ER-GS combine meeting

報告者：R3 許哲彰
指導者：VS 連楚明

Patient data

- 72 y/o female
- Visited ER at 102/2/21 11:42

- Vital sign: T/P/R: 35.4/76/18
- BP: 73/36mmHg
- SpO2:96%

Chief complaint

- 檢傷主述：泌尿道感染症狀，全身不適，少尿

- 看診主述：low grade fever this morning

Past history

- TCC with right obstructive uropathy s/p PCN
- s/p left nephrectomy
- Breast ca
- DM

Present illness

- Dysuria, urinary frequency for days
- Decrease urine output for days
- No N/V

Physical examination

- Conscious: E4V5M6
- Breathing sound: clear
- Heart: RHB
- Abdomen:
- soft, no tenderness or guarding
- Extremity: freely, edema(+)

Tentative diagnosis

- Suspect urosepsis with septic shock

Initial Order

- WBC/DC/Hb
- F/S(280)
- BUN, Cr, GOT, Na, K, Lipase, Troponin-I
- B/C x II
- CXR(AP + Lat), KUB
- VBG (G4)
- N/S 500 cc challenge then 60cc/hr
- on Foley, U/A, U/C
- Claforen 2g IV st

檢驗單名稱	檢驗值	單位
Sediment	**********	
.RBC	0-1	/HPF
.WBC	16-30	/HPF
.Epithelial cell	1-2	/HPF
.Cast	Not Found	/LPF
..cast-amount	-	
.Crystal	Not Found	/HPF
..Cry-amount	-	
.Bacteria	+++	
.Others	Not Found	

PH=7.289
PCO2=24.9 mmHg
PO2=56 mmHg
BE=-15 mmol/L
HCO3=11.9 mmol/L
TCO2=13 mmol/L
SO2=86 %
LAC=11.8 mg/dL

檢驗單名稱	檢驗值	單位	狀態
GOT(AST)	19	U/L	
T-Bilirubin	0.4	mg/dL	
CPK	22	U/L	*L
BUN	74	mg/dL	*H
Creatinine	4.4	mg/dL	*H
eGFR	9.86		
Na	136	meq/L	
K	5.8	meq/L	*H
Lipase	11	U/L	*L
Troponin I	0.007	ug/L	
CK-MB	21	U/L	

檢驗單名稱	檢驗值	單位	狀態
Hb	9.3	gm/dl	*L
WBC	29.4	x1000/ul	*H
Differential count	**********		
.Segmented Neutro.	84.0	%	*H
.Lymphocyte	2.5	%	*L
.Monocyte	2.5	%	*L
.Eosinophil	0.0	%	
.Basophil	0.0	%	
.Atypical lymphocyte	0.0	%	
.Band	9.5	%	*H
.Metamyelocyte	1.5	%	*H
.Myelocyte	0.0	%	
.Promyelocyte	0.0	%	
.Blast	0.0	%	
.Nucleated RBC	0.0	/100WBC	

Order

- Bedside echo: IVC collapse, right hydronephrosis and hydroureter
- N/S 500cc challenge st
- (BP:79/41mmHg, HR:78)

- Abd CT without contrast

CT

Order

- Consult radiologist: right hydronephrosis as before; A-colon to T-colon wall swelling => favor colitis
- Consult GU
- pre-op, sent p't to OR on call (for re-on R't PCN)
- 排GU床, 轉OBN
- on monitor
- Dopamine 0~40cc/hr

CT report

- Impression：
- 1. Right distal ureteral lesion with chronic obstructive uropathy and c/w UTI association.
- 2. Colon wall thickening with pericolic edema with gradually increased severity from distal T-colon to cecum. DDx: Acute colitis or perfusion related
- 吳醫師

day 1 21:07 progress note

- Con's as previous level
- chest: clear BS
- Abd: soft, tenderness over para-umbilical area
- Ext: warm

Day 2

- 11:15 VBG (G6)
- 14:10 NaHCO3 4amp IV st
- 15:30 Admission

PH=7.179
PCO2=24.7 mmHg
PO2=77 mmHg
BE=-19 mmol/L
HCO3=9.2 mmol/L
TCO2=10 mmol/L
SO2=92 %
NA=136 mmol/L
K=5.3 mmol/L
HCT=30 %PCV
HB=10.2 g/dL

- 2/22, 2/23 no progress note 可參考

Day 4 02:30 Duty note

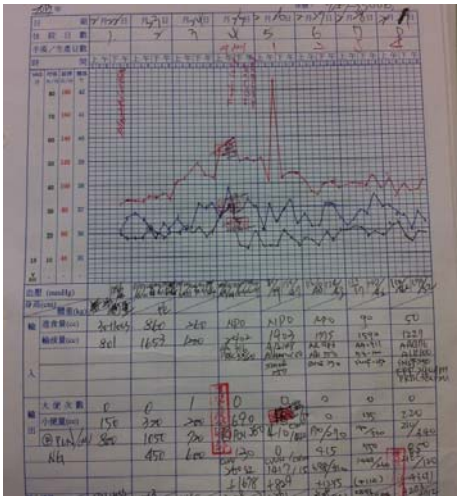
- S: abdominal pain, N/V with bile content
- O: diffuse distended abdomen and tympanic, hypoactive bowel sound, no obvious tenderness
- A: ileus, r/o obstruction r/o colitis progression
- P:
  1) NPO with NG decompression
  2) shift ATB to Invanz
  3) consult GS/Inf/GI as needed
  4) f/u KUB

Day 4 12:50

- Abd CT without contrast
- WBC/DC, CRP

CRP	21.300	mg/dL

WBC	22.7	x1000/ul
Differential count	**********	
.Segmented Neutro.	90.0	%
.Lymphocyte	1.0	%
.Monocyte	2.0	%
.Eosinophil	0.0	%
.Basophil	0.0	%
.Atypical lymphocyte	0.0	%
.Band	7.0	%
.Metamyelocyte	0.0	%
.Myelocyte	0.0	%
.Promyelocyte	0.0	%
.Blast	0.0	%
.Nucleated RBC	0.0	/100WBC



CT

2/24 GS consult

A case of 72 trs old female. Hx of TCC s/p Lt nephrectomy. This time, came to ER due to septic shock, urosepsis. PCN was done and acute on CKDwas noted. Abdominal pain since yesterday. No stool passage since few days ago. Fever was noted. No vomiting and nausea. PE: diffuse tenderness, no muscle guading. Abd CT: distended colon with much gas, minimal ascites. WBC: 22.7, CRP:21.3.IMP: Acute colitis with ileusPlan:NPO with NG decompressionIV antibiotics treatmentfollow up KUB coming morningthanks!

2/25 reconsult GS

A case of DM CVD and hydronephrosis, abdominal pain since yesterday with progressive in severity, CT scan showed dilated colon and SI, PE showed diffuse tenderness with peritoneal sign+, high susp of ischemic bowel with necrosis, suggest operation, Thanks!

OP finding

- Distal T-colon and proximal D-colon located at very deep paraspinal retroperitoneum due to previous nephrectomy, bowel ischemia from terminal ileum to splenic flexure

Post op

- admitted to SICU
- 3/2 angiography

ISCHEMIC BOWEL. FOR SMA PGE1 INFUSION
Imaging findings:
Angiography via SMA injection shows:
-Marked distension of the small bowel loops consistent with ileus.
-Diffuse small caliber over SMA territory. Otherwise no definite vascular occlusion at main branches of SMA.
-Retained surgical clips at LUQ with surrounding irregular vasculature in favor of post operative changes.
-Focal wall hyperemia at RLQ.
-The angiosheath was kept in the right femoral artery with the tip of angiocathether placed at proximal SMA trunk for further PGE1 infusion.
Impression:
1. Marked distension of the small bowel loops with diffuse small caliber over SMA territory could be related to hypoperfusion status. Otherwise no definite vascular occlusion at main branches of SMA.
2. The tip of angiocathether was placed at proximal SMA trunk for further PGE1 infusion.
陳泰睿醫師 / 陳國彰醫師(放診專醫字第0878號)

Discussion

- Tintinalli's section 9: suggested lab for mesenteric ischemia => lactate, 但是sepsis也會高 => 不準
- pain out of proportion to PE
- nausea 56~93%, vomiting 38~80%, diarrhea 31~48%
- Selective CT angiography 96% sensitive

Dig Surg. 2012;29(3):226-35. doi: 10.1159/000338086. Epub 2012 Jun 13.

Beyond lactate: is there a role for serum lactate measurement in diagnosing acute mesenteric ischemia?.

Demir IE, Ceyhan GO, Friess H.
Department of Surgery, Klinikum Rechts der Isar, Technische Universität München, Munich, Germany.

Abstract

BACKGROUND/AIMS: Measurement of serum lactate remains the most frequently applied laboratory investigation to diagnose acute mesenteric (intestinal) ischemia. The present review aims at critically questioning the widespread measurement of serum lactate to diagnose acute mesenteric ischemia in clinical practice and at drawing attention to more novel markers of intestinal ischemia.

METHODS: An electronic search of multiple databases was performed with the key words 'lactate', 'marker', 'mesenteric', 'intestinal' and 'ischemia' to detect all relevant studies. Additionally, the references of published articles were also reviewed.

RESULTS: Serum lactate is an unspecific marker of tissue hypoperfusion and undergoes significant elevation only after advanced mesenteric damage. While L-lactate is the routinely measured stereoisomer of lactate, the other stereoisomer, D-lactate, has been shown to bear a somewhat higher specificity, which is still not comparable to the extremely specific nature of ischemia markers from other organs (e.g. cardiac ischemia). Larger studies are currently lacking to reliably advocate the routine clinical usage of novel markers like mucosal damage markers such as intestinal fatty acid-binding protein.

CONCLUSION: Based on current evidence, the level of no single serum marker, including serum lactate, is elevated early and specifically enough in the serum to diagnose acute mesenteric ischemia.

Ulus Travma Acil Cerrahi Derg. 2010 Jan;16(1):63-70.

[Prognostic factors for hospital mortality in patients with acute mesenteric ischemia who undergo intestinal resection due to necrosis].

[Article in Turkish]

Unalp HR, Atahan K, Kamer E, Yaşa H, Tarcan E, Onal MA.
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Abstract

BACKGROUND: The purpose of this study was to review our experience in patients with acute mesenteric ischemia (AMI) and to identify prognostic factors associated with hospital mortality.

METHODS: Clinical data of patients with AMI were reviewed and analyzed retrospectively. A total of 67 patients (34 female, overall mean age 66 years) were evaluated in the study.

RESULTS: Small bowel necrosis was detected in all patients, while colonic involvement was present in 21 (31.3%). Necrosed small bowels were resected in 59 (88%) in the first intervention. Embolectomy was also performed in 2 (3%) of these cases. Anastomosis was established in 22 (32.8%). Second-look operation was performed in 31 (46.3%) and primary resection and re-resection were performed in 8 (11.9%) and 11 (16.4%) patients, respectively. Hospital mortality rate was 56.7% (n=38). Logistic regression analysis showed prolonged symptom duration (>24h) (p=0.000), sepsis (p=0.022) and colonic necrosis accompanied with small bowel necrosis (p=0.002) as the independent prognostic factors in hospital mortality.

CONCLUSION: AMI has a high hospital mortality rate due to late diagnosis and sepsis. Another risk factor is colonic involvement. Early evaluation in high-risk patients and resection for necrosed intestinal segments as soon as possible prior to sepsis may reduce the hospital mortality rate.

Tunis Med. 2012 Jul;90(7):533-6.

[Acute mesenteric ischemia: study of predictive factors of mortality].

[Article in French]

Aouini F, Bouhaffa A, Baazaoui J, Khelifi S, Ben Maamer A, Houas N, Cherif A.
Service de Chirurgie, Hopital Habib Thameur. Tunis, Tunisie

Abstract

BACKGROUND: Acute mesenteric ischemia is a surgical emergency that requires a quick diagnosis and therapeutic care. Without treatment, the outcome is towards intestinal infarction whose prognosis remains grim.

AIM: To look for predictive factors of mortality of this disease.

METHODS: We retrospectively reviewed the clinical data of patients hospitalized between January 2000 and December 2008 for acute mesenteric ischemia. Univariate and multivariate analysis of factors that could influence mortality was conducted.

RESULTS: 26 patients, predominantly male, were included. The mean age was 60 years. These patients were cared for on average 4 days after the onset of symptoms. The diagnosis was made pre-operatively in 9 patients, by CT scan in 8 patients and by Doppler ultrasound in 1 patient. The cause of AMI was arterial thrombosis in 19 cases, venous thrombosis in 4 cases and non occlusive mesenteric ischemia in 3 cases. 25 patients were operated on emergency 24 times by a laparotomy and one time by a laparoscopy. The surgery consisted in bowel resection in 15 patients; an abstention was decided in one case of venous mesenteric ischemia and in 9 cases where necrosis affected all small bowels. Revascularization of the superior mesenteric artery was associated in 4 cases. Outcome was simple in 8 patients. The mortality rate was 69%, death occurred in a period of J0 to J90 after surgery. This rate wasn't influenced by age or sex. It was higher in patients with preoperative collapse (p = 0.02) and having an expansive bowel necrosis (p=.0001). The prognosis is better in cases of venous infarction with a mortality rate of zero.

CONCLUSION: Prognosis of acute mesenteric ischemia depends on the aetiology and the quickness of treatment. It is directly linked to the extension of intestinal infarction. An urgent and multidisciplinary care is necessary.

Radiology. 2010 Jul;256(1):93-101. doi: 10.1148/radiol.10091938.

Diagnostic accuracy of multidetector CT in acute mesenteric ischemia: systematic review and meta-analysis.

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Abstract

PURPOSE: To use meta-analysis to determine the diagnostic accuracy of contrast agent-enhanced multidetector computed tomography (CT) in primary acute mesenteric ischemia (AMI).

MATERIALS AND METHODS: The PubMed search engine and five other electronic databases were searched for "mesenteric ischemia," "computed tomography," and related terms in articles published between January 1996 and September 2009, without language restrictions. Reference lists of retrieved articles were also searched. Two reviewers independently selected six studies that reported 2 x 2 contingency data on the diagnostic accuracy of multidetector CT in primary AMI in at least 10 patients with disease and 10 patients without disease and that used surgery or clinical outcome as the reference standard. Study data were independently extracted by the two reviewers, and disagreement was resolved by consensus. The study quality was assessed by using items from the Quality Assessment of Diagnostic Accuracy Studies tool. The primary 2 x 2 count data were investigated with a bivariate random-effects meta-analysis of sensitivity and specificity.

RESULTS: Three studies were prospective, and three were retrospective. All studies were of high quality. The CT scanners used in the included studies had between four and 40 rows. The between-study heterogeneity was low to moderate. Overall, AMI was found in 142 of 619 studied cases. The meta-analysis showed a pooled sensitivity of 93.3% (95% confidence interval: 82.8%, 97.6%) and a pooled specificity of 95.9% (95% confidence interval: 91.2%, 98.2%).

CONCLUSION: On the basis of a thorough clinical examination, contrast-enhanced multidetector CT allows the diagnosis of primary AMI with high sensitivity and specificity. Thus, it may be used as the first-line imaging method.

REVIEW ARTICLE

Acute Mesenteric Ischemia: a Vascular Emergency

Ernst Klar, Parwis B. Rahmanian, Arno Bücker, Karlheinz Hauenstein, Karl-Walter Jauch, Bernd Luther

BOX

Clinical manifestation, risk factors, and classification of acute mesenteric ischemia

Arterial occlusive
Sudden occlusion of the superior mesenteric artery by an embolus or thrombus in patients with preexisting wall alterations

Predisposition:
- Cardiac arrhythmia, particularly atrial fibrillation
- Coronary heart disease, clinical status following myocardial infarction
- Peripheral arterial occlusive disease (PAOD)

Clinical manifestations:
- Sudden-onset abdominal pain
- Pain-free interval approximately 6 to 12 hours after symptom onset
- Subsequent gangrene of the intestine with peritonitis

Arterial nonocclusive
Ischemia caused by reduction in cardiac output with reactive vessel spasm mesenterically

Predisposition:
- Clinical status following heart surgery with extracorporeal circulation, particularly with complicated disease course
- Long-term hemodialysis
- Digitalis medication

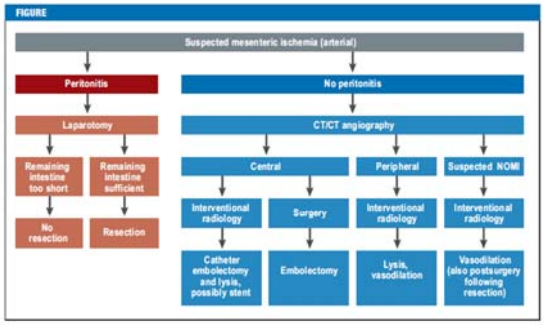
Clinical manifestations:
- In responsive patients: increasing abdominal pain
- In intubated patients: abdominal distension, increase in inflammatory parameters, signs of sepsis

Venous
Thrombosis of the mesenteric-portal axis

Predisposition:
- Paraneoplasia
- Pancreatitis, pancreatic carcinoma
- Congenital thrombophilia (e.g. AT III deficiency, protein C deficiency, protein S deficiency)
- HCC (hepatocellular carcinoma) with macrovascular invasion

Clinical manifestations:
- Dependent on severity of thrombosis
- Often nonspecific abdominal complaints lasting several days
- Venous infarction with peritonitis in a minority of cases

FIGURE



Procedure for diagnosing and treating acute mesenteric ischemia
NOMI: nonocclusive mesenteric ischemia

Treatment

- Endovascular
- Surgery

TABLE

Endovascular treatment for AMI

Treatment	Indication	Level of evidence
Arterial		
Transfemoral aspiration embolectomy	Large embolus close to outlet	IIa, C
IA continuous drug perfusion (papaverine, prostavasin, heparin)	Peripheral embolism with no peritonitis, nonocclusive ischemia	IIa, C
Local fibrinolysis (rt-PA)	Peripheral embolism with no peritonitis, as diagnostic technique for cases of stenosis	IIa, C
Stent PTA	Stenoses and occlusions close to outlet	I, B
Portal venous (transjugular transhepatic)		
Portal venous rechanneling	Ischemia of the wall of the intestine in cases of mesenteric/portal venous thrombosis	IV
Portal decompression (TIPS)	Portal hypertension with venous ischemia of the wall of the intestine caused by congestion	IV

AMI: acute mesenteric ischemia; IA: intraarterial; rt-PA: recombinant tissue plasminogen activator; PTA: percutaneous transluminal angioplasty; TIPS, transjugular intrahepatic portosystemic stent shunt

KEY MESSAGES

- The mortality rate of mesenteric ischemia remains high. This is due to delays in diagnosis.
- Before hospital treatment, or at the latest upon emergency admission, the patient's risk profile must lead to suspected diagnosis.
- As soon as diagnosis is suspected, mesenteric ischemia must be treated as a vascular emergency, comparable to myocardial infarction.
- One of the main sources for potential time-saving is targeted diagnosis. In cases of suspected occlusive mesenteric ischemia (arterial or venous), biphasic contrast-enhanced CT must be performed. If nonocclusive mesenteric ischemia is suspected, catheter angiography with intraarterial infusion of vasodilators must be performed.
- In patients with multiple morbidities, interventional radiology options for rechanneling must be explored promptly. In cases of peritonitis, irreversibly damaged portions of the intestine must be resected, with surgical revascularization. Venous thrombosis is treated with transjugular transhepatic catheter lysis.

- Thanks for your attention!