

Occupational/Environmental Toxicology

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Occupational/Environmental Toxicology

- Sub-section of Medical Toxicology
- Exposure occurs at work or in the environment
- Often, but not always, the result of chronic low-level exposure

Case #1

21-year-old healthy male landscaper reaches down to grab some branches and feels a sharp sensation in his hand:

Case #1 (continued)

He sees this snake slither away



Case #1 (continued)

He presents to the clinic with a hand that looks like this:

Diagnosis:

- Local findings
- Bloodwork



Case #1 (continued)

Treatment

- Observation
- +/- CroFab

DOSAGE FORMS AND STRENGTHS

CroFab® is available as lyophilized powder. Each vial contains up to 1 gram of total protein, a maximum of 0.05 mg of mercury, and not less than the indicated number of mouse LD₅₀ neutralizing units:

Snake Species Used for Antivenin Component	Minimum mouse LD ₅₀ Units per vial
C. atrox (Western Diamondback rattlesnake)	1270
C. adamanteus (Eastern Diamondback rattlesnake)	420
C. scutulatus (Mojave rattlesnake)	5570
A. piscivorus (Cottonmouth or Water Moccasin)	780

Case #2

25-year-old healthy male construction worker sits on an outhouse seat and feels a sharp pain in his scrotum.
What is the likely etiology?

Case #2 (continued)

- He sees this spider crawl away



Case #2 (continued)

- 30 minutes later he is in the urgent care with severe abdominal cramping and pain unresponsive to large doses of morphine and diazepam.

Case #2 (continued)

- What would you do next?

**ANTIVENIN
(LATRODECTUS MACTANS)
(Black Widow Spider Antivenin)**
Equisine Origin

DESCRIPTION

Antivenin (Latrodectus mactans) is a sterile, non-pyrogenic preparation derived by drying a frozen solution of specific venom-neutralizing globulins obtained from the blood serum of healthy horses immunized against venom of black widow spiders (Latrodectus mactans). It is standardized by biological assay on mice, in terms of one dose of Antivenin neutralizing the venom in not less than 6000 mouse LD₅₀ of Latrodectus mactans. Thimerosal (mercury derivative) 1:10,000 is added as a preservative. When contained as specified, it is opalescent, ranging in color from light (straw) to very dark (iced tea), and contains not more than 20.0 percent of solids.

Each vial contains not less than 6000 Antivenin units. One unit of Antivenin will neutralize one average mouse lethal dose of black widow spider venom when the Antivenin and the venom are injected simultaneously in mice under suitable conditions.

Case # 3

40-year-old healthy male walks outside the back door into a cloud of noxious fumes and the door slams shut behind him. He goes down on his knees but fortunately, a co-worker was able to grab him and get him to fresh air. An hour later, he is in the ED wheezing and SOB, but has a normal CXR and pulse oximetry.

- What diagnostic testing might be helpful?

Spirometry Report

Name: [REDACTED] Age: 40 years Race: Caucasian
 Sex: Male Height: 71 inches Weight: 204 lbs.
 Smoker: No Asthma: Unknown
 COPD Risk: Low Medication:

Reviewed By: 025516 06/15/10 Performed By: 025516 06/15/10
 Test Date: 02/21/10 11:04:04 Site: CHESTNUT
 Print Temp: 76.0 100 100/67/77 degrees F Spiro Control Year: 8.0.0
 Spirometry: 804455 02/21/10 11:04:04
 Name: [REDACTED]

Measurement	Units	Predicted	Actual	% Pred	Pre-Br	Post-Br	% Post	% Change
FVC	L	2.48	2.53	102%	2.56	2.56	103%	1%
FEV1	L	1.91	1.91	100%	1.91	1.91	100%	0%
FEV1/FVC	%	77%	75%	98%	75%	75%	99%	1%
PPF25-75%	L/s	1.07	1.23	115%	1.20	1.20	119%	10%
PEF	L/s	19.40	2.88	15%	12.11	12.11	79%	44%
Flow	L/s	1.07	1.07	100%	1.07	1.07	100%	0%
Best FEV1	L	1.91	1.91	100%	1.91	1.91	100%	0%
VC	L	1.91	1.91	100%	1.91	1.91	100%	0%

Pre-Br FVC: 1 attempt, 1 accepted, 2 matches.
 Post-Br FVC: 2 attempts, 2 accepted, 2 matches.

Interpretation: Mild obstructive Post bronchodilator test not improved (RVC 1.13%)

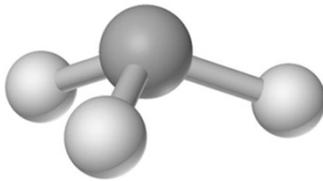
Reviewed By: [REDACTED] 025516

What is the likely diagnosis?

Case # 3 (continued)

- The likely diagnosis is irritant-induced asthma
- What is his treatment?
- Any guess as to the cause in this case?

Case # 3 (continued)



Ammonia

Case #4

80-year-old male with progressive DOE/SOB over last 10 years. Worked at a US Naval shipyard for 40 years and retired 15 years ago. He quit smoking 25 years ago.

- Exam is remarkable for bilateral basilar crackles
- Spirometry reveals restriction

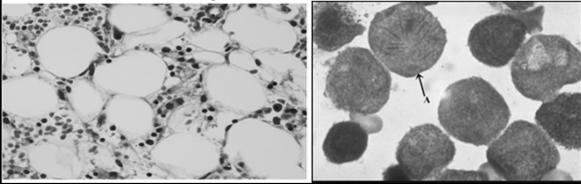
Case #4 (continued)

- Asbestosis-related pulmonary fibrosis i.e., asbestosis as well as asbestos-related pleural disease
- What other diseases is this patient at risk for?

Case #5

A 55-year-old female Chinese immigrant presents to her primary physician with recent onset of fatigue and diffuse ecchymoses. She worked in a shoe manufacturing plant for 30 years prior to immigrating to the USA 2 years ago.

- What is her diagnosis?



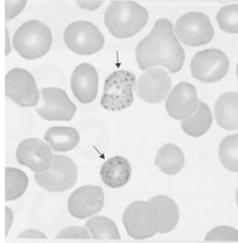
Case #5 (continued)

- What is the likely cause of these conditions?
- What type of cancer is this?
- What is her treatment?

Case #6

32-year-old previously healthy male who works as a battery re-claimer. He complains of 9-12 months of fatigue and inability of his wife to get pregnant.

- What does this slide show?



Case #6 (continued)

It shows Basophilic stippling
What is the likely etiology?

Case #6 (continued)

Lead
BLL 87µg/dl
Treatment?

Case #6 (continued)



Usual Dosage:
See package insert.

Store between 15°C and 25°C
and avoid excessive heat.

L32005 Rev. 01/2011

NDC 67386-201-11 100 Capsules

**Chemet®
(succimer) Capsules**

100 mg

Pharmacist:
Dispense in light,
light-resistant
container as defined
in USP&M.

Manufactured by:
Kromas Urban
Pharmaceuticals Inc.
Seymour, IN 47274
U.S.A.

For Lundbeck Inc.
Dearfield, IL 60015
U.S.A.

Rx only



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