How urgent is an emergency ?
(To hurry up or not ?!)

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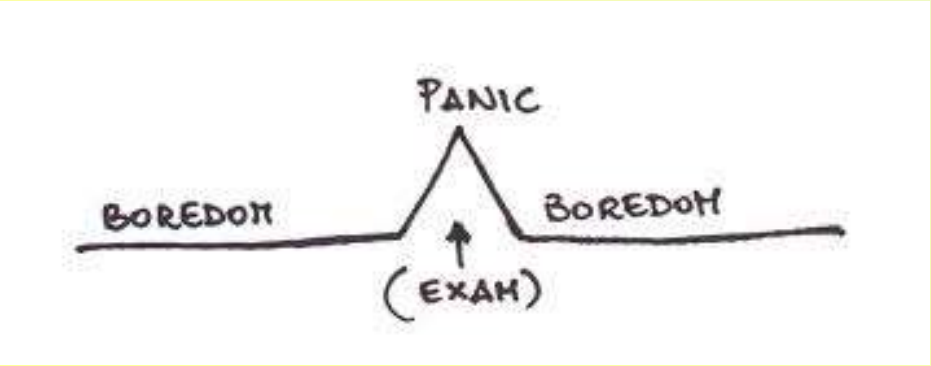
- **One definition of our profession”**

Anesthesiology ?

Hours of boredom and moments of terror !!!



- **And another one, this time of our patients:**

“Our patients are very complex, and they contain many components, the underlying functions of which are imperfectly understood. Unlike aviation system, patients are not designated, built, or tested by humans, nor do they come with an operator manual”

(Gaba, Fish and Howard, 1994)

Trei întrebări pentru audienţă:

- Câţi dintre dvs sunt medici specialişti ATI?
- Şi câți rezidenți?
- Ce părere aveţi despre profesia de medic anestezist?

.Foarte interesantă, tot timpul se ivesc cazuri noi

- La fel de interesantă ca orice profesiune medicală, cu situaţii simple, dar uneori complicate
- Plictisitoare, prea multă rutină....

ORIGIN OF BOREDOM IN ANESTHESIA

Look at the routine procedure:

The patient enters the OR

↓

A variety of monitors are assembled

↓

The patient receives a fixed dose of propofol

↓

A fixed dose of a muscle relaxant follows

↓

A tracheal tube is inserted

Eckenhoff,

➢BOREDOM IN ANESTHESIA

An automated ventilator is connected

N20 + 02 added → **An inhalatory agent and/or an opoid i.v.is supplemented**

patient is

- unconscious
- paralyzed
- narcotized
- intubated
- ventilated

➢Origin of boredom in anesthesia (final)

The anesthesiologist

Surrounded by:

***drugs**

***machines**

Occasionally looks af:

***surgical procedure**

***monitors**

Thinks of:

***last night event**

***today schedule**

***this evening dinner**

As you know, this does not happen every day and every single case…..

- **So, let’s see one case which speaks for itself**

E ora 1.30, în mijlocul nopţii...

- **The anesthesiologist is waken up by the surgeon call:**

“We have a case, a 13 year old boy, with an acute abdomen, most probably acute appendix. He will be in the OR in 10 minutes, can you help us ?”

15 minute mai târziu.....

- **01.45- the anesthesiologist, a senior MD with a five year post-residency experience, sees the patient in the OR:**

  ***a somnolent boy, 12 yrs old, 40 kg weight**

  ***he got 50 mg pethidine i-m in the emergency room, after being seen by the surgeon**

  ***The father story :**

  -healthy boy, no history

  -two days later, abdominal pain, vomits and thirsty

  -wakes up at night to void urine, most probably because of psychological stress (sister to be married next week)

➢Surgeon is already in the theater

- **Clinical examination:**

***Patient somnolent, calm, can be easily waken up**

***BP 115/55**

***HR 122**

***Slight signs of dehydration (Pt gets fluids)**

***No urine in the last three hours**

***fever 38.5 C**

Very tender abdomen, rebound, patient complain of pain and no chance for a more complete abdomen examination

- **Lab results:**

***WBC 31,000, Hb 16.5**

No other results available, blood and urine sent to lab from the ER and a chest X ray interpreted as normal by the radiologist on call

➢Iată o nouă întrebare:

- Do you anesthetize this patient or wait for lab results ?

- For waiting : we need to know the blood electrolytes, BUN, sugar
- Against : the diagnosis is clear, the surgeon is afraid of perforation

- Care e opinia dvs ?
- Cine e pentru a interveni imediat?
- Cine e contra?

➢Patient on the operating table

- **Patient with a large-bore infusion cannula**
- **Induction performed with propofol/ fentanyl/atracurium**
- **Tracheal intubation without difficulty**
- **An urinary catheter inserted**
- **Tachycardia 160, BP 85/50**
- **Anesthesiologist decides to insert an arterial cannula for hemodynamic monitoring**

➢30 minutes after patient arrival to OR

- Surgeon prepared to perform a Mc Burney incision
- Patient BP is 80/50
- HR 144
- 20 ml urine in the last 15 minutes
- SpO2 97%
- ETCO2 drops from 35 mmHg to 17

- The first lab result is here : Glucose in urine +++
- 1st sample for blood gases analysis is taken, results comes 4 minutes later:
- pH 7.1, Bicarb 9, PaCO2 15, PaO2 258 (on FiO2 0.5)

Blood glucose level : 580 mg/100 ml !!!

➢Diagnosis : severe diabetic ketoacidosis !!!

- **First scenario:**

The surgeon is informed about the new data, he decides to postpone surgery, wake up the patient and re-examine him once the metabolic balance was re-established

- **Second scenario:**

The surgeon is convinced that this is a pure coincidence, the diagnosis of acute appendicitis is correct, he proceeds to appendectomy

The time came to go to literature….

➢*Farting MJG Ind J Gastro 2006;25:33*

- **The most common cause of acute abdominal pain is acute appendicitis (37%)**
- **The commonest METABOLIC cause of acute abdominal pain is diabetic ketoacidosis (DKA)**
- **Abdominal pain due to DKA is invariably associated with other signs, such as smell of ketones on the breath, dehydration and hypercapnia as a consequence of metabolic acidosis**

➢*Leung and Sigalet Am Fam Phys 2003;67:2321*

- **In patients older than 12 yrs the first diagnosis of acute abdominal pain is acute appendicitis**
- **DKA does not show up among the first 10 causes of acute abdominal pain**
- **Indications for surgical consultation include :**

***severe abdominal pain with progressive signs of deterioration**

***rebound abdominal tenderness**

***abdominal pain WITHOUT any obvious etiology**

➢ *Umpierez and Freire, J Crit Care 2002;17:63*

- **200 consecutive patients with hyperglycemic crisis admitted to a hospital in Atlanta, Ga**
- **189 with DKA**
- **46% of them presented abdominal pain**
- **5 required surgical intervention, two of them for appendectomy**
- **In DKA patients a strong correlation between abdominal pain and metabolic acidosis (lower bicarbonate, more frequent the abdominal pain)**

➢The last data from literature

- ***Gutierez RR et al 2015***

18 patients with acute diabetic ketoacidosis-symptoms:

***general malaise, dyspnea, alttered mental status, abdominal pain**

- ***Balachandran B et al 2013***

***Nonsurgical causes of acute abdominal pain: lower lobe pneumonia, ketoacidosis, acute porphyria**

- ***Van de Laak MF 2000***

***3 patients (21, 43, 67 yrs old)-diabetic ketoacidosis+acute abdominal pain**

***in two cases –laparotomy, which was negative!**

➢*Van de Laak, MF*
Ned Tijddschr Geneeskd, 2000;144:153

A potential acute abdominal problem prompting surgical intervention should not be overlooked; it may have been the precipitating factor for diabetic ketoacidosis

➢Now back to our patient with the FIRST scenario

- Vigorous isotonic saline infusion, according to the electrolyte and osmolality level
- Insulin 0.1 u/Kg i-v followed by insulin in continuous infusion 0.1 u/Kg/Hr
- Patient metabolically monitored, blood sugar to be lowered by not more than 75-100 mg/dl per hour
- When its level reaches 250 mg/dl , glucose is added
- Be aware of factitious hyponatremia
- Bicarbonate usually not necessary
- Hypokalemia is very dangerous in this situation

- Şi o întrebare esenţială: aţi trezi pacientul după echilibrarea hidroelectolitică?

➢The SECOND scenario

- **The surgeon decides to operate**
- **Three possibilities :**

Acute appendicitis, appendectomy, together with vigorous treatment of ketoacidosis

Normal appendix, patient still under treatment

Patient unstable because volume deficiency, early or late complications related to DKA

➢Do you really want to know what happened to the patient ?!

- **Patient operated- acute appendix- discharge after 10 days**
- **Surgery delayed- DKA solved- laparotomy 16 hours later- no appendix inflammation**
- **What more ?**

Could be much, much worse!!!!!

➢Lessons to take home

- **The most important point is early recognition and management of a crisis**
- **The anesthesiologist is part of the decision making process in the OR, especially in emergent and urgent cases**
- **Sometimes this process is dynamic and does not limit to one single event**
- **Routine (management of DKA) and non-routine (delaying surgery) decisions are sometimes needed simultaneously**
- **This kind of situations demands consultations with peers**


3 Evaluate Possible Options
2 Observe a Problem
4 Choose Option
1 & 6 Monitor and Control
5 Implement

➢Real difficulties

- **The decision affects not only the patient but also the other members of the team, especially when one thinks of ethical and legal consequences**
- **Fatigue and lack of experience are objective obstacles in the way of correct decision making process**
- **To overcome one's own ego and to ask for help**
- **The reluctance to switch from "business as usual" to "emergency mode"**

➢Şi un ultim aforism...

“Fiecare caz clinic reprezintă o lecţie, care trebuie învăţată chiar dacă nu te aştepţi să se repete foarte repede”


DANGER
MEDICAL
ERRORS AHEAD