MED437
KING SAUD UNIVERSITY

SURGERY TEAM 437

Approach to surgical problems in pediatric

Objectives:

- Realize the impact of Age :
- Where/who are the history sources

- Recognize and interpret the :
- Important symptoms
- Important signs

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Same as 436's lecture: yes

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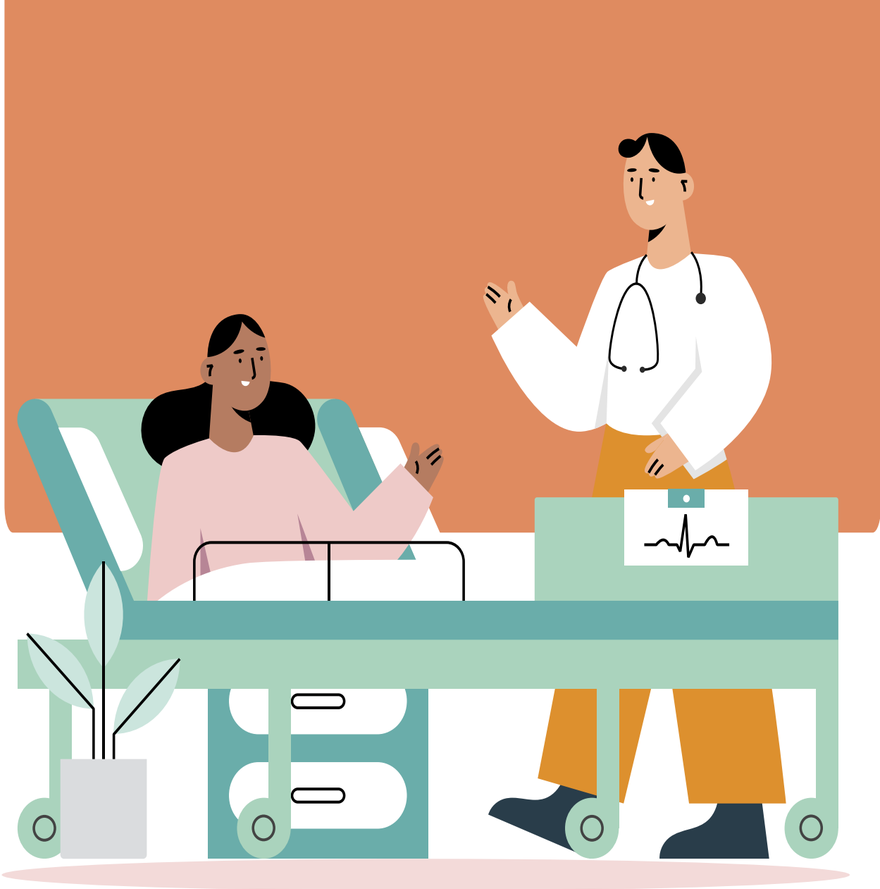
Color Index:

- Important
- Doctor's Notes
- Extra
- Davidson's

Editing File / Feedback



History & The impact of age: (Less than 3-4 year)

• Difficult to communicate

1. Verbal expression their language still is not fully developed.
2. Fear of strangers they have anxiety when they see doctors or be in a hospital because they associate them with pain.. e.g. when taking vaccination which is painful.

• History sources

In children we always need to ask relatives, it's not reliable to ask children even older ones.

1) Mother is the best source (Social barrier less than what we expect) the mother knows the child very well.
2) Father is **not** very reliable
3) Nurses are reliable Patient who are admitted for a long time, the nurses know them better than parents.
   - ■ Not always possible ■ Important in PICU/ NICU
4) Other (doctors) but they're not always available. Very reliable, for adults also not only for children.

Symptoms of surgical abdomen

• Feeding & Growing

The Function of GI is to absorb nutrition and support growth and energy. Immediate consequence of lack of food is lack of energy, long term inadequate feeding you get growth retardation.

- Feeding well and growing→ healthy baby Indicator of intact GI is that the baby's feeding well, growing well and having normal bowel movement. The mother may assume that her baby has abdominal pain because he is crying, but as long as he has normal bowel movement, feeding, growing and not vomiting his abdomen is probably ok.
- Poor feeding indicates :
  - ■ Sick baby → from any GI or systemic cause (ear infection). If there is GI sickness they will not eat well, in other problems like ear infection they will not eat well too, so how to know its GI not an ear infection? If It comes with symptoms like vomiting, poor weight gain, it's probably GI.
    if it comes with swollen neck or sore throat unlikely to be GI sickness.
  - ■ GI obstruction
  - ■ Pain swollen babies almost never complain of pain they only cry! How to differentiate between a baby crying of hunger/wet or pain? Look for **associate symptoms** (diarrhea, vomiting, growth retardation)

• Persistent vomiting → Sick baby

- Frequency in obstruction vomiting is after every meal.
- Color :
  - ■ Milk If its persistent and white and not gaining weight? Obstruction is proximal to 2nd part of duodenum e.g. **Pyloric obstruction** which is very common in children.
  - ■ Greenish most likely there's an obstruction in the 2nd part of duodenum, ileum large bowel, colon and rectum.
- Force :
  - ■ Projectile vomiting → caused by **proximal obstruction** (gastric outlet or 1st part of duodenum) forceful vomiting as the stomach will pump all the content up to the mouth, Colonic obstruction will not cause projectile vomiting.
  - ■ **Small amount of vomit after each feed → regurgitation →** normal as long as they are gaining weight the **lower esophageal sphincter is weak** in the early months of life.

Bowel movement (BM)

Frequency	■ What is the normal for infant? Once daily, four times daily or once every three days all considered **normal as long as its soft, large amount** without difficulty or other symptoms. ■ Constipated, obstructed less than once in three days with small amount Indicates either obstruction or constipation.. How to differentiate between them? ● Constipation : less than once in three days with small amount without other symptoms. ● Obstruction or abdominal distention: Constipation plus vomiting or poor feeding, gas filled intestines. ■ Failure to pass meconium in newborns Immediately after birth they pass their meconium (first bowel movement). it's dark greenish and sticky because of whatever the baby swallowed before birth e.g. amniotic fluid. If mother says her baby is constipated since birth, you ask When was the first time he passed meconium ? 85% of babies pass meconium in first day.. 95% in first two days. If not passed, RED FLAG is raised! It's probably a congenital cause of constipation like partial or complete obstruction **(Hirschsprung disease).**
Consistency	■ Frequent & watery → diarrhea How would you know it's a diarrhea not only loose bowel movement? Two criteria: 1) Persistency 2) frequency. If it's once daily its not diarrhea, sometimes you have the rectum irritated (pus on rectum) the rectum will have aggressive movement and will not absorb water and you have loose bowel movement not diarrhea. ■ **How to know how much fluid is lost in a patient with diarrhea? High urinary gravity.** ■ Firm & dry → constipation. Pellet (Pebble) stool.
Color	■ The normal color is : Yellow ■ **Very pale(because of absence of bilirubin in stool)→ obstructive jaundice** ■ Black → Melena It's indicate to upper GI bleeding and they rarely get melena which is a common cause of it is gastritis or gastric ulcers, because children have strong resistance to acid. One cause of melena in children is Meckel's Diverticulum; an outpatch of intestine with gastric mucosa that secretes acid in the ileum which doesn't have protective mechanisms against acids thus, development of ulcers, very uncommon , also it's black because of deoxygenated blood. ■ Bright red Uncommon for children to have GI bleed, what's common is to have some blood because of **anal fissure** which is cause by poor diet ex: feeding lots of candy or chocolate.

Crying baby

- Hungry: the most common cause
- Wet
- At >6 month → they learn to cry for other reasons.
- Want to be carried.
- Want to play.
- Baby who continues to cry, refuse feeding and dry → pain
  - Abdominal pain
  - Earache
- Non-crying baby can be worrisome → very sick (septic)

Development

- Physical growth (height and weight): when to get concerned? When the baby stop growing or lose weight for a long period weeks/months.
  * Chronic problems
  (Metabolic, Nutrition → gut health)
- Psychological: be more aware, communicate, and respond.
  * Mental problem, chromosomal abnormalities
- Motor : can crawl, turn, stand and walk.
  * Syndrome
  * Metabolic

Relayed symptoms (by parents):

- **External abnormality** → anything that is seen/felt as abnormal by parents. (spots, swelling)

- **Swelling**:
  - Abscess red, recent swelling, 48 hours with fever. (Abscess Fistula)
  - Mass (lymph node, Tumor, Cyst and Hernia) Mother says its inguinal swelling that disappear and appear 99% it's a hernia, we depend on history from parents for diagnosis (imaging is useless).

- **Color changes:**
  - Inflammation
  - Rash when there is generalized redness. (Viral infection, vasculitis)
  - Vascular malformation هي الي يسمونها الوحمة
  - A red area that appeared before one day is most likely cellulitis.
- **Mental changes**
  - ↓Responsiveness :
    - Sleepy
    - Not interested in feeding after 8 hours.

  [Indicates : Sepsis(it comes with fever), shock, CNS trauma, metabolic (O2, Glu, urea)
]

Abdominal Problems come as a Combination of symptoms:

- Vomiting
- Constipation / diarrhea
- Poor feeding
- Abdominal distension
- Palpable mass (felt by parents) tumor
- Very dark or very pale colored stool ,if you have a baby that is not growing well and not feeling well, looks yellow. The next question should be? Pale stool → most probably obstructive jaundice.

Intussusception:

- Intermittent cramping abdominal pain, vomiting and passing red currant jelly stool.
- Abdominal examination will reveal distension and palpable sausage like mass.

Physical Exam: (It's difficult because they're not cooperative)

- **Vital signs:**
  - Fever
  - RR, BP, HR, O2 Sat(oxygen saturation won't change only other values in babies are different from adults)
  - Blood pressure in babies is low, their systolic is almost 90 mmHg. Why? Because their arteries are soft and very elastic.
  - Heart rate in babies is HIGH, a heart rate of 130 in a baby is normal. Why? Because it is a small heart.
  - Respiratory rate will be higher than adults.
- **Consciousness (crying):**
  - Crying baby → not very sick (not critical)
  - Unusually calm baby who doesn't respond normally → sick

- **Exam while crying:**
  - Can't hear the chest well (Focus on inhalation).
  - Can't examine abdomen well (Examine while taking breath ,Keep hand on abdomen)
    you have to try examine while they're calm or while parents holding him,, once they start crying they contract their abdominal muscles and you cannot feel properly (mass or tenderness) as they will have short breaks between each breath.
  - Can't concentrate (Parents are stressed → less time)
  - Otherwise similar to adult.
    Never do a rectal examination on babies. It's not helpful, it causes anal fissures and it's very painful.

History (general skills):

- A good history = a good logical story. Example of a history; 20 years old gentleman who is involved in exercise recently and noticed a bulge in inguinal region (describe it in details) with Chronic constipation and cough and no history of vomiting or severe pain or obstruction
- Known major predisposing factors → Describe the current problem →Other risk factors → Symptoms of other possible complications.
- Due to the relative difficulties in taking a reliable history and performing an accurate physical exam → We tend to depend more on investigations in diagnosing the underlying problems in infants.

investigations :

- CBC
- Ultrasound is commonly used.

Pediatric ddx is totally different from adults its based on age (age specific) (14 years old chest pain is unlike to be ischemia), **pyloric stenosis** usually between 4 to 8 weeks after that very unlikely can't say 10 years with projectile vomiting is pyloric stenosis

summary

o Mother is the **best source for baby's history.**

o **Poor feeding** is a common symptoms and could **indicate GI problems or other systemic problem.**

o **Persistent vomiting** is significant and may **indicate serious underlying diseases.** Color, frequency and force give hints about them.

o Changes in the bowel habit can be divided into **color** and **consistency** changes, **both are significant .**

o **Continued crying or non crying babies should draw the pediatrician's attention.**

Some notes :

o **Crying baby** came with **vomiting** and color of vomiting is **green**?
Probably obstruction distally

o **Crying baby with bright red stool?**
Think about anal fissure

o **Crying baby with swelling in inguinal area?**
Think about Inguinal Hernia

o **Crying baby with swelling in perianal swelling?**
Could be Abcess

questions

1) 5 week old boy brought to you by his parents because of recurrent vomiting, parents indicated that the baby vomits with significant force all the milk he had ate completing the feed and get hungry again. Where do you think is the level of obstruction?
a) Esophagus
b) Middle ileum
c) Proximal colon
d) Pylorus

2) 6 months old baby boy presented to emergency department with history of possible swallowing of metallic object. The father said he was not sure if the baby swallowed the object. The next most appropriate is:
a) Perform an upper GI endoscopy
b) Perform a chest X-ray of the chest and upper abdomen
c) Perform a chest X-ray to the neck and chest, AP and lateral
d) Ask the mother about the incidence

3) Mainly we depend on …. To diagnose infants ;
a) History
b) Examination
c) History + Examination
d) Investigation

4) the most common cause of crying in babies is :
A) Wants to be carried
B) Pain
C) Hunger
D) Wet

1; D

2: D

3:D

4: C