



Case Studies in Forensic Pathology Part I

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Case 1

79 yo male with COPD and lung cancer struck in face and had car stolen in parking lot

Witnesses called 911

Obvious facial trauma (bleeding) but alert/oriented and refused medical care.

Subsequent N/V with hematemesis, abdominal pain and brought to ED approximately 4 hrs after the assault

Hospital Course

Anxious, “can’t catch his breath”

Decompensated with respiratory failure and signs of ACS during workup

Intubated and admitted to CCU with cardiogenic shock

Hemodynamically stabilized over next couple days but prolonged hospitalization for tenuous respiratory status

Ultimately made CMO and expired two months after assault

County attorney requested autopsy

Autopsy Findings

Tracheostomy

PEG tube

Pleural effusions

Pulmonary edema

Right upper lung lobe tumor infiltrating chest wall and mediastinum

Pulmonary emphysema

Cardiomegaly (584 grams) with mild to moderate CAD

Nutmeg liver

Benign nephrosclerosis

Questions

What is the etiology of his cardiogenic shock?

Is his death related to the assault?

What is the cause and manner of death?

Case 2

56 yo female presented to ED c/o generalized pain

- Severe RA (prescribed oxycodone 120 mg/d)
- Substance abuse with positive UDS
- Anemia
- Diabetes
- Hypertension

Somnolent, hypotensive, dry mucous membranes, moaning

Admitted for dehydration, intoxication and pain control

Visitors arrived early next AM for short visit then “hastily left the floor”

An hour later agitated and yelling followed by witnessed arrest

Cell phone contained drug seeking text messages

Antemortem Toxicology

Positive Findings:

<u>Compound</u>	<u>Result</u>	<u>Units</u>	<u>Matrix Source</u>
Caffeine	Positive	mcg/mL	001 - Hospital Blood
Acetaminophen	7.6	mcg/mL	001 - Hospital Blood
Tramadol	77	ng/mL	001 - Hospital Blood
O-Desmethyltramadol	61	ng/mL	001 - Hospital Blood
Venlafaxine	120	ng/mL	001 - Hospital Blood
O-Desmethylvenlafaxine	690	ng/mL	001 - Hospital Blood
Trazodone	0.68	mcg/mL	001 - Hospital Blood
Amphetamine	16	ng/mL	001 - Hospital Blood
Methamphetamine	46	ng/mL	001 - Hospital Blood
Oxycodone - Free	120	ng/mL	001 - Hospital Blood
Oxymorphone - Free	2.9	ng/mL	001 - Hospital Blood

Question

Would you perform an autopsy?

Autopsy Findings

Joint deformities

Ruptured spleen with hemoperitoneum

Postmortem Toxicology

Positive Findings:

<u>Compound</u>	<u>Result</u>	<u>Units</u>	<u>Matrix Source</u>
Caffeine	Positive	mcg/mL	001 - Femoral Blood
Naloxone	Positive	ng/mL	001 - Femoral Blood
Acetaminophen	9.7	mcg/mL	001 - Femoral Blood
Tramadol	150	ng/mL	001 - Femoral Blood
O-Desmethyltramadol	130	ng/mL	001 - Femoral Blood
Venlafaxine	2600	ng/mL	001 - Femoral Blood
O-Desmethylvenlafaxine	1900	ng/mL	001 - Femoral Blood
Trazodone	0.33	mcg/mL	001 - Femoral Blood
Diphenhydramine	870	ng/mL	001 - Femoral Blood
Amphetamine	53	ng/mL	001 - Femoral Blood
Methamphetamine	120	ng/mL	001 - Femoral Blood
Oxycodone - Free	230	ng/mL	001 - Femoral Blood
Oxymorphone - Free	19	ng/mL	001 - Femoral Blood

Questions

What else would you like to know?

Would you perform any additional studies?

What is the cause of death?

What is the manner of death?

Case 3

27 yo male complained of SOB followed by witnessed arrest

Long history of IVDA

Hospitalized two weeks earlier for cellulitis and COVID-19 pneumonia

Question

Would you perform an autopsy?

Autopsy Findings

Needle track marks

Massive left pleural effusion with atelectasis

Pulmonary emphysema

Questions

What else would you like to know?

What additional testing would you perform?

What is the cause of death?

What is the manner of death?

Case 4

77 yo male alcoholic found bleeding from the head with bed linens on fire shortly after gunshot was heard

Handgun between legs

Suicide note

Suicidal ideation and chronic neck pain

Question

Would you perform an autopsy?

Autopsy Findings

Perforating GSW of head

Thermal burns

Severe aortic atherosclerosis

Bullous emphysema

Questions

Do you have any concerns?

What additional testing would you like?

What is the cause of death?

What is the manner of death?

Case 6

57 yo female driver crossed centerline and collided head-on with another car

No vital signs on arrival of EMS

Pronounced in ED

Questions

What else would you like to know?

Would you authorize tissue donation?

Autopsy Findings

Tissue donor

Obese (BMI = 39 kg/m²)

Fatty liver

Benign nephrosclerosis

No evidence of trauma

Question

Now what?

Case 7

24 yo G5P4 called 911 in active labor at 35 2/7 weeks gestation

Spontaneous vaginal delivery shortly after arrival

Newborn female pronounced dead 40 minutes after delivery

Minimal prenatal care

Admitted IVDU previous night

County attorney requested autopsy

Toxicology

<u>Compound</u>	<u>Result</u>	<u>Units</u>	<u>Matrix Source</u>
Methemoglobin	31	%Saturation	001 - Heart Blood
Sulfhemoglobin	7.5	%Saturation	001 - Heart Blood
4-ANPP	Positive	ng/mL	001 - Heart Blood
Caffeine	Positive	mcg/mL	001 - Heart Blood
Cotinine	Positive	ng/mL	001 - Heart Blood
Amphetamine	30	ng/mL	001 - Heart Blood
Methamphetamine	50	ng/mL	001 - Heart Blood
Fentanyl	5.9	ng/mL	001 - Heart Blood
Norfentanyl	7.7	ng/mL	001 - Heart Blood
Carboxyhemoglobin	7	%Saturation	001 - Heart Blood

Questions

What is the pathology shown here?

What is the cause of death?

What is the manner of death?

Case 8

21 yo male found on bathroom floor 30 min. after conversing normally

c/o LBP, numb legs, SOB, diaphoretic

Evidence of vomiting

Witnessed arrest

Pronounced on scene

Autopsy Findings

Massive hemoperitoneum

Questions

What else would you like to know?

Would you perform any additional studies?

What is the source of bleeding?

What is the cause of death?

What is the manner of death?

Case 9

G2P1 female presented to ED at 33 weeks gestation with loss of fetal movements X 3 days

Mother reported (later recanted) being struck in face and abdomen by FOB

Induced vaginal delivery of stillborn female on HD#4

County attorney requested autopsy

Autopsy Findings

Macerated premature female fetus with no evidence of trauma and no congenital anomalies

Intact placenta, umbilical cord and fetal membranes with no significant gross pathology

Questions

What else would you like to know?

Is it possible to determine time of IUFD?

What is the cause of death?

What is the manner of death?

Case 10

31 yo male presented to ED with N/V and dizziness and found to have multiple brain abscesses.

- Received antibiotic therapy through EVD
- Complicated hospital course, ultimately expired 2 months after admission

PMH

- CF with liver cirrhosis and splenomegaly
- TBI from assault 3-4 months PTA

County attorney requested autopsy

Autopsy Findings

Cachectic and jaundiced

Liver cirrhosis with massive splenomegaly (1476 grams) and portal vein thrombosis

Meningoencephalitis (meningitis, ventriculitis, cerebral abscesses), hydrocephalus and cerebral edema

Lobar pneumonia, bilateral lower lobes

Remote TBI (subdural neomembrane, old cerebral contusions)

Questions

What's up with his fingers and toes?

What else would you like to know?

Is his death related to the assault?

What is the cause of death?

What is the manner of death?

Case 11

47 yo male found dead in his chair 20 minutes after returning home from errand

History of DVT/PE

Daily alcohol consumption

Autopsy performed the next day

Autopsy Findings

Abnormal external exam findings

Dilated cardiomyopathy

Questions

What syndrome is suggested?

How would you confirm the diagnosis?

Is it related to his cause of death?

Case 12

24 yo female shot while walking down street with friends

First responders find her rolling on sidewalk repeatedly stating that she could not breathe

Pale and restless with dilated pupils on arrival in ED stating that she could not breathe

Tachypneic, tachycardic and hypotensive followed by bradycardic arrest

Autopsy Findings

Needle track marks

Penetrating gunshot wound of pelvis with hemoperitoneum

Toxicology

Positive Findings:

<u>Compound</u>	<u>Result</u>	<u>Units</u>	<u>Matrix Source</u>
Phenylpropanolamine	6.2	ng/mL	001 - Hospital Blood
Amphetamine	350	ng/mL	001 - Hospital Blood
Methamphetamine	6000	ng/mL	001 - Hospital Blood
Fentanyl	2.6	ng/mL	001 - Hospital Blood
Norfentanyl	2.1	ng/mL	001 - Hospital Blood

Questions

What is the mechanism of death?

How do you explain the respiratory distress?

What is the cause of death?