

How to prepare an asthmatic patient to surgery ?

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Oare cât de frecvent e astmul bronșic in lume?

Care e părerea Dvs?

- 1%
- 5%
- 10%
- 15%



Too many diseases needing to be assessed and managed before surgery

Why bronchial asthma ?



- Its incidence is around 5% in young population
- Increased prevalence and severity in the last 25 years (pollution ?)
- Rarely a severe disease, it can lead to pulmonary complications and death in the perioperative period
- Relatively easy to manage

Beside, asthma put some supplementary problems

- **The differential diagnosis is not so simple, especially regarding COPD**
- **The severity of the disease is variable and needs a precise evaluation**
- **Some patients come for elective surgery in a pulmonary status which needs to be optimized**

***And....(Warner et al, Anesthesiology
1996;85:460)***

**“We found that
patients
without recent
symptoms of
asthma had a
very low
frequency of
perioperative
complications “**



So, what is asthma ?

Asthma is a chronic pulmonary disease characterized by chronic airway inflammation, reversible expiratory airway obstruction due to narrowing in the airways in response to various stimuli and airway hyperactivity



Am un pacient pentru Dvs!

- **A 54-yr old patient is scheduled to have a laparoscopic cholecystectomy**
- **Since his surgeon knew about the patient's asthmatic condition, the admission was decided for the afternoon before surgery**
- **The anesthesiologist is requested to see the patient around 16.00 hours**
- **He finds the patient sitting on his bed.....**

- He seems to be in a mild respiratory difficulty, using his accessory muscle for every inspiration
- His respiratory rate is 18 per minute
- On auscultation , moderate wheezing and ronchi all over the lungs
- HR 89/min, BP 136/88
- He uses a drug nebulizer



So, as usual three steps are to be taken:

***Anamnesis**

***Physical examination**

***Lab tests**

Because, eventually, is it you who has to decide if the patient will be operated tomorrow !

Ask the patient some very important questions and you will find out

To what category does he belong ?

1. History of wheezing BUT no acute attack in the past and no regular medication

2. History of recurrent attacks and use of bronchodilator medication

3. History of established daily symptoms and multiple medication, including steroids

Once you will categorize your patient.....

- **You will establish the risk of postoperative pulmonary complications**
- **You will know what patient deserve preoperative assessment and preparation**
- **You would plan the perioperative care with the aim of decreasing acute exacerbations**

Deci pacientul nostru aparține celei de a doua categorii:

- **Had in the past some asthma attacks, which brought him to the emergency room**
- **He is on chronic bronchodilators therapy**
- **Steroids have been used i-v twice during treatment in the ER**
- **He had his Rt inguinal hernia repaired two years ago without any complication**

It could be worse !!

- Patient on continuous steroid treatment
- Pulmonary hyperinflation, hypercapnia
- Chronic dyspnea, most probably due to hypoxia and pulmonary hypertension
- Secondary effects of steroid treatment:
 - *hyperglycemia
 - *myopathy
 - *adrenal insufficiency

Fortunately , your patient is much less sick !!

**Now you know that the
symptoms are not out of the
blue and that this patient is
asthmatic and needs a special
attention**

**The first, and most important,
question:**

**Do you agree to anesthetize
this patient tomorrow
morning ?!**

A venit timpul sa votam!

- **Cine e pentru a anestezia pacientul mâine dimineată?**
- **Cine e pentru a externa pacientul si a-l trimite în ambulator în vederea pregătirii pentru intervenția chirurgicală?**
- **Cine e pentru a amâna intervenția si a continua tratamentul de pregatire în spital?**

**Evidently here we might have
two approaches.....**

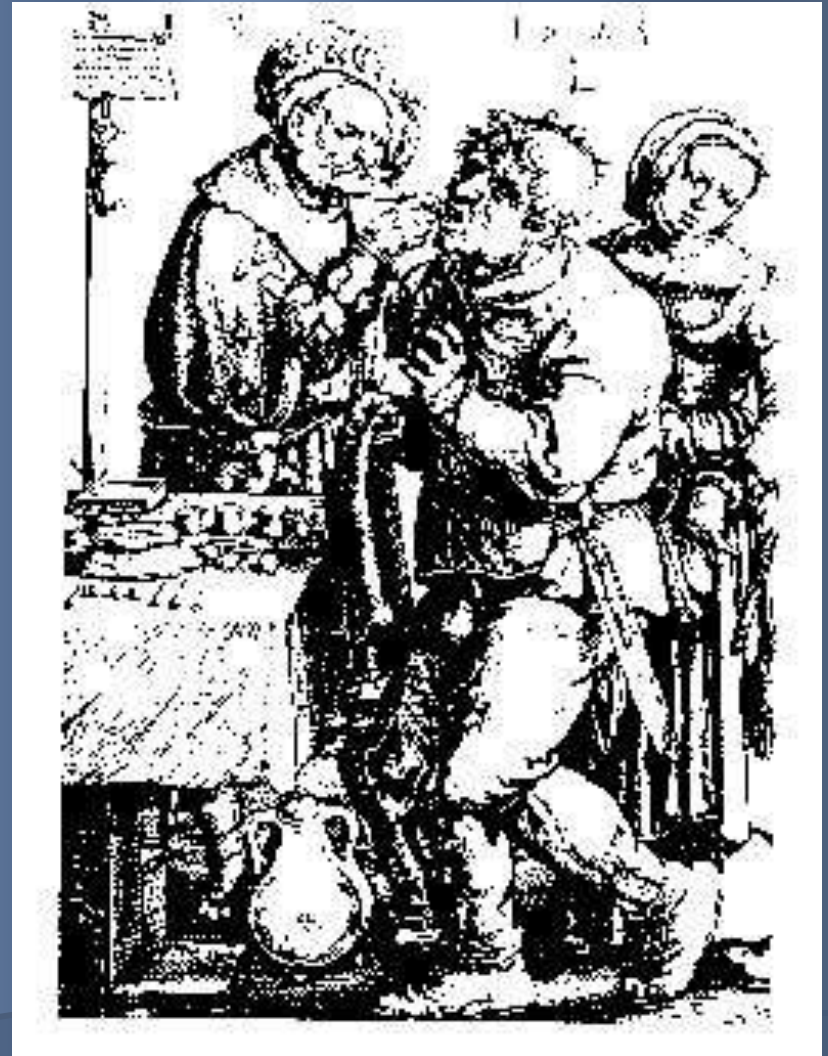




The first one.....

The pragmatic plan:

- Start an i-v infusion
- Ask patient to use oral bronchodilators as well as nebulizer
- Order a chest X Ray
- Check him after a couple of hours
- Hopes that this approach improved his clinical conditions:
 - *no more wheezing or ronchi
 - *easier breathing



The second approach is based on evidence and literature

- No rush, his surgical condition is not acute
- You have time to ask the following questions:
 - *what is the cause of decompensation
 - *what is the degree of airflow obstruction
 - *how can you optimize the treatment
 - *and, of course, what can be done to prevent the intra- and postoperative pulmonary complications

**Oxford
Handbook of
Anaesthesia**
(p. 57)

“Do not anaesthetize patients for elective surgery when the patient's asthma is less than optimally controlled “!!

It seems that the cause of (mild) decompensation is.....

A flu, which started a week ago, with mild fever and post nasal drip and which did not completely disappeared



In this case.....

YES,

- Start an i-v infusion
- Ask patient to use oral bronchodilators as well as nebulizer
- Order a chest X Ray
- Check him after a couple of hours

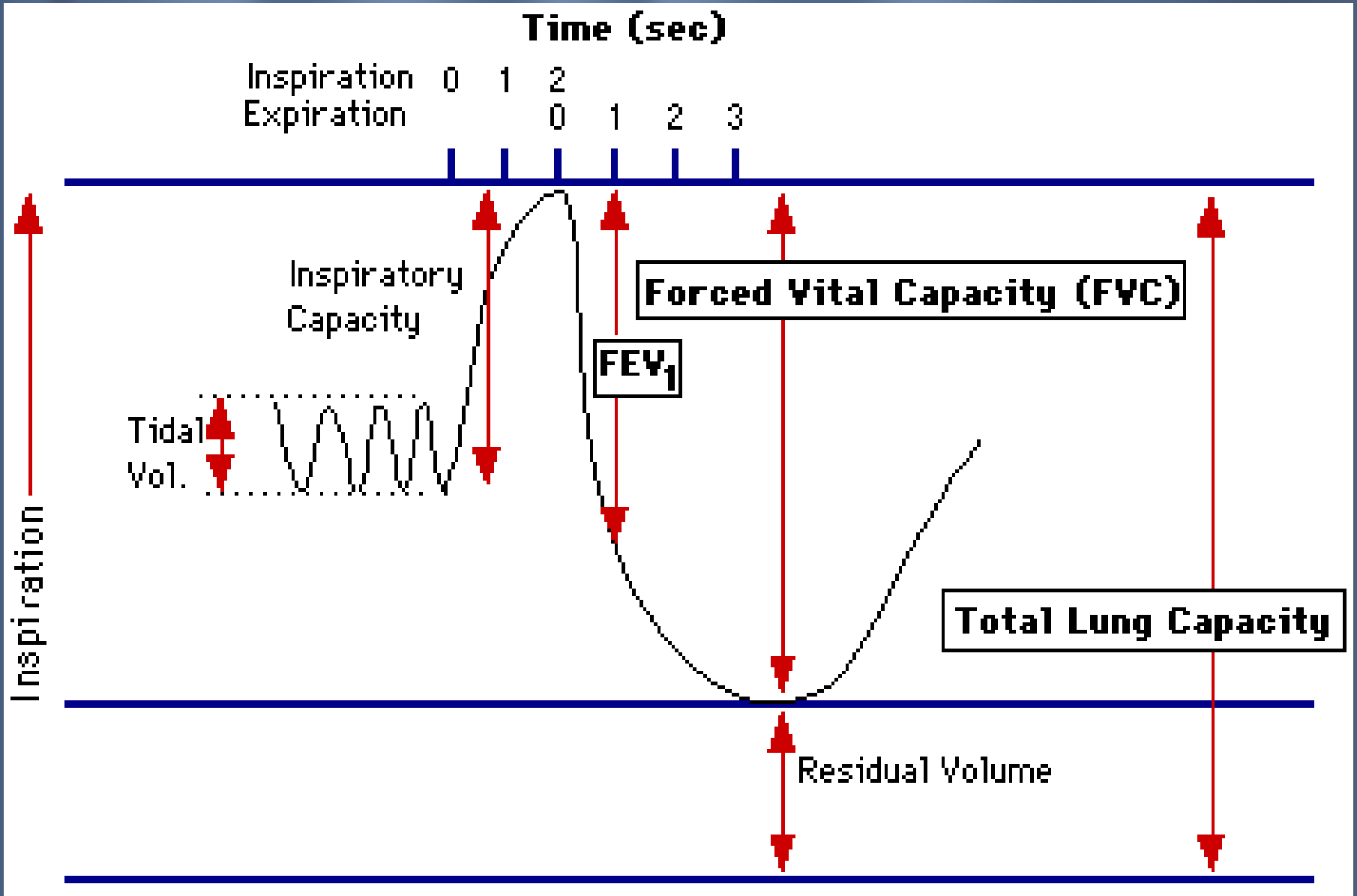
BUT also..

Go on with the lab investigations:

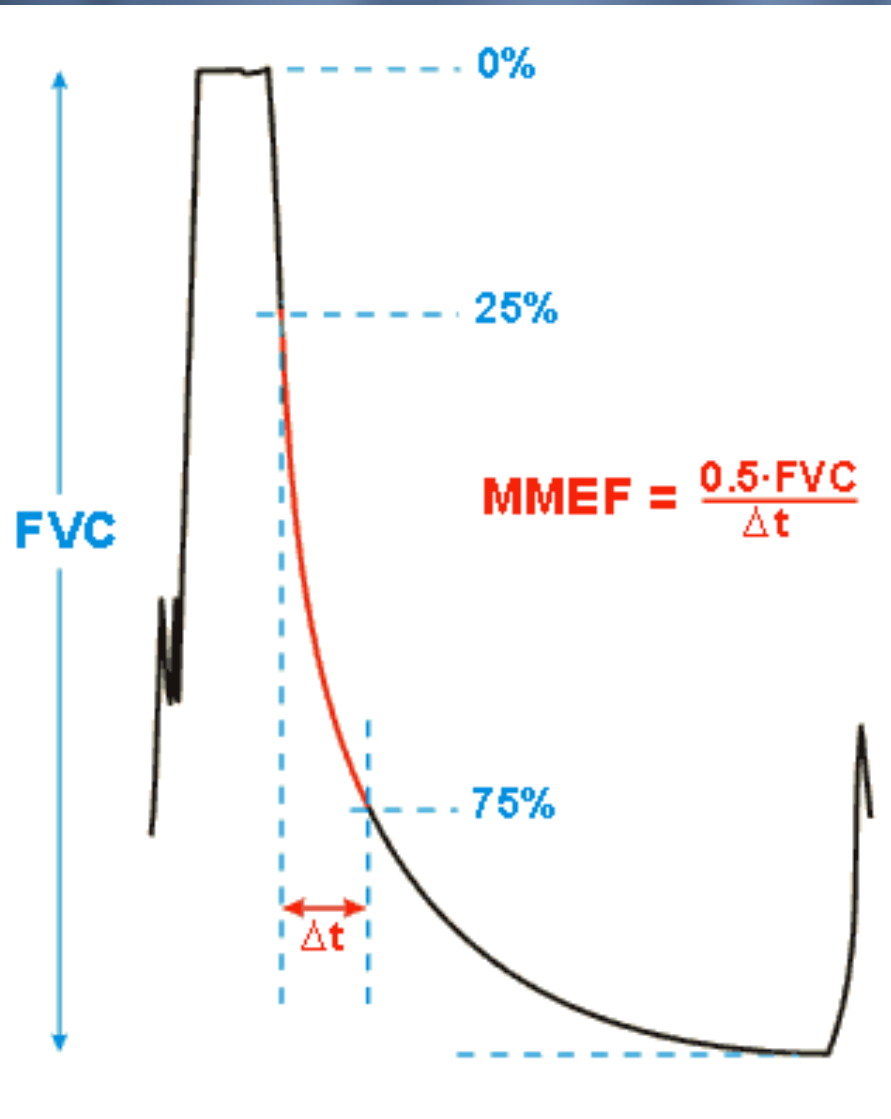
***white cell count
(*eosinphiles ?*)**

***pulmonary
function tests
(PFT)**

***arterial blood
gases (most
probably normal,
but you need them
as a reference
term)**



Pulmonary function tests



**Maximum
Midexpiratory
Flow rate
(MMEF)**

How can we interpret the results ?

Severity of symptoms	FEV 1 (% predicted)	MFEF 25-75 (% predicted)	PaO ₂ (mm Hg)	PaCo ₂ (mm Hg)
No symptoms	65-80	60-75	>60	<40
Moderate	50-64	45-59	>60	40-45
Marked	35-49	30-44	< 60	≥50
Status asthmaticus	<35	<30	<60	>50

Next morning, about 11.00 AM

- **The patient is clinically better, but still wheezing and complaining of shortness of breath**
- **The lab results:**
 - *WBC 10,300 mostly neutrophiles with a 8% eosinophiles**
 - *FEV₁ 77% of predicted**
 - *FEF₂₅₋₇₅ 69%**
 - * pH 7.36 PaCO₂ 40 PaO₂ 70 (FiO₂ 0.21)**

Cum putem concluziona această nouă situație?

- Patient still symptomatic, but mild
- PFT borderline, between a mild and a moderate form
- Chest X ray shows signs of hyperinflation
- Surgery still elective
- He got only inhalatory bronchodilators



What did we forget ?

The patient repeated the PFT after two puffs of a beta- agonist and.....

His FEV 1 improved by 18% (from 3.2 l to 3.8 l)
!!!



What does it mean ?

- **It means that he needs to continue the bronchodilator treatment for another 24 hours**
- Albuterol by metered-dose inhaler
- Add Ipratropium, an anticholinergic drug, by nebulizer
- Go on with the infusion (will make the bronchial secretion thinner)
- Keep the patient under observation
- Steroids ?

Steroids ?

Why, when and how ?

Why ? For the antiinflammatory and bronchodilator effect

When ? If the patient remains symptomatic despite the bronchodilator therapy

How ? inhalatory

Do not forget the secondary effects of prolonged treatment:

- **Bone resorbtion**
- **Steroid purpura**
- **Cataracts**
- **Suppression of the adrenal axis**
- **Dysphonia, glossitis**
- **Oropharyngeal candidiasis**

Și acum să rezumăm acest caz

- This is an asthmatic patient, in a mild form, who had a flu which worsened the symptoms
- He cannot be anesthetized immediately, but with proper treatment for 36-48 hours he has a very good chance to become completely asymptomatic and pass his laparoscopic cholecystectomy
- He does not need steroids pre-operatively, but the decision in this direction is to be taken in accordance with the clinical evolution

**Of course, our discussion
could get a completely
different course if the patient
was in more serious
condition.....**

**Cu alte cuvinte, era loc
de și mai rău.....!!!**



Severe persistent asthma

Clinical signs

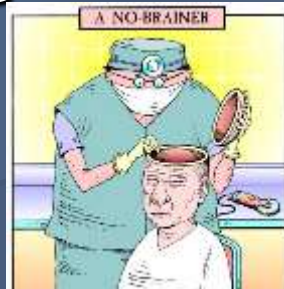
- *severe cough
- *chest tightness
- *resting dyspnea
- *persistent wheezing and ronchi
- *no improvement under bronhodilator treatment

In this very case:

- *include oral or even i-v steroids in the pre-anesthetic preparation
- *continue treatment for at least 48-72 hours
- *consider postponing surgery for next week/month

Și iată că a venit dimineața intervenției chirurgicale, cam la 48-72 ore de la internare

- Last clinical examination, to be sure that there is no wheezing, ronchi, dyspnea
- Go on with the i-v infusion
- A two-puff inhaler of albuterol
- Some colleagues will inject 1.5-2 mg/kg hydrocortizone just before induction



Si ultima întrebare: cum anesteziem acest pacient?

- **Administer benzodiazepines for premedication, no atropine**
- **Use propofol-ketamine for induction**
- **Inject lidocaine 1.5 mg/Kg i-v**
- **Use inhalatory drugs for maintenance**
- **Be sure that you assured a proper depth of anesthesia BEFORE intubation**
- **Avoid muscle relaxants which release histamine**
- **Extubate the patient when he is still anesthetized in order to suppress hyperactive airway reflexes**
- **Some colleagues will administer lidocaine at the end of surgery (1-3 mg/Kg/hr) to avoid bronchospasm**

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Call and Deadline for Abstracts...

Qualified abstracts on all technological and computing as well as organizational and system ergonomic aspects of anesthesiology, intensive care and emergency medicine are most welcome. Accepted abstracts will be published in the Book of Proceedings and the Journal of Clinical Monitoring and Computing (JCMC). Selected authors of abstracts will be invited to write a full article in JCMC

Submission Deadline:
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