How to prepare an asthmatic patient to surgery?

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Oare cât de frecvent e astmul bronșic în 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.
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 să votăm!

- Cine e pentru a anestezia pacientul mâine dimineață?

- Cine e pentru a externa pacientul și a-l trimite în ambulator în vederea pregătirii pentru intervenția chirurgicală?

- Cine e pentru a amâna intervenția și a continua tratamentul de pregătire în spital?
Evidently here we might have two approaches.....
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?

<table>
<thead>
<tr>
<th>Severity of symptoms</th>
<th>FEV 1 (% predicted)</th>
<th>MFEF 25-75 (% predicted)</th>
<th>PaO2 (mm Hg)</th>
<th>PaCo2 (mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No symptoms</td>
<td>65-80</td>
<td>60-75</td>
<td>&gt;60</td>
<td>&lt;40</td>
</tr>
<tr>
<td>Moderate</td>
<td>50-64</td>
<td>45-59</td>
<td>&gt;60</td>
<td>40-45</td>
</tr>
<tr>
<td>Marked</td>
<td>35-49</td>
<td>30-44</td>
<td>&lt; 60</td>
<td>50</td>
</tr>
<tr>
<td>Status asthmaticus</td>
<td>&lt;35</td>
<td>&lt;30</td>
<td>&lt;60</td>
<td>&gt;50</td>
</tr>
</tbody>
</table>
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
The patient repeated the PFT after two puffs of a beta-agonist and......

His FEV1 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
Şi 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 bronchodilator 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
Şi iată că a venit dimineaţa intervenţiei 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
Vă rog să luați această informație ca o invitație personală de a participa la congresul ESCTAIC 2012

<table>
<thead>
<tr>
<th>ESCTAIC 2012 in Timisoara RO - Call &amp; Deadline for Abstracts</th>
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<tbody>
<tr>
<td><strong>Call and Deadline for Abstracts...</strong></td>
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<tr>
<td>Qualified abstracts on all technological and computing as well as organizational and system ergonomic aspects of anesthesia, 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.</td>
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<td><strong>Submission Deadline:</strong> 31st of March 2012</td>
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<td>For further information just visit <a href="http://www.esctaic.org">www.esctaic.org</a> and enter your email address to be added to our mailing list</td>
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system ergonomics
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virtual textbooks
simulation
closed-loop systems
patient controlled analgesia
target controlled infusion
economic benefits of technology
standardization of data sets
standards for technical devices
and many more