ACUTE ABDOMEN: AN OVERVIEW

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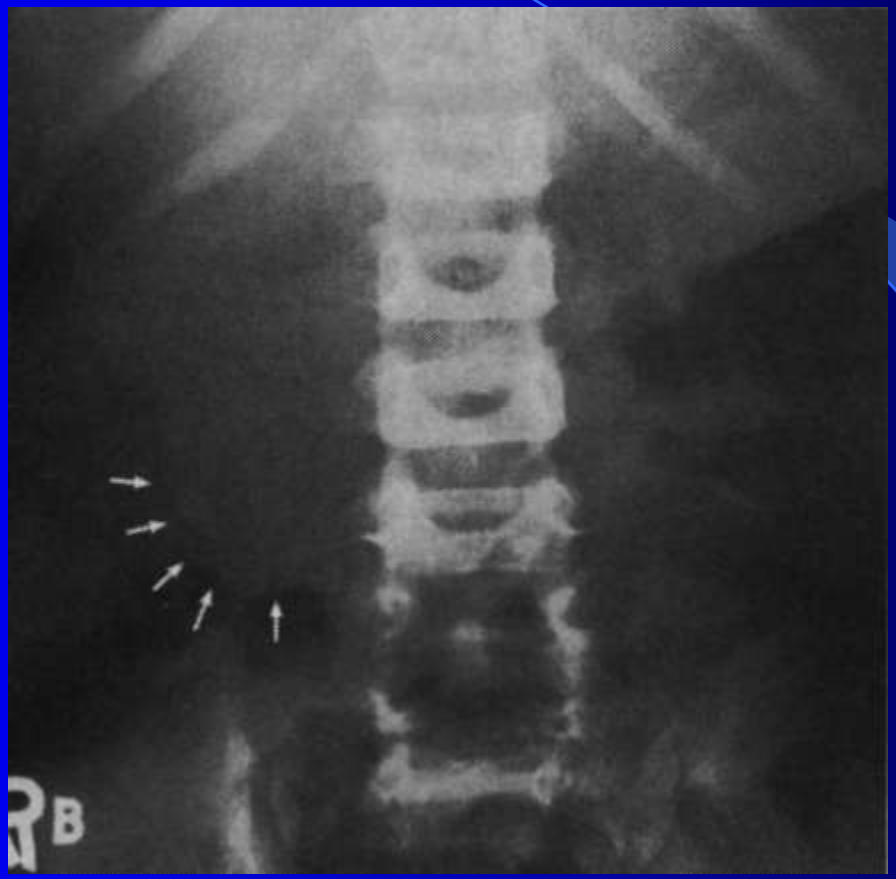
Abdominal plain films are essential for accurate assessment of the acute abdomen. In many cases, they may confirm the presence of a perforated viscus, colonic obstruction, or other abnormality requiring immediate surgical intervention. Alternatively, they may suggest relatively benign disease and help avoid unnecessary operations in these patients. In either case, emergency room physicians should benefit greatly from a systematic approach to the plain film diagnosis of the acute abdomen.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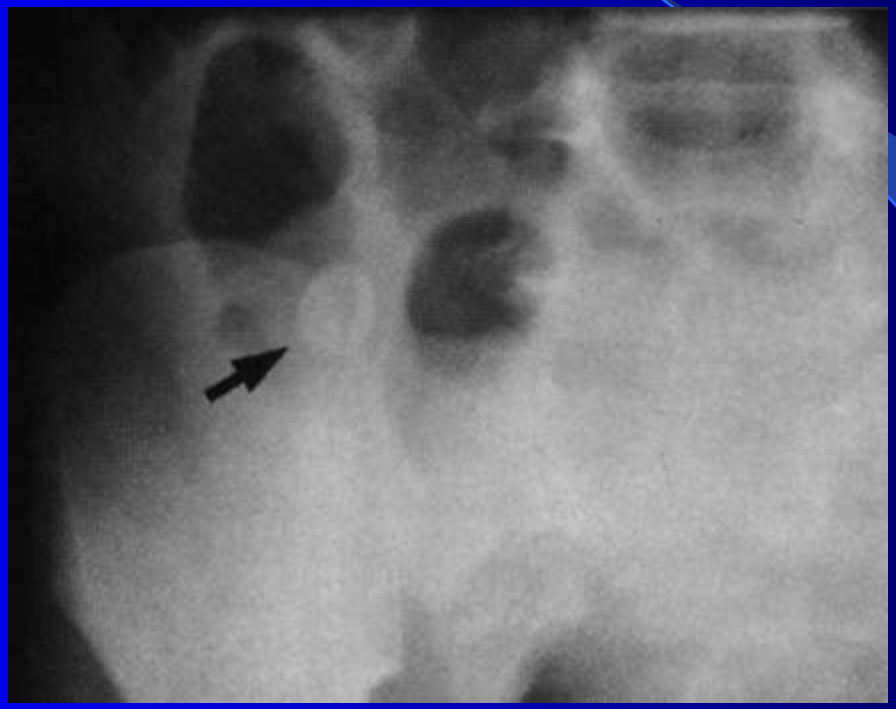
Acute abdominal disorders are common reasons for consultation at the emergency department. The diagnosis of all acute abdominal disorders begins with a careful history and physical examination. When appropriate, the clinical examination should be supplemented by conventional plain abdominal radiography. Gastrointestinal perforation and obstruction are very commonly encountered in the diagnosis of acute abdomen. Plain abdominal radiographs are the initial diagnostic methods of choice. In some circumstances, ultrasonography and CT may be valuable for the evaluation of the cause of abdominal disorder.



Incidence of specific causes of acute abdominal pain in children

Intussusception

Three in every 1000 live births

Appendicitis

Four in every 1000 children aged 5-14 years each year

Crohn's disease

One in every 10000 children

Only a third of children with appendicitis will have classic symptoms

The appendix does not grumble--it

screams or remains silent

Causes of acute abdominal pain in children
Common causes* Appendicitis * Non-specific abdominal pain

Uncommon causes

Meckel's diverticulitis, mesenteric adenitis, Crohn's disease, sickle cell crisis, gall stones, pancreatitis, tonsillitis, otitis media, acute hapatitis, acute porphyria, intestinal bands, malrotation, ureteric calculi, urinary tract infection, pneumonia, peptic ulcer disease, psychogenic, Henoch-Schonlein purpura, intussusception, yersinia infection, obstructed inguinal hernia,

contd.

torsion of testicle, omental infarction, renal vein thrombosis, acutehydronephrosis, primary peritonitis, salpingitis, ovarian cyst, ectopic tubalpregnancy, pyelonephritis, trauma, infective gastroenteritis, food poisoning, child abuse, attention seeking behavior, intestinal volvulus,choledochal cyst, cholangitis, foreign body, adhesions and small bowelobstruction, pica, ketoacidosis

Spiral CT and multidetector-row CT diagnosis of perforation of the small intestine caused by ingested foreign bodies.

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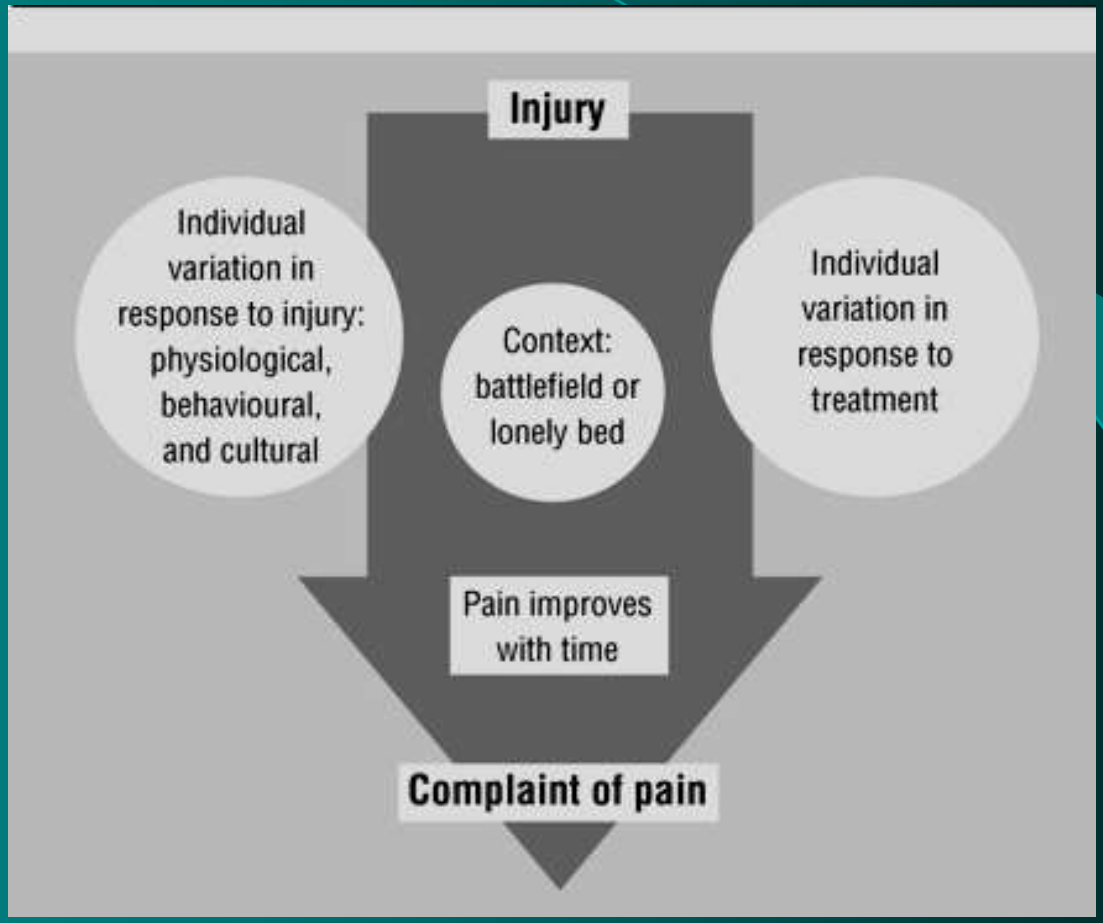
The aim of this retrospective study was to emphasize the performances of spiral CT (HCT) and multidetector-row CT (MDCT) as very effective imaging modalities for the diagnosis of intestinal perforations caused by calcified alimentary foreign bodies. Eight sites of perforations of the ileum by ingested foreign bodies were found in seven patients--one patient presenting with two separate sites of perforation. The diagnosis was successfully made by HCT in four patients and MDCT in the remaining three. Involuntarily and generally unconsciously ingested chicken and fish bones were the implicated calcified foreign bodies. The acute clinical presentations were nonspecific, mimicking more common acute abdominal conditions.

A thickened intestinal segment (7/8 sites) with localized pneumoperitoneum (4/8 sites), surrounded by fatty infiltration (4/8 sites) and associated with already present or developing obstruction or sub-obstruction (5/7 patients) were the most common CT signs, but the definite diagnosis was clearly made by the identification of the calcified foreign bodies (7/7 patients). In each patient, this identification was only possible thanks to the scrupulous analysis of very thin overlapping reconstructions obtained not only in the perforation sites (6/8 sites), but also through the entire abdomen (2/8 sites). Our report emphasizes the high performances of CTA and MDCT in identifying intestinal perforation caused by calcified alimentary foreign bodies. Moreover, the high specificity of the CT diagnosis made it possible to avoid surgical exploration in three patients.

Acute abdomen in the elderly

Sixty six percent of elderly patients had concomitant diseases, that were multiple in 63%. In this age group, the causes accounting for 71% of acute abdominal pain were bilio-pancreatic diseases (31.1%), intestinal adhesive obstruction (17.7%), complicated abdominal wall hernia (13.7%), and complications of peptic ulcer disease (8.9%). Sixty four percent required surgical treatment and, in almost 50% the surgical risk was classified in ASA III or IV, according to the American Society of Anesthesiology. Thirty one percent had postoperative complications. Compared with their younger counterparts, elderly patients required significantly ($p<0.05$) more admissions to intensive care units (2.7 and 24.2% respectively), more connections to mechanical ventilation (1.4 and 8.9% respectively) and longer hospital stays (5.4+/-7.4 and 12.4+/-10.9 days, respectively). In this series overall mortality was 6.7%, being 0.6% for young patients and 11.1% for the surgical group over 65 years old.

Understanding pain



Summary points

Opt for safety and simplicity

Measure and record pain regularly–be proactive

Choose evidence based interventions

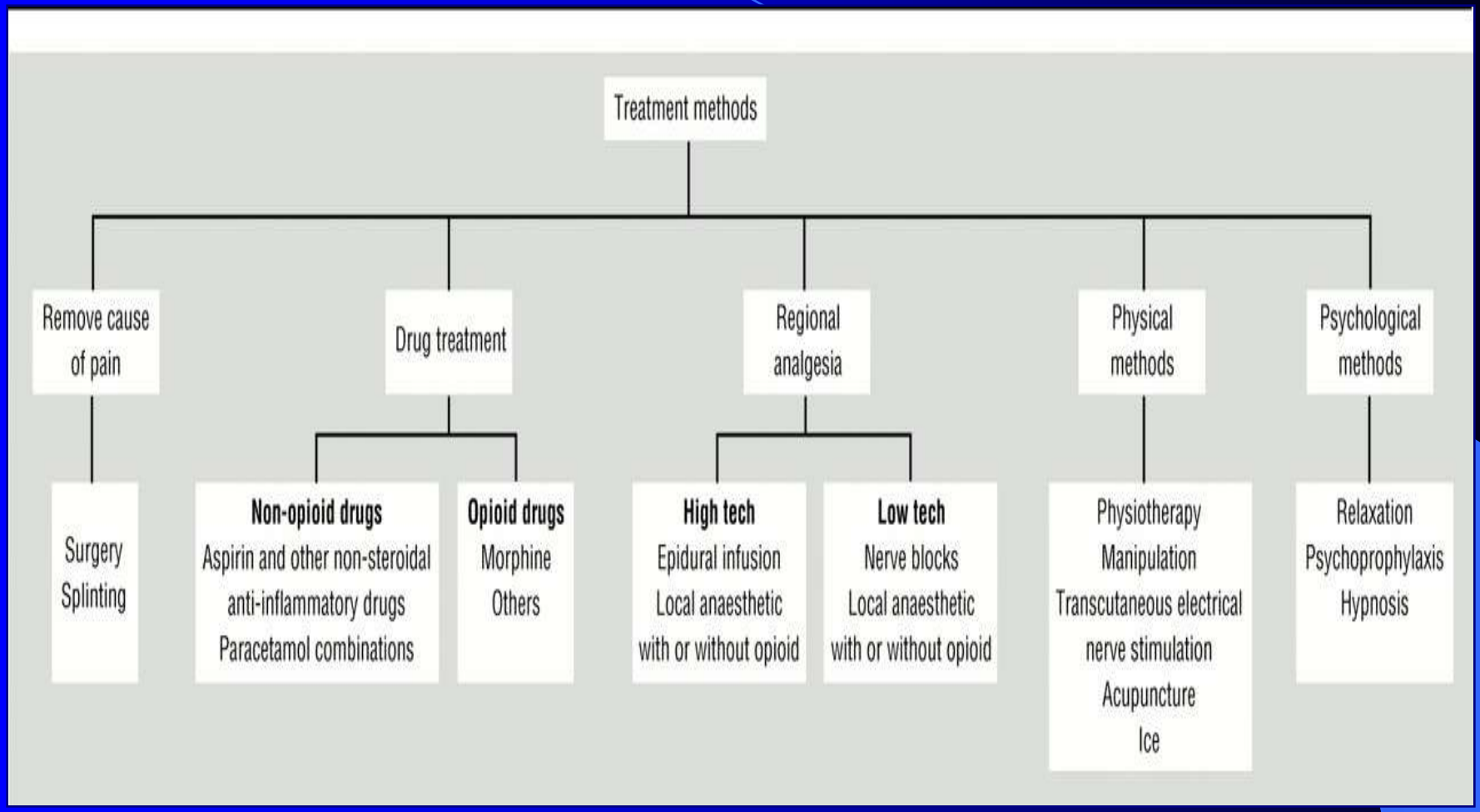
Trust patients and tailor treatment to their individual needs and allow them to have control

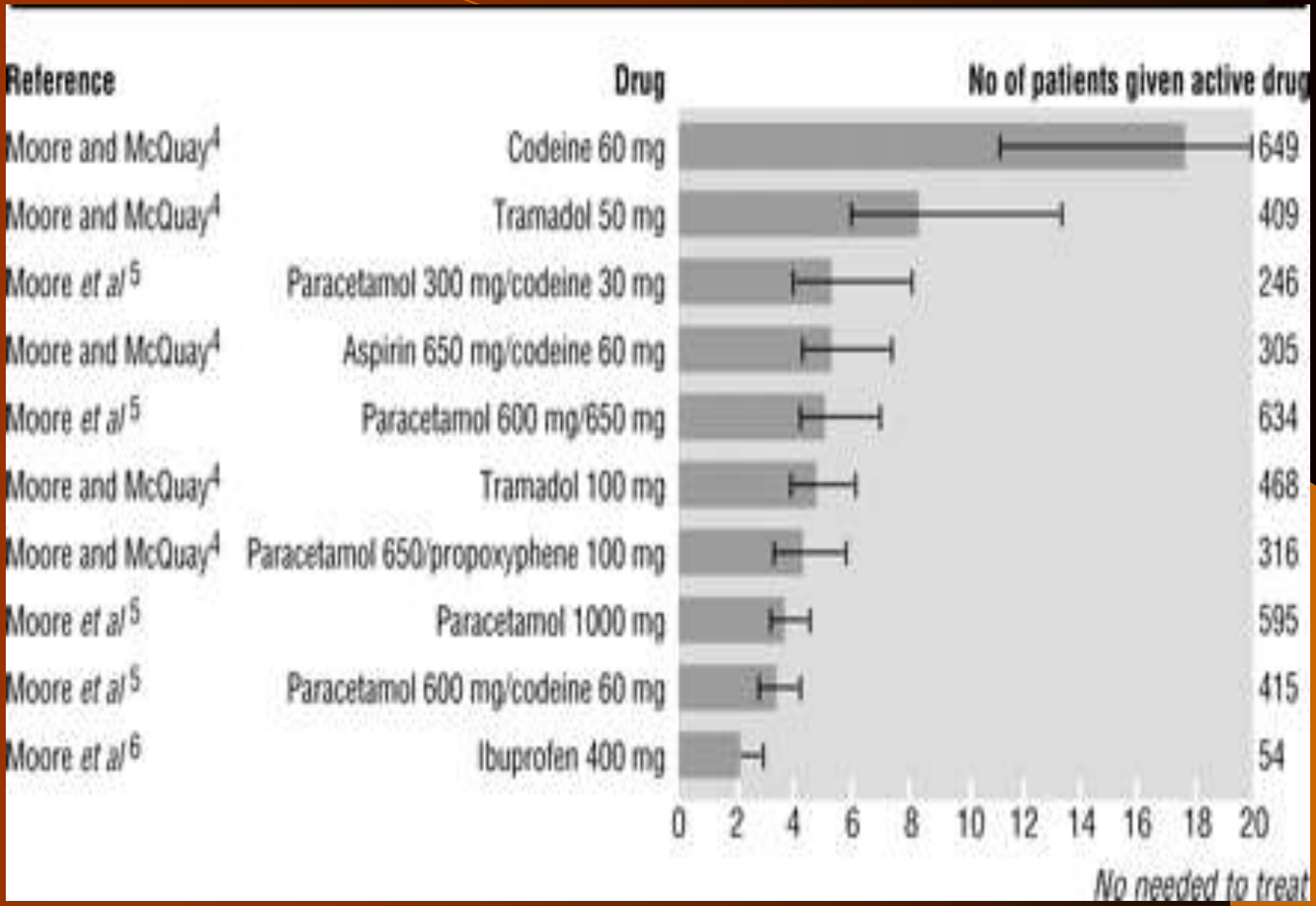
Choose appropriate drug, route, and mode of delivery

Educate staff and patients

Settings where pain is a problem

- After operations: inpatient; day surgery; wound dressing
- Medical illness: myocardial infarction; sickle cell crisis; renal colic
- Musculoskeletal disease: acute low back pain; rheumatoid arthritis
- Cancer
- Trauma
- Burns
- Childbirth


Treatment methods
Remove cause of pain
Surgery
Splinting
Drug treatment
Non-opioid drugs
Aspirin and other non-steroidal anti-inflammatory drugs
Paracetamol combinations
Opioid drugs
Morphine
Others
Regional analgesia
High tech
Epidural infusion
Local anaesthetic with or without opioid
Low tech
Nerve blocks
Local anaesthetic with or without opioid
Physical methods
Physiotherapy
Manipulation
Transcutaneous electrical nerve stimulation
Acupuncture
Ice
Psychological methods
Relaxation
Psychoprophylaxis
Hypnosis


Reference
Drug
No of patients given active drug
Moore and McQuay[4]
Codeine 60 mg
649
Moore and McQuay[4]
Tramadol 50 mg
409
Moore et al[5]
Paracetamol 300 mg/codeine 30 mg
246
Moore and McQuay[4]
Aspirin 650 mg/codeine 60 mg
305
Moore et al[5]
Paracetamol 600 mg/650 mg
634
Moore and McQuay[4]
Tramadol 100 mg
468
Moore and McQuay[4]
Paracetamol 650/propoxyphene 100 mg
316
Moore et al[5]
Paracetamol 1000 mg
595
Moore et al[5]
Paracetamol 600 mg/codeine 60 mg
415
Moore et al[6]
Ibuprofen 400 mg
54
0 2 4 6 8 10 12 14 16 18 20
No needed to treat

Causes of acute abdomen

In first few years of life –

1. **Congenital abnormalities**
2. **Incarcerated inguinal hernia**
3. **Intussuception**
4. **Intestinal volvulus**
5. **GI perforation**
6. **NEC in preterm neonates**

In older children –

1.Trauma
2. Pancreatitis
3. Meckel's diverticulum
4. Primary peritonitis
5. Intestinal worm infestation

In adolescents –

1. Acute appendicitis
2. Cholecystitis (acalculous)
3. Testicular torsion
4. Rupture of ovarian cyst

Non- surgical causes of abdominal pain –

1. Hyperthyroidisin
2. Addison's disease
3. Diabetic ketoacidosis
4. Hypercalcemia
5. Lead poisoning
6. Porphyria

Investigations in a child with acute abdomen:

1. Abdominal X-Ray/Chest X-Ray erect – Look for bowel obstruction calcification, free air and lower lobe pneumonia. Also soft tissue mass may be seen

2. Ultrasound of both pelvis and upper abdomen – For hepatobiliary, renal and gynaecological pathology.

3. Complete blood count – Increased in case of necrosis, bacterial infection, abscess

4. Peripheral smear for HUS, Sickle cell.

5. Urine examination for UTI, porphyria

Additional investigations

- **Serum Amylase/lipase – for pancreatitis**
- **Blood cultures**
- **Beta HCG**
- **CT scan for abdomen**

Stool examination for worm infestation

Typical presenting clinical characteristics of appendicitis in infants and children

Diagnosis	Age/Sex	History	Physical Examination	Lab Analysis	Radiology (Abdomen)
Appendicitis	Peak: 10-12 years M:F=3:2	Periumbilical pain (early) followed by vomiting and localized right lower quadrant pain.	- Fever >100.5 degree F. - Localized right lower quadrant peritonitis	Increased WBC (> 10000/cumm)	X-Ray - Concave curvature of spine to the right. - Presence of faecolith in 5–10 % USG - Pericolic /appendiceal fluid and/or edema.

Estimated Fetal Exposure From Some Common Radiologic Procedures

Procedure	Fetal Exposure
Chest radiograph (2 views)	0.02-0.07 mrad
Abdominal film (single view)	100 mrad
Intravenous pyelography	≥1 rad*
Hip film (single view)	200 mrad
Mammography	7-20 mrad
Barium enema or small bowel series	2-4 rad
CT scan head or chest	<1 rad
CT scan abdomen and lumbar spine	3.5 rad
CT pelvimetry	250 mrad

Thank You