vial per 15 minutes).

– The combined rate of diluted anti-venom and RL solution is now ~ 500 ml/hour.

– The rate of RL may be adjusted accordingly to avoid fluid overload, however a brisk urine output should be a treatment goal.
Medical Management

✓ When one complete vial has been infused (i.e. 15 min., 60 cc), remove splints and crepe bandage slowly over a period 10 minutes.

✓ If symptoms progress rapidly, reapply the bandage, wait 10 minutes, and then again release the bandage slowly over 10 minutes while anti-venom administration is continuing.

✓ Monitor S & S, lab data, & administer additional anti-venom in 1 vial increments at a rate of one vial q 15 minutes prn to control the progression of symptoms.

✓ The required amount of anti-venom will vary with the severity of envenomation. One should anticipate using;
  ✓ 5 vials for a minor bite with envenomation
  ✓ 10 vials may be necessary for moderate or severe bites.
  ✓ Up to 15 vials may be necessary
Bloodwork to draw…

- Type and Cross Match TWO units of blood.
- CBC with differential and quantitative platelet count.
- Coagulation Parameters: PTT, Fibrinogen Levels
- Serum Electrolytes, BUN/Creatinine, Calcium, Phosphorus.
- Lactate Dehydrogenase (with Isoenzyme analysis). Isoenzyme analysis may indicate multiple targets of the venom components which may dictate further management.

- Urinalysis. Must include analysis for:
  - Free Protein
  - Hemoglobin
  - Myoglobin
Other Tests/Procedures

- EKG (ST would be expected).
- Continuous Urine Output Monitoring.
- The pt’s vital signs should be monitored frequently over the first 48 hours after the bite for evidence of circulatory shock.
- Repeat some of the serum and urine tests to monitor the effects of anti-venom therapy or to detect late changes in laboratory values.
Administering Blood Products

• Not clear whether replacing coagulation factors is indicated.
• They may “add fuel to the fire”.
• Blood products should not be given until circulating venom has been neutralized with anti-venom.
Medical Management
No Envenomation

OBSERVE PATIENT CLOSELY for signs and symptoms of envenomation which usually manifest between 15 minutes and two hours after the bite occurred.

If NONE of the signs or symptoms have been noted after TWO hours, there is the possibility that the patient received a dry bite (no venom injected).

If signs and symptoms still fail to manifest, continue CLOSE observation of the patient for an additional 12 to 24 hours.
S & S’s of Envenomation

- Local Effects
- Cardiovascular effects
- Hematological
- Pulmonary
- Renal/Urinary
- General
- CNS

Local Effects

- Pain and swelling: onset almost immediately after bite

- Blistering, bleb formation

- Hemorrhagic edema

- Tissue necrosis: onset usually days after bite

- Ecchymosis
Fang Marks

• The presence of fang marks does not always imply that envenomation has occurred.

• The absence of fang marks does not preclude the possibility of a bite, or indicate the severity.

• Fang marks can be defined punctures, a series of small lacerations or scratches, or not noticeable at all.

• Multiple bites may be present.
Cardiovascular

- Severe Hypotension: onset immediately
- Cardiac arrhythmias
- Tachycardia
- Prolonged QT intervals
- Supraventricular tachycardia
- Inverted T waves
- Cardiac arrest
Cardiovascular

- Gaboon Viper venom is cardiotoxic and causes arrhythmias, in S.V. and C.O.
- The venom results in a of PVR, causing hypotension.
- The administration of anti-venom alone will dramatically improve hypotension and signs of circulatory shock provided the patient is not volume depleted.
- IV RL is warranted if the patient is hypovolemic, but is only effective if anti-venom has been administered.
- Cardiac arrhythmias may persist for days after the initial envenomation & may require the use of a temporary pacemaker to ensure adequate cardiac output and to prevent cardiac arrest.
Hematological

- Coagulation defects
- Spontaneous bleeding
- Mucosal bleeding
- Hematemesis
- Epistaxis
- Ecchymoses/petechiae
- Gastrointestinal bleeding
- Internal hemorrhage
- Hemolysis

med-source.blogspot.com/2007/06/med-spot-on-m...
Hematological

• Gaboon Viper venom has a thrombin-like enzyme which quickly depletes serum fibrin levels thus rendering the blood incoagulable.

• The venom has hemorrhagic activity as it causes widespread damage to the microvasculature.

• The lungs and GI tract are extremely sensitive to this hemorrhagic activity.

• DIC and anemia may also occur.

• PRBC's platelets, cryoprecipitate, and FFP should be given when indicated.
Pulmonary

- Pulmonary edema
- Tachypnea
- Dyspnea

- The hemorrhagic activity of the venom results in pulmonary edema, tachypnea, and dyspnea
Renal/Urinary

- Hematuria
- Hemoglobinuria
- Myoglobinuria
- Renal failure
General

- Nausea/Emesis
- Fever
- Abdominal pain
- Regional Lymphadenopathy
CNS

• Neurological symptoms are uncommon with Gaboon Viper bites.
• Respiratory distress is usually secondary to pulmonary edema rather than muscle paralysis.
General Considerations

- Keep patient resting and warm. Avoid unnecessary movement.
- Patient should be well hydrated, and a brisk urine output should be maintained.

- **Compartment Syndrome:** Compartment syndromes in Gaboon Viper bites are uncommon. Limbs may swell significantly, but rarely involve specific fascially bound compartments. Fasciotomy is rarely recommended in these patients.

- **Tetanus Prophylaxis** should be current.
Prognosis

• Prompt recognition of clinical envenomation and adequate amounts of anti-venom delivered early in the treatment course will facilitate a good recovery.

• It is always best to keep the patient in an ICU until free of major symptoms for 24 hours. The patient should be observed in the hospital for at least 24 hours after all symptoms abate.
Epidemiology

- 18 cases of envenomation were recorded pre 1981, with symptoms of:
  - Swelling & pain @ bite site
  - Bleeding
  - Hemorrhagic edema @ bite site
  - Dyspnea & loss of consciousness
  - Hematuria, hematemesis & local tissue necrosis.

- However, recovery after anti-venom is usually complete & uncomplicated.
Epidemiology

- Increasing incidence of these animals being kept as ‘pets’.
- All of the 18 cases pre-1981 were specimens in the wild.
- The 12 cases after 1983 were from captive species.
- Snake bites occur most often as a result of human folly or carelessness.
- The typical snakebite victim in the U.S. is young, drunk & male.
<table>
<thead>
<tr>
<th>Sex</th>
<th>Age</th>
<th>Occupation</th>
<th>Outcome</th>
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<td>43</td>
<td>Amateur Herpetologist</td>
<td>10 vials SAIMR, hypotension, complete recovery</td>
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<tr>
<td>M</td>
<td>42</td>
<td>Breeder</td>
<td>5x20ml SAIMR, debridement, skin graft, complete recovery</td>
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<td>33</td>
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<tr>
<td>M</td>
<td>41</td>
<td>Amateur licensed herpetologist</td>
<td>Lymphangitis, 5 vials SAIMR, complete recovery, but distal phalanx amputation</td>
</tr>
<tr>
<td>M</td>
<td>28</td>
<td>Amateur licensed herpetologist</td>
<td>Antivenom, surgery, complete recovery</td>
</tr>
<tr>
<td>M</td>
<td>35</td>
<td>Zoo keeper</td>
<td>100ml SAIMR, debridement, complete recovery</td>
</tr>
<tr>
<td>M</td>
<td>54</td>
<td>Research Scientist</td>
<td>Antihistamine (no antivenom, complete recovery)</td>
</tr>
<tr>
<td>M</td>
<td>16</td>
<td>Student stole snakes</td>
<td>Antivenom, complete recovery</td>
</tr>
<tr>
<td>M</td>
<td>?</td>
<td>Amateur licensed herpetologist</td>
<td>Antivenom, complete recovery?</td>
</tr>
</tbody>
</table>

Total= 12 cases between 1983-2003
Cases in the Literature (#1)
(Wildi, Gamperli, Beer & Markwalder, 2001)

• 42 y.o. snake breeder called 911 after a Gaboon Viper had bit his hand.
• 15 min later EMS found the patient on the floor with a BP=60/30 & HR= 160.
• IVF & adrenalin administered.
• The local poison controller was paged, but happened to be the victim.
• He was able to communicate where the anti-venom was.
Cases in the Literature (#1)
(Wildi, Gamperli, Beer & Markwalder, 2001)

• The patient developed severe angioedema without dyspnea or stridor.
• Patient transported to hospital on adrenalin infusion.
• In the ER BP=80/40, HR= 140 with truncal erythrodermia, swelling of eyelids, lips & tongue, petechiae on tongue & palate, severe macrohematuria & hematochezia.
Cases in the Literature(#1)  
(Wildi, Gamperli, Beer & Markwalder, 2001)

<table>
<thead>
<tr>
<th></th>
<th>HgB</th>
<th>Platlets</th>
<th>INR</th>
<th>PTT</th>
<th>Fibrinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to anti-venom</td>
<td>20.3 g/dl</td>
<td>11 x 10^9/L</td>
<td>3.79</td>
<td>91 sec</td>
<td>1.3g/L.</td>
</tr>
<tr>
<td>6 hrs post anti-venom</td>
<td>15.1 g/dl</td>
<td>293 x 10^9/L</td>
<td>1.1</td>
<td>27sec</td>
<td>2.27 g/l</td>
</tr>
</tbody>
</table>

- ~ 1 hour post bite the patient received 5 x 20ml amps anti-venom.
Cases in the Literature (#1)  
(Wildi, Gamperli, Beer & Markwalder, 2001)

• Coag’s remained stable, but the left hand continued to swell with hemorrhagic blisters & superficial necrosis.

• 2 days later a severe compression syndrome developed involving the median nerve requiring acute relief & debridement of the fang marks.

• The patient healed with no further complications.
Cases in the Literature #2

(Marsh, DeRoos, Touger, 2007)

• 33 y.o. female amateur herpetologist was bitten while handling a snake in her mobile home.
• Unable to get help. & found deceased 3 d. later.
• Trail of blood in home indicated attempts to summon help.
• Note was found near victims hand with the local hospitals ICU #.
• She was bruised around the face, eyes & parts of the back.
• The affected hand was swollen & bloody.
Cases in the Literature #2

(Marsh, DeRoos, Touger, 2007)

- L/A of blood on the floor = substantial hemorrhage.
- Puncture marks on her hand, containing an edematous hemorrhagic accumulation under the wound.
- Hemolytic swelling extended up left arm.
- Extensive internal bleeding in head, trunk & extremities
- Hemorrhage to RLL.
- Marks on the wrist suggested that the patient had applied a tourniquet but may have succumbed to systemic release of venom when the tourniquet was removed.
Cases in the Literature (#3)
(Marsh, Gattullo, Pagliaro, Losano, 1997)

• 16 y.o. male who stole 2 adult Gaboon vipers from the Washington National Zoo.
• While returning home on the bus with the snakes under a blanket he was bitten.
• 10 min. later BP 82/50.
• Within 30 min.- bleeding freely from the urinary tract, GI tract & site of bite.
• DIC evidenced by profuse bleeding & not responsive to massive replacement of coag factors.
• Platelets fell to 15x10^9/L.
• Treated with SAIMR anti-venom & d/c from hospital 2 mo. later after a lengthy, but uneventful recovery.
Conclusion

• Pet snakes are not a good idea!
• Nurses & Physicians should be aware of procedure & what may occur.
• Handlers should know protocol.
• Access to specialist support.

• Thank you! Questions? Comments?
Special Thanks

Dr. Wes Palatnick

Dr. Faisal Siddiqui

Rick Thurmeirer (pharmacy)
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