SCL CLINICALLY IMPORTANT ENZYMES.

Outline the use of enzymes in clinical practice.

Discuss the clinical use of the enzymes aminotransferases in patients with liver diseases.

ANSWER:

Use of enzymes for clinical practice

• Screening or early detection of disease (e.g. ALT is increase in viral hepatitis even before the occurrence of jaundice)
• Diagnosis (e.g. CK-MB for diagnosis of myocardial infarction, amylase for diagnosis of acute pancreatitis)
• Monitoring (e.g. ALT to monitor progress and response of treatment of viral hepatitis)
• Prognosis (e.g. amylase is one of the parameters for Ranson’s criteria (a score for acute pancreatitis)

Discuss the clinical use of the enzymes aminotransferases in patients with liver diseases.

Liver enzymes: Alanine aminotransferase (ALT) Aspartate aminotransferase (AST)

Clinical use:

• Indicate pattern of liver injury.
  – Hepatocellular vs. cholestatic predominant disease
    • Predominant increase in ALT and AST are indicative of liver cell damage (e.g. hepatitis)
      whilst predominant elevation of ALP and GGT indicates cholestasis although certain liver
diseases may display mixed biochemical picture.

• Indicate severity of injury
  – Magnitude of enzyme alteration: can be classified into mild (< 5x ULN), moderate (5-10 x ULN)
    and marked (>10 ULN) increase.
  – The magnitude and rate of change of aminotransferase alteration may provide initial insight into
    the differential diagnosis.
• For monitoring patients progress or response to treatment
  – Monitor the rate of change (increase or decrease over time)
  – Monitor the course of alteration (mild fluctuation vs progressive increase)
  – Persistent increase of ALT for more than 6 months after acute hepatitis indicates chronic hepatitis.