Case Studies in Forensic Pathology
Part I

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Chief Medical Examiner
New Hampshire
Case 1

- 33 yo male found dead on living room floor
- h/o depression with prior suicide attempts by overdose
- No notes
- Recent DUI
- Hypertension
Autopsy

- WD/WN
- Well-healed scars, anterior and posterior left forearm
- Single wound, left temple
Questions

- What type of weapon could cause this injury?
- What is the perforation velocity of skin?
Case 2

- 31 yo male found dead in bed after drinking excessively the previous night
- h/o progressive (daily) headaches and vomiting x 10 months
  - Prescribed meclizine for vertigo
- Sometimes smoked synthetic marijuana
# Toxicology

<table>
<thead>
<tr>
<th>Compound</th>
<th>Result</th>
<th>Units</th>
<th>Matrix Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>126</td>
<td>mg/dL</td>
<td>001 - Femoral Blood</td>
</tr>
<tr>
<td>Blood Alcohol Concentration (BAC)</td>
<td>0.126</td>
<td>g/100 mL</td>
<td>001 - Femoral Blood</td>
</tr>
<tr>
<td>Caffeine</td>
<td>Positive</td>
<td>mcg/mL</td>
<td>001 - Femoral Blood</td>
</tr>
<tr>
<td>Cotinine</td>
<td>Positive</td>
<td>ng/mL</td>
<td>001 - Femoral Blood</td>
</tr>
</tbody>
</table>
Questions

- What additional testing would you perform?
Case 3

- 16 yo male presented to ED with chest pain
- Witnessed arrest in waiting room
- Leaky heart valve, HTN, obesity
Autopsy

- Obesity
- Pleural hemorrhages (100 mL right, 30 mL left)
- Lacerated ascending aorta and hemopericardium (350 mL)
- Liver lacerations and hemoperitoneum (1100 mL)
Questions

- What questions do you have for the medicolegal investigator?
- What is the etiology?
- What additional testing could be performed to confirm your diagnosis?
Case 4

- 48 yo male drinking beer with two friends and comparing handguns
- Friend’s hear “and don’t do this” followed by gunshot
- Transported to local ED and transferred for tertiary care
- Declared brain dead approximately 10 hrs after incident
Toxicology

Positive Findings:

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<tbody>
<tr>
<td>Ethanol</td>
<td>191</td>
<td>mg/dL</td>
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<td>Blood Alcohol Concentration (BAC)</td>
<td>0.191</td>
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</table>
Questions

- What questions do you have for the medicolegal death investigator?
- What is the range of fire?
- What is the manner of death?
Case 5

- 22 yo female c/o lower back pain unrelieved by massage, Icy Hot or heating pad
- Pain progressively worsens and she is assisted to bath tub by GM
- While standing she delivers an infant into tub
- GM picks up infant, wraps in towel, places on floor and calls 911
- First responders find infant under towel warm, pink, apneic and pulseless
  - “the baby looked normal and alive”
Autopsy

- Performed 7 hours after pronounced
- Term male infant
- No congenital anomalies
## Toxicology

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<tr>
<td>Acetaminophen</td>
<td>Positive</td>
<td>mcg/mL</td>
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</tr>
<tr>
<td>Caffeine</td>
<td>Positive</td>
<td>mcg/mL</td>
<td>001 - Heart Blood</td>
</tr>
<tr>
<td>Ibuprofen</td>
<td>Positive</td>
<td>mcg/mL</td>
<td>001 - Heart Blood</td>
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<tr>
<td>Theobromine</td>
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<td>mcg/mL</td>
<td>001 - Heart Blood</td>
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<tr>
<td>Codeine - Free</td>
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<tr>
<td>Morphine - Free</td>
<td>12</td>
<td>ng/mL</td>
<td>001 - Heart Blood</td>
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</table>
Radiology

Impression:

1. Abnormal widening multiple cranial sutures with resulting offset of several calvarial bones, as described above. These findings presumably occur on a traumatic basis.

2. Diffuse posterior scalp thickening.

3. Near-complete opacification of the lungs in the setting of extensive bilateral consolidation.

4. Branching lucencies projecting over the liver shadow, which could reflect portal venous gas or pneumobilia.
Questions

- What questions do you have for the medicolegal death investigator?
- Should any additional studies be performed?
- What is the cause and manner of death?
Case 6

- 55 yo female found dead in bathroom after not responding to calls/texts all day
- Two days post liposuction surgery (abdomen and hips)
- Last known alive previous morning feeling good
# Toxicology

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<td>Lidocaine</td>
<td>Positive</td>
<td>mcg/mL</td>
<td>001 - Femoral Blood</td>
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<tr>
<td>Metoclopramide</td>
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<tr>
<td>Monoethylglycinexylidide (MEGX)</td>
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<tr>
<td>Tramadol</td>
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<td>O-Desmethyltramadol</td>
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<td>Diphenhydramine</td>
<td>190</td>
<td>ng/mL</td>
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Questions

- What additional studies should be performed?
- What is the cause of death?
Case 7

- 57 yo male and roommate handling firearms thought to be unloaded
- Roommate admits pulling trigger and inadvertently shooting deceased
- Resuscitation unsuccessful and pronounced dead at scene
Toxicology

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Questions

- What questions do you have for the medicolegal death investigator?
- What is the manner of death?
- What is the range of fire?
- What caused the marks on the chest?
Case 8

- 36 yo male found dead by family/coworker in upstairs bedroom with two .12 gauge shotguns
- “disconnected” and “paranoid” and less social per parents and coworkers
- Missed last two days of work
- Previous day loitering in parking lot and told police he was going to church for an exorcism
- LKA previous night by police when he went to station to “turn himself in”
Questions

- How would you characterize the gunshot wounds?
- Would it be possible to move after sustaining these wounds?
- What is the manner of death?
Case 9

- 41 yo female smoker vomited blood and c/o difficulty breathing
- Combative, hypertensive (165/111) and tachycardic (180s) on arrival of EMS
- Arrested on arrival to ED
- Remote history of ovarian cancer s/p hysterectomy and radiation/chemotherapy
Autopsy

- Obesity (34.1 kg/m²)
- Cardiac hypertrophy (504 g)
- Fatty liver
- Arteriolonephrosclerosis
- Bilateral adrenal tumors
Questions

- Should any additional studies be performed?
- What is the cause of death?
Case 10

- 27 yo homeless male witnessed collapse after returning from store and drinking apple juice
- h/o IVDA, IDDM with recent hospitalization for DKA
- PEA arrest on arrival of EMS
- Unsuccessful resuscitation efforts and pronounced in ED
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<tr>
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<td>Caffeine</td>
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<tr>
<td>Naloxone</td>
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<td>Promethazine</td>
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</tr>
<tr>
<td>Amphetamine</td>
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</tr>
<tr>
<td>Methamphetamine</td>
<td>1000</td>
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See Detailed Findings section for additional information
Vitreous Chemistry

- Sodium 158 mmol/L
- Potassium 11.0 mmol/L
- Chloride 129 mmol/L
- Glucose 270 mg/dL
- Urea nitrogen 12 mg/dL
- Creatinine 0.37 mg/dL
Questions

- What is the cause of death?
- What questions do you have for the medicolegal death investigator?
- Should any additional studies be performed?