

Discuss the role of biochemical investigations in the diagnosis and management of acute pancreatitis

Introduction

20 MARKS

AP caused by premature activation of digestive enzymes within the gland causing severe inflammatory reaction and multisystem failure
AP is a common cause of acute abdomen
Becoming commoner due to population changes in obesity and alcohol
High mortality (up to 10%)
Requires early diagnosis and risk stratification to ensure best outcome
Expert societies' guidelines produced and published by BSG 1998 and revised in 2005

Diagnosis

35 MARKS

Traditionally based on serum amylase
Many methods described, based on different assay principles: amyloclastic, saccharogenic, chromogenic, defined substrate
Sensitivity and specificity depend on cut off values used, eg X3 or X4 upper limit of reference range
Short plasma half life, cleared by kidneys, measurable in urine
Non-pancreatic sources of amylase: salivary isoenzyme, other intra-abdominal pathology, eg perforation, ectopic pregnancy
Interference from lipaemia, giving false negative results
Importance of this as hyperlipidaemia may cause acute pancreatitis
Use of urine amylase to overcome lipaemia, plus its use in late presentation
Different ways of expressing urine amylase: timed samples or clearance ratio to creatinine
Lipase as pancreatic marker with theoretical advantages: more tissue specific, longer half life
Good evidence of clinical superiority is lacking
BSG guidelines recommend its use over amylase: "Grade A", but no reference quoted
Newer diagnostic tests: urinary trypsinogen 2

Prognostic scoring

35 MARKS

Important to distinguish severe AP early on to allow transfer to ITU care
Use of scoring systems: Ranson's, Glasgow score, APACHE 2, CRP
How evidence based are the criteria?
Components of scoring systems, particularly biochemical and how they are used
Glasgow score •Age >55 years

- WCC >15000
- Glucose > 10 mmol/l
- Urea > 16 mmol/l
- pO₂ < 8 kPa
- Albumin < 32 g/l
- Calcium < 2.00 mmol/l
- LDH > 600 u/l
- AST or ALT >100 u/l

Use of proforma sheets to collate the information daily
Availability of all assays out of hours
Monitoring of progress: renal function, glucose, blood gases

Investigation of underlying cause**10 MARKS**

Majority of AP due to gallstones or alcohol excess

Less common causes include hypercalcaemia and hyperlipidaemia (triglycerides)

Search for these in convalescence if no other cause found as both Ca and lipids lowered in acute stages by drop in albumin and nil by mouth, respectively