EBM

李宜恭醫師
慈濟醫院大林分院急診科

EBM

- "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research." (Sackett D, 1996)
- EBM is the integration of clinical expertise, patient values, and the best evidence into the decision making process for patient care.

The Steps in the EBM Process

The patient	1. Start with the patient -- a clinical problem or question arises out of the care of the patient
The question	2. Construct a well built clinical question derived from the case
The resource	3. Select the appropriate resource(s) and conduct a search
The evaluation	4. Appraise that evidence for its validity (closeness to the truth) and applicability (usefulness in clinical practice)
The patient	5. Return to the patient -- integrate that evidence with clinical expertise, patient preferences and apply it to practice
Self-evaluation	6. Evaluate your performance with this patient

Lifelong learning model

- A process of lifelong, self-directed, problem-based learning in which caring for one's own patients creates the need for clinically important information about diagnosis, prognosis, therapy and other clinical and health care issues.
- Target your reading to issues related to specific patient problems. Developing clinical questions and then searching current databases may be a more productive way of keeping current with the literature.

Why is EBM important?

- Physicians reported that their practice generated about 2 questions for every 3 patients
- Investigators found that physicians had about 5 questions for each patient. 52% of these question could be answered by the medical record or hospital information system. 25% could have been answered by published information resources such as textbooks or MEDLINE
- Studies have also shown that when clinicians have access to information, it changes their patient care management decisions

Is the Evidence Available?

- 145 cases and clinical decisions analyzed:
  - 31 could be supported by a randomized controlled trial
  - 65 were supported by a head-to-head trial (not a placebo-controlled trial)
  - 23 were supported by case-control or cohort studies
  - 4 were supported by case series reports
  - 22 could not be supported with a study from the literature

疑似上消化道出血的病人需不需要放置鼻胃管?

測量小兒病人體溫的最佳方法為何?

Oral, rectal or tympanic temperature?

Physical Methods for Cooling

- Tepid sponging
- Bathing
- Fanning
- Cooling blankets
- Rubbing alcohol on the skin
- Cool enemas
- Ice packs

What is the best way to deliver β2-agonist therapy for the acute asthma patient in the ED?

MDI with a holding chamber or Nebulizer ?

The EBM Process

Pauline is a new patient who recently moved to the area to be closer to her son and his family. She is 67 years old and has a history of congestive heart failure brought on by several myocardial infarctions.

She has been hospitalized twice within the last 6 months for worsening of heart failure. At the present time she remains in normal sinus rhythm. She is extremely diligent about taking her medications (enalapril, aspirin and simvastatin) and wants desperately to stay out of the hospital. She lives alone with several cats.

You think she should also be taking digoxin but you are not certain if this will help keep her out of the hospital. You decide to research this question before her next visit.

Pauline

Can you construct a well built clinical question ?

Anatomy of a good clinical question

- Patient or problem
  - How would you describe a group of patients similar to yours? What are the most important characteristics of the patient?
- Intervention, prognostic factor, or exposure
  - Which main intervention, prognostic factor, or exposure are you considering? What do you want to do for the patient? Prescribe a drug? Order a test? Order surgery? What factor may influence the prognosis of the patient? Age? Co-existing problems? What was the patient exposed to? Asbestos? Cigarette smoke?
- Comparison
  - What is the main alternative to compare with the intervention?
- Outcomes
  - What can you hope to accomplish, measure, improve or affect?

The structure of the question might look like this:

Patient / Problem	congestive heart failure, elderly
Intervention	digoxin
Comparison, if any	none, placebo
Outcome	primary: reduce need for hospitalization; secondary: reduce mortality

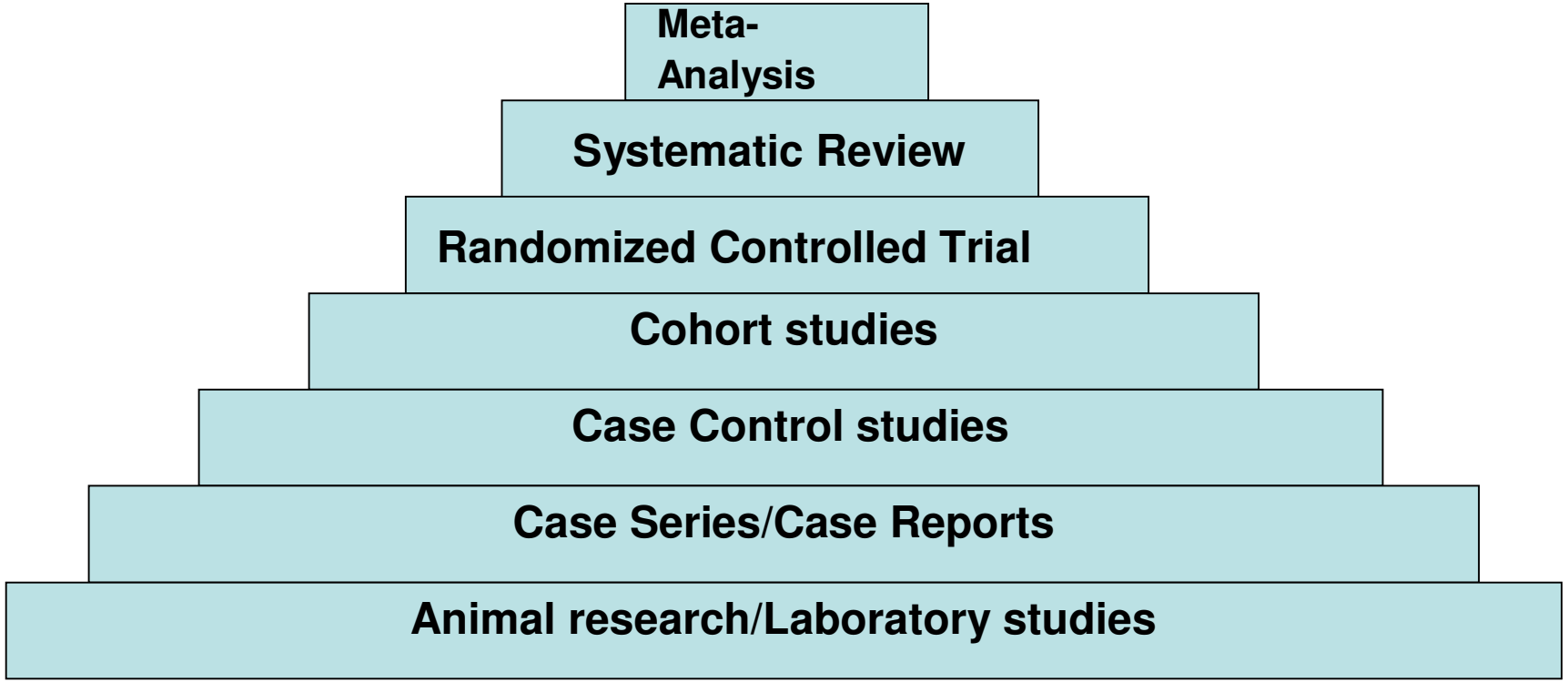
For our patient, the clinical question might be:

In elderly patients with congestive heart failure, is digoxin effective in reducing the need for rehospitalization?

Type of question

Diagnosis	how to select and interpret diagnostic tests
Therapy	how to select treatments to offer patients that do more good than harm and that are worth the efforts and costs of using them
Prognosis	how to estimate the patient's likely clinical course over time and anticipate likely complications of disease
Harm/ Etiology	how to identify causes for disease (including iatrogenic forms)

Type of Study



The type of question is important and can help lead you to the best study design

Type of Question	Suggested best type of Study
Therapy	RCT>cohort > case control > case series
Diagnosis	prospective, blind comparison to a gold standard
Harm/Etiology	RCT > cohort > case control > case series
Prognosis	cohort study > case control > case series
Prevention	RCT>cohort study > case control > case series
Clinical Exam	prospective, blind comparison to gold standard
Cost	economic analysis

For our patient, the clinical question is:

In elderly patients with congestive heart failure, is digoxin effective in reducing the need for rehospitalization

It is a therapy question and the best evidence would be a randomized controlled trial (RCT). If we found numerous RCTs, then we might want to look for a systematic review.

Clinical question →	Clinical Scenario →	MEDLINE strategy
Patient Population	congestive heart failure, elderly	heart failure, congestive Limit to Aged
Intervention	digoxin	digoxin
Comparison (if any)	none or placebo	
Outcome	rate of hospitalization	hospitalization
Type of question	therapy	
Type of study	RCT	Limit to randomized controlled trial as publication type

Select a resource

- **Colleagues**
- **Summaries of the primary evidence**
  ACP Journal Club | Clinical Evidence | eMedicine | FPIN Clinical Inquiries | InfoPOEMs| UpToDate
- **Databases**
  MEDLINE | Cochrane Library
- **Electronic textbooks and libraries**
  ACP Medicine | Harrisons | MD Consult | Stat!Ref
- **Meta-Search Engines**
  SUMSearch | TRIP Plus: Turning Research into Practice

- **ACP Online**: http://www.acpjc.org/
- **Clinical Evidence**: http://www.clinicalevidence.com/
- **eMedicine**: http://www.emedicine.com
- **FPIN**: http://www.fpin.org
- **InfoPOEMS**: http://www.infopoems.com/
- **UpToDate**: http://www.uptodate.com
- **MEDLINE** Access PubMed at: http://www.pubmed.gov

Henry is an active 5 year old boy. His mother brought him in for a check-up because Henry has had a fever and a sore throat for several days. You suspect Strep and take a throat culture. The standard treatment for Streptococcal Pharyngitis is oral Penicillin three times a day. However, for Henry and his mother, you are concerned about compliance and the expense of this medication. You recall that a drug representative recently told you that a daily dose of amoxicillin is just as good as penicillin, but costs less. You want to review the literature before you decide on amoxicillin for Henry and possibly changing your standard practice.

Based on this scenario, choose the best, well-built clinical question:

A. In children with strep throat, is amoxicillin as effective as penicillin for relief of symptoms?
B. What is the best treatment for relieving the symptoms of a sore throat?
C. Is amoxicillin better than penicillin for young children?

History

- A 68 year-old female is brought to the ED by her husband who is concerned that she is “not acting right”.
- The patient has been not eating well for several days, and has been increasingly confused.
- Intermittent “stomach pains” intermittently and vomiting

Vital signs

- Blood Pressure - 78/60 mmHg
- Heart Rate - 120 beats/minute
- Respiratory Rate - 24 breaths/minute
- Temperature 38.50 C
- Oxygen Saturation (SaO2): 100% on 2 liters via nasal cannula

Physical Exam

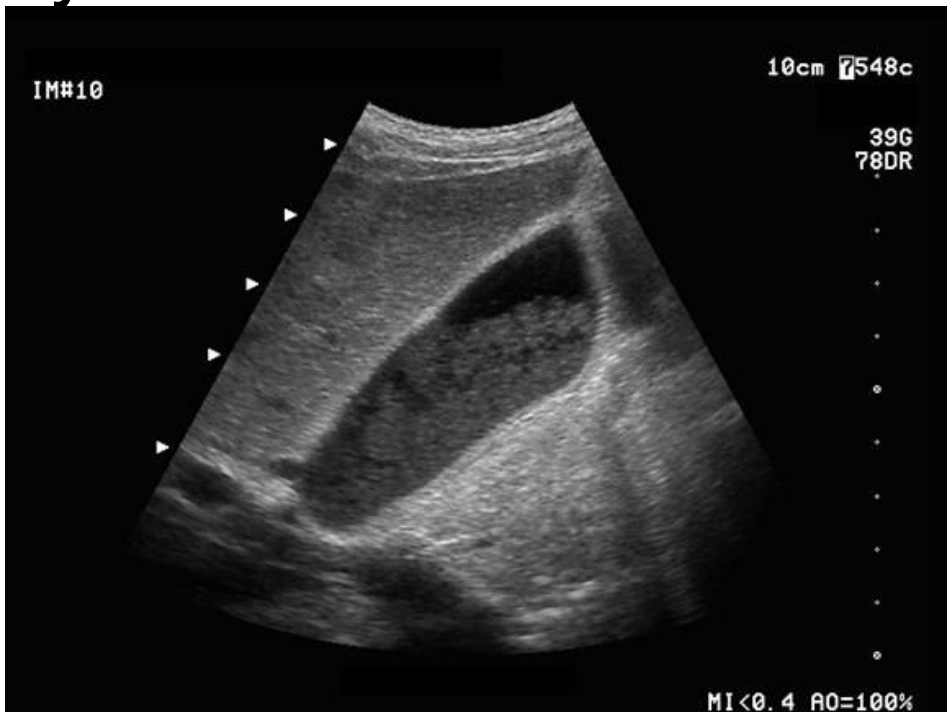
- General: patient responds verbally, but is weak appearing and somewhat confused
- HEENT: possible scleral jaundice
- Neck: Soft, no JVD, no meningismus
- Heart: Increased rate, no murmurs or rubs.
- Respiratory: Mild basilar rhonchi in both lung fields, no retractions
- Abdomen: Soft, non-distended, RUQ tenderness with deep palpation, no rebound or guarding
- Extremities: no appreciable edema, rash, or erythema

Labs

- WBC: 22,000/mm3
- HCT: 30%
- HCO3: 17 mEq/L
- BUN: 60 mg/dL
- Cr: 2.1 mg/dL
- Total Bilirubin: 4.6 mg/dl
- Alkaline Phosphatase: 223 U/L
- Coagulation values: normal
- Urinalysis: (+) urobilinogen
- Blood, Urine, Sputum Cultures pending

Imaging

- ECG: sinus tachycardia with an old LBBB
- Head CT: no acute changes
- Chest x-ray: normal



Clinical Course

- Within the first 3hs: 2 liters NS, Ceftriaxone 1g IV, and 500mg metronidazole 500 mg IV

→Repeat BP: 88/30 mmHg→ norepinephrine at 3 mcg/kg/min, BP increased to 105/60 with HR115, and she appeared somewhat improved

→Admitted to the ICU and arrived about 3 hours later when a bed became available

→She died shortly after arriving to the ICU

Patient Profile 16:27

- Age: 76 years old
- Sex: male
- Arrival: walk by himself
- Vital signs: BT 37.6℃ PR 118 RR16
  BP 132/78
- Triage III

History

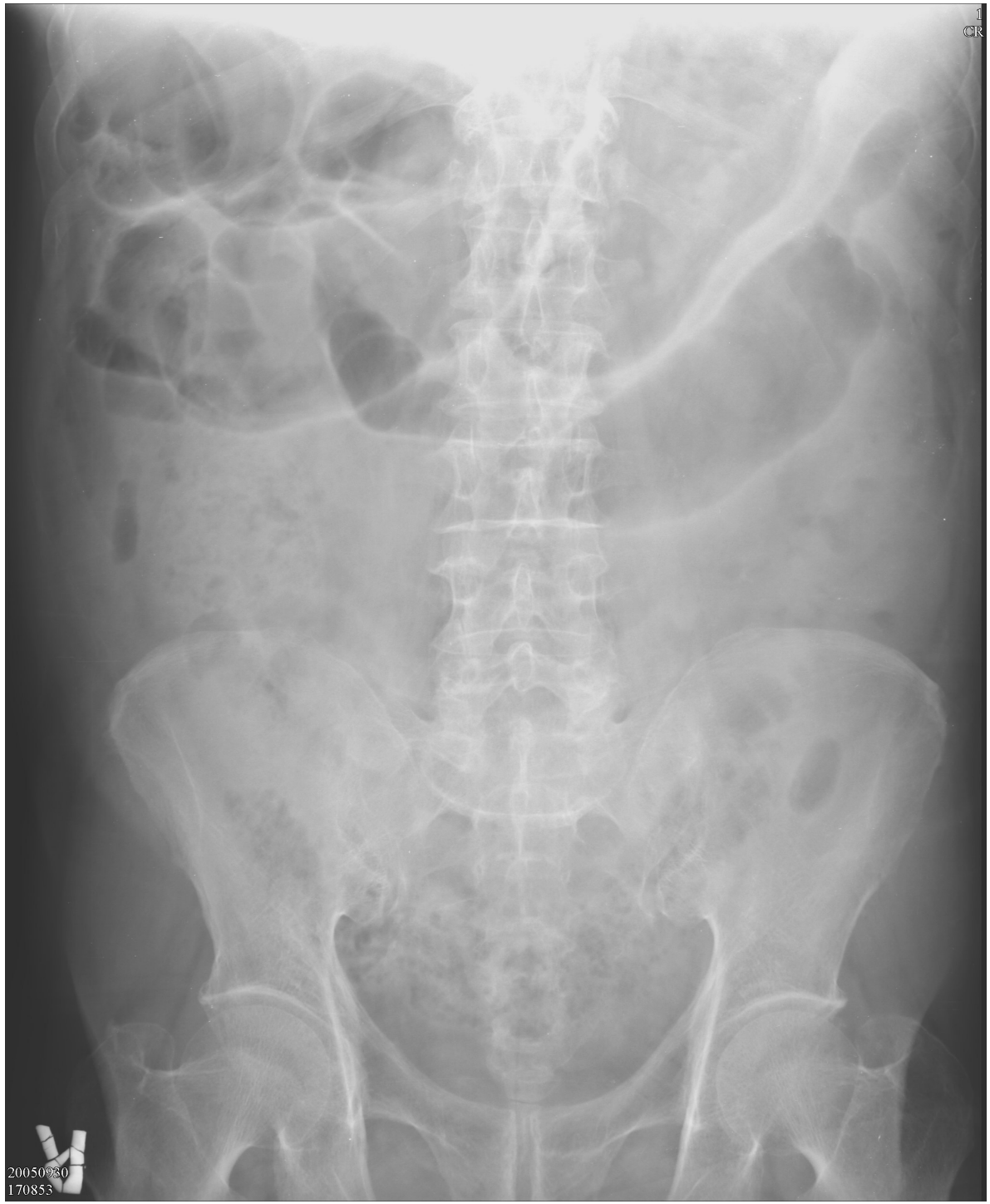
- A 76 y/o male suffered from progressive abdominal pain since yesterday afternoon after “painless” colonoscopy in a medical center
- Nausea(+), vomiting(+), no stool passage for 1 day
- Denied fever, tarry stool
- PH: irritable bowel disease, constipation, GU, appendicitis s/p op, denied hypertension and DM

PE

- Consciousness: clear E4M6V5
- HEENT: no icteric, no anemic
- Chest and heart: no specific findings
- Abdomen: Soft, distended, mild diffuse tenderness, no rebound pain, hypoactive bowel sound
- Extremities: no edema, warm, no rash

Management

- IV fluid with NS
- Morphine 5mg IV st
- CBC+DC/PL, BCS
- KUB, CXR (Standing)


1
CR
20050930
170853

1
CR
20050930
171004

Lab 17:57

- WBC 24070 with Seg 87%, Band 2%
- Hb: 16.3 Platelet: 175k

Management 18:20

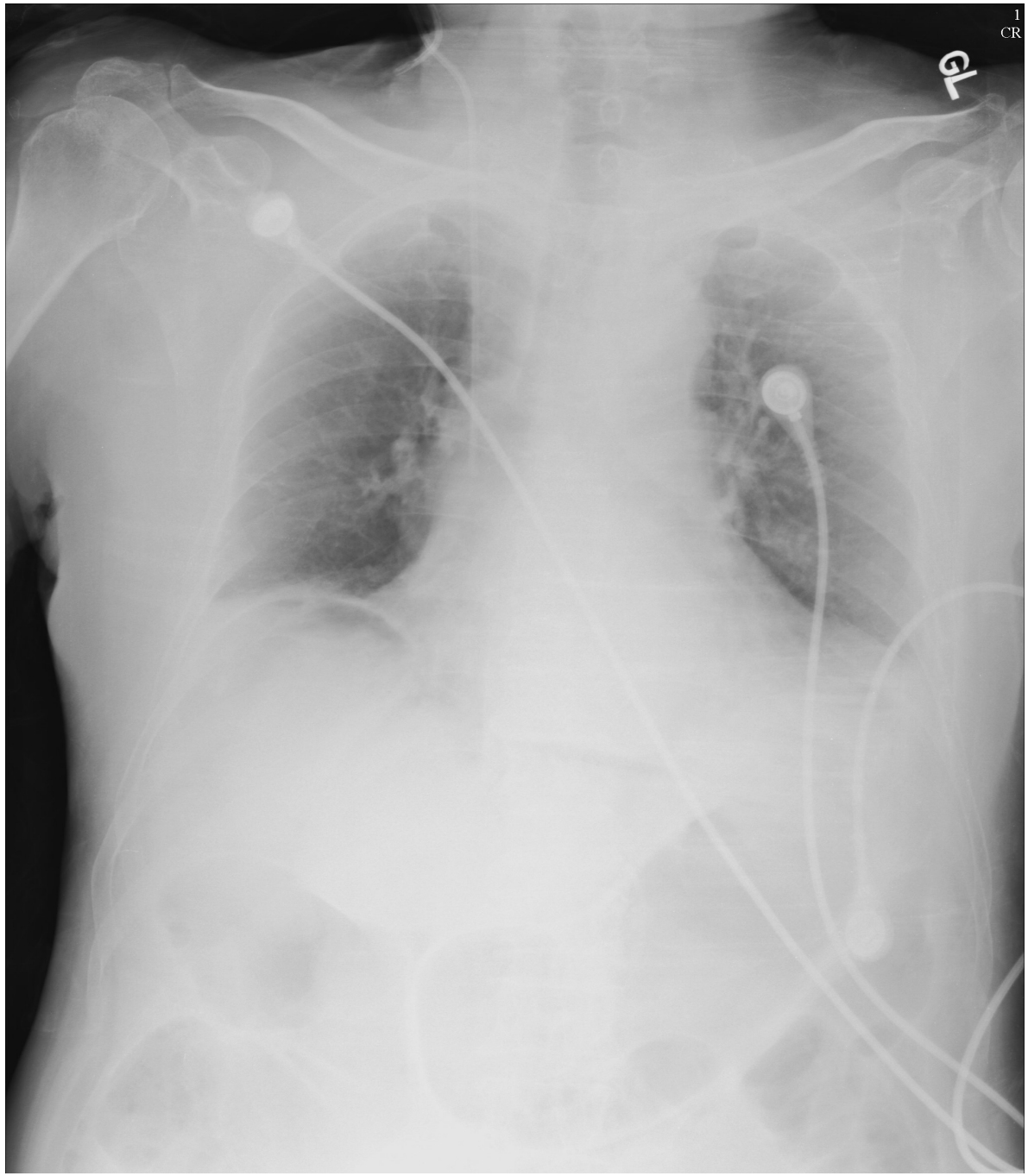
- Primperan 10mg IV st
- Fleet enema 1 BT st: Fail
- Fleet enema 1 BT st again

Lab 18:43

- Na 132 K 4.5 Sugar 171 GOT 50
- BUN 27 Cr 2.5
- CRP 23.7

Progression (19:15)

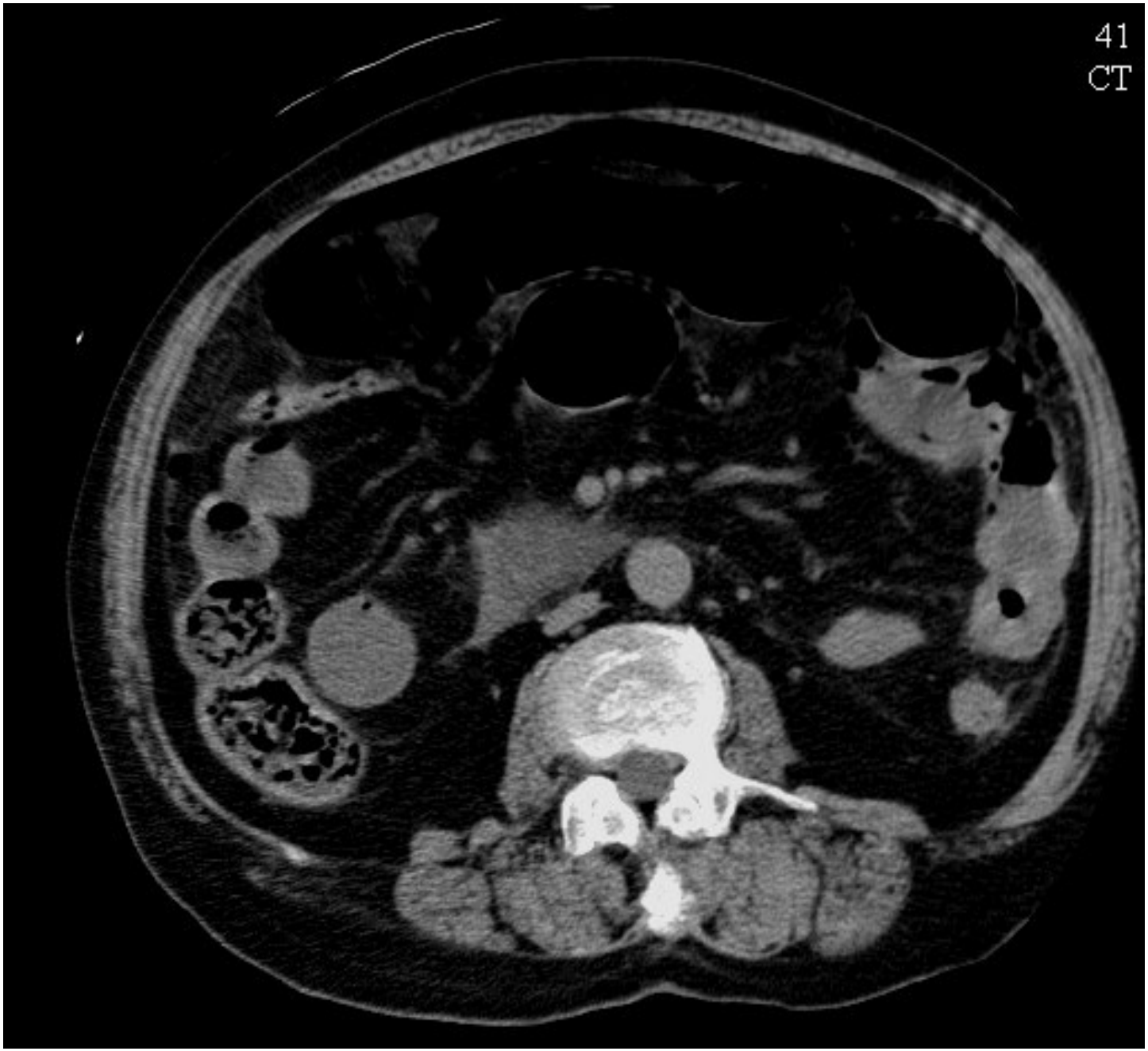
- Abdominal pain exacerbation after the 2nd enema
- Vital signs: PR 116 RR 14 BP 104/56
- On Monitor, 12-lead ECG, Cardiac enzyme and D-dimer
- Plain abdomen (Left decubitous view) and Abdomen CT


1
CR
GL


I 245

18
CT

CT
29


41
CT

Progression (20:00)

- Vital signs: PR 120, RR 36 BP 98/62
- Intubation (RSI)
- Fluid resuscitation and Inotropic agents
- Antibiotics
- Consult surgeon
- No ICU bed available

Lab (20:10)

- ABG 7.301/35.7/205.1/17.8 (O2 mask 6L/min)
- TnT: neg, D-dimer 708

Progression 21:00

- Vital signs: PR 118 RR 22 BP 85/57
- Admitted to ICU
- Operation was performed until 00:50 due to
  - Unstable hemodynamics
  - No key family member could make decision

OP Findings

- A huge perforation hole about 6x4cm was found on the anterior wall of the rectosigmoid area at the distance 18~20cm from the anal verge
- A marked gangrene change with impending perforation was seen on a segment about 50cm of small bowel, 80cm away from the ileocecal valve
- There were multiple spots to patches of ischemic changes spreading on the whole colon and small bowel.
- The whole colon was congested, edematous. thick-walled and erythematous changes

What was happened?

- General surgeon: Colon perforation complicated with intestinal necrosis (ischemic bowel disease)
- Operator of colonoscopy: colon perforation by enema, not related to colonoscopy
- EP????? 冤枉啊! 大人!