2024 - 2025

BCHM4608 – Fundamentals of Diagnosis (Pathology)

Use of Biochemical Laboratory Tests:

Clinical Biochemistry II

LFT, RFT and BG Tests Interpretation

09.04.2025

14:30 – 16:20

(T6-035)

Sidney Tam

Hon Clinical Professor

Department of Pathology

The University of Hong Kong

Case #01

Acute viral hepatitis presenting at early onset.

Markedly elevated transaminases with normal bilirubin.

Case #02

F/71, Hepatocellular Carcinoma with Biliary Obstruction

Hyperbilirubinaemia – Conjugated

Elevated transaminases, and “ductal” enzymes.

Case #03

M/70, Rapidly progressive Carcinoma of Prostate with Lung and Bone Metastases

Isolated Alkaline Phosphatase (ALP) elevation.

Case #04

F/92, Progressive painful jaundice and fever due to common bile duct obstruction by gall stones; rapid symptomatic relief with stenting and drainage under antibiotic cover.

Hyperbilirubinaemia (conjugated) gradually resolved while ALP and GGT remained elevated

Case #05

M/18, Progressive Jaundice for 1 week accompanied by right upper quadrant discomfort shortly after returning from a trip to India.

Fulminant Hepatic Failure with encephalopathy due to Acute Hepatitis E infection with continued hepatocyte necrosis.

Case #06

M/59, Cirrhosis complicating chronic hepatitis B infection.

Low albumin with reversed Albumin-to-Globulin Ratio; mildly elevated Transaminases and Prothrombin Time.

Case #07

F/47, Chronic drinker with Alcoholic Liver Disease complicated by Acute Cholecystitis

Grossly elevated GGT and transaminases with a typical De Ritis Ratio, and normal ALP.

Case #08

M/56, Known Type 2 Diabetes, Carcinoma of Pancreas with multiple Liver Metastases without biliary obstruction.

Elevated ALP with the heat-stable fraction indicative of hepatic origin.

Case #09

M/54, sustained multiple bone fractures, lacerations and contusion injuries from a road traffic accident.

Deranged LFT with markedly elevated ALP accompanied by marginally elevated AST/ALT and GGT.

Mildly elevated Bilirubin gradually resolved.

ALP Heat Stability Test (heat-stable fraction 15%) $\Rightarrow$ Predominantly of BONE origin

Case #10

Acute myocardial infarction precipitated by strenuous exercise with “deranged” LFT.

Mildly elevated transaminases with AST > ALT, rest of the LFT profile normal.

AST and ALT came from the necrotic cardiac muscle and skeletal muscle after strenuous exercise .

Case #11

Acute myocardial infarction complicated by cardiogenic shock leading to ischaemic hepatic injury and massive hepatocyte necrosis.

Grossly elevated transaminases with AST >> ALT

AST and ALT came from the necrotic cardiac muscle and damaged hepatocytes.

Case #12

Prolonged neonatal jaundice in a male newborn with G6PD deficiency.

Unconjugated hyperbilirubinaemia due to haemolysis.

Case #13

M/63, CA Pancreas with Liver metastasis without biliary obstruction.

Deranged liver function test profile with elevated transaminases and “ductal” enzymes, and normal bilirubin.

Case #14, #15 & #16

3 Cases of severe dehydration due to over zealous diuretics therapy, poor feeding, and profuse fluid loss from gastrointestinal tract in elderly patients.

Reduced eGFR

Elevated Urea and Creatinine

Urea >> Creatinine

Case #17

M/62, Carcinoma of stomach presented with upper gastrointestinal bleeding.

Normal eGFR

Mild but progressive elevation of Urea.

Case #18

F/77, Severe gastrointestinal bleeding with shock.

Reduced eGFR

Elevated Urea >> Creatinine

Venous Blood Gases profile showed Metabolic Acidosis

Repeat Blood Gases Profile revealed partial Respiratory Compensation of Metabolic Acidosis.

Case #19

M/70, Poorly controlled long standing Type 2 diabetes mellitus with diabetic nephropathy, presented with lower limb cellulitis and progressive renal impairment.

Falling eGFR

Progressive Urea and Creatinine elevation

Case #20

F/54, Subarachnoid haemorhage with respiratory failure, put on mechanical ventilation with 40% inspiratory oxygen.

Arterial Blood Gases profile showed high PO_2

Normal pH and PCO_2

Case #21

F/82, Hypothermia, Metabolic Acidosis due to high Lactic Acid and Ketones.

Arterial Blood Gases profile showed

Low PCO_2

Low pH and Normal PO_2

Negative Base Excess

Case #22

M/74, known Diabetes with nephropathy, presented with acute on chronic renal failure due to intercurrent sepsis.

Venous Blood Gases profile showed

Low PCO_2, Low PO_2

Low pH

Negative Base Excess

Case #23

F/91, Type 2 Diabetes on Metformin, severe metabolic acidosis due to Metformin-Associated Lactic Acidosis (MALA).

Venous Blood Gases profile showed

High PCO_2, Low PO_2

Low pH

Negative Base Excess

Case #24

F/97, Severe chest infection with Respiratory Failure on facial mask with 50% inspiratory oxygen at 10 L/min. Arterial Blood Gase profile indicated respiratory acidosis with partial renal compensation.

Arterial Blood Gases profile showed

High PCO_2, High PO_2

Low pH

Positive Base Excess

END

sidneytam@hku.hk