

Pre-operative examination and perioperative care

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Pre-operative-examination - goals

- **Evaluation** of the general **risk of operation** based of clinical status of patient and the laboratory and other examination results
- **To compare** risk of the operation with the risk of delay or conservative treatment. To give a chance for informed decision to patient.
- **Suggest** procedures to minimalize risk
 - pre-operative treatment to stabilize patient status
 - specification of threatening complication and their prevence

ASA classification

- **ASA I:** Patient without chronic comorbidities under 50 years old
- **ASA II:** stable patient with compensated chronic illness without functional limitation, or over 50 years old
- **ASA III:** patient with chronic illness with functional limitation or more chronic illnesses with systemic influences, but not life threatening
- **ASA IV:** patient with serious decompensated illness threatening its life, patients after transplantation, chemotherapies, with immunodeficiency and mild to hard malnutrition
- **ASA V:** critically ill patient, when the operation is last chance for to survive („vital indication“)

Who can perform

- ASA I-II - General practitioner, valid for 4 weeks
- ASA III and IV – internist with cooperating specialists according patient diagnoses, valid for 4 weeks

Parts of pre-operative examination

- Personal history is most important!
- Family history: thrombembolism and CVS illnesses
- Personal history: screening of serious illnesses, previous operations and their complications
- Farmacological history in relation with operation (anticoagulation, contraceptives,...)
- AA: medicaments, blood derivatives, anesthesia
- Abusus: smoking, alcohol, drugs

You must
clearly explain
your problem



Current status

- current patient complaints
- Respiratory and other infections during last week (cough, expectoration, fever, vomiting, diarrhoea, dysuria)
- Worsening of breath or angina pectoris in last 2 weeks
- Nutritional status – appetite loss, weight loss, dyspepsia during last 3 months
- Load tolerance – longer walks, how many levels upstairs (and kind of limitation-breathing, legs pain), leg oedemas

Physical examination

- BP, P, weight, height
- Consciousness, hydratation, nutrition, ventilation
- Inflammation of throat, carotic murmurs, jugular veins load, cardiac action and murmurs, breathing, abdominal pain+obesity, leg oedemas and signs of deep venous thrombosis

Laboratory examination

- For ASA I – blood count, urine, over 40y's EKG, over 50y's glycaemia, urea, kreatinin
- before longer operations: serum minerals, INR, APTT, blood group
- Complementary examination – regarding of patient history and objective findings – liver enzymes, Ca, P, acidobasis, blood gases, gloerular filtration rate, CRP, albumin, prealbumin
- Hepatitis antibodies – patient with dialysis, after many transfusions, i.v. drug addicts
- HIV at risk groups

For simplicity we often use universal set of tests –in FN Motol - EKG, blood count, INR, APTT, minerals, glycaemia, urea, kreat, AST, ALT, whole protein

Another complementary examinations

- Spirometry – patients with chronic respiratory disease, chest dephormities, neuromuscular disease, chest operations
- Echocardiography – history of myocardial infarction, signs of heart failure, murmurs or scare on ECG
- Selective coronarography –no special indication
- Cervical spine skiagraphy – revmathoid and psoriatic arthritis, Bechtěrev disease
- Further examination is indicated dependings to status of the patient and urgency of operation

Special risk factors of operation and their solution

- Malnutrition** – weight loss more than 10%- weakness, infectious complications, bad wound healing, decubits, instability of endoprothesis – nutritional intervention before and after operation
- Obesity** – elongation and complication for operation (esp. abdominal), restriction of ventilation, risk of esophageal reflux and aspiration, risk of thromboembolism
- Dehydration** – hypotension, worsening of renal insufficiency, delirium – p.o. and intravenous hydration before operation
- Liver cirrhosis** – koagulopathy, hypoalbuminemia, thrombocytopenia, anemia – nutritional intervention, blood derivatives substitution
- Gastric reflux and ulcers** – risk of exacerbation and aspiration –PPI, prokinetics

Special risk factors II

Prostatic hypertrophy – problem with restitution of spontaneous miction after cathetrisation, risk of uroinfection – minimise time with urinary catheter, control of urination after extraction

Etylism – risk of regurgitation and aspiration, abstinence syndrom, change in pharmacokinethic of medicaments – wait for sober up if possible, check serum levels of etanol

Chronic kidney failure – change in pharmacokinethic of medicaments, attention for nephrotoxic medicaments (NSA, aminoglycosids), risk of worsening after peroperation ischaemia – calculation with a need of hemodialysis at advanced stages of kidney failure

Rhevmatoid and psoriatic arthritis – atlantoaxial subluxation- risk of quadraparesis – x-ray examination of cervical spine

Special risk factors III

Hematological abnormalities – anemia- correction to 100mg Hgb/l, thrombocytopenia – correction to 50 bil/l, before prosthatectomy, intraocular and neurosurgical operation 100 bil./l

- leucopenia under 1 bil./l – G-CSF

Respiratory infection – risk of progress of infection, bronchospasm – operation delay 2 weeks after upper airways infection, 6 weeks after pneumonia (for planed operation), small cough usually doesn't matter. If urgent operation is necessary, start i.v. ATB before

Anesthesia and food – last drinks and peroral medication 2 hours before, meal min. 6 hours before

Special risk factors IV

- **Carotic stenosis** – solve before, if significant
- **Thromboembolism**
 - patient risk – contraceptives, neoplasia, obesity, gravidity, personal and family history, thrombophilia
 - operation risk – bigger operation (imobilisation, activation of coagulation) - abdominal and chest surgery, orthopaedic, gynecologic operation

Prevention – bandages, bed exercise and early mobilisation

Already before operation start with LWMH, direct II a X factor inhibitors-continuing 1-6 weeks depending from type of operation, at contraindication use pneumatic compresion, at pre-existing DVT use caval filter

Diabetes mellitus

Before planned operation:

- compensation status – glycaemic profile 3 days (fasting under 10, prandial under 13 mmol/l, glyc. Hgb –under 7,2%)
- complications screening (nephropathy, neuropathy, retinopathy, atherosclerosis, silent coronary ischaemia)

The goal for compensation of DM at perioperative care is glycaemia 4,0-7,0 mmol/l

Pre-operative management and postoperative care

- **PAD** – small operation – discontinuation of medication only morning, greater operation - discontinue metformin 2 days before, switch to intensive insulinothreapy
- before operation **infusion** 500ml of 10% Glucosi with 10-20 I.U. of rapid insuline
- Prefere soon **morning term** for operation at diabetic patients
- **Complications:** infection(urinary), MI,urinary retention, gastroparesis, renal failure, hypoglycaemia during anesthaesia

Arterial hypertension

- New established –starting therapy with beta-blockers
- Continue chronic therapy expect of diuretics
- BP over 180/110 is contraindication for operation – must be corrected before
- **Stress hypertension** is frequent (pain, anxiety) – treat with analgetics, anxiolytics, if necessary use short-acting i.v. antihypertensives (nitrates, metoprolol, urapidil) in infusion – risk of hypotension after start of anaesthesia

Asthma, COPD

- **Spirometry** – increased risk at FVC under 70%
- At grave disease also blood gasses
- Stop smoking (min.3 weeks), start learning breathing exercises
- **Inhalation** of Bronchodilatances (betamimetics, parasymptolytics), eventually higher dose of corticoids 1 week before
- Continual oxygenotherapy at hypoxaemic patients

Heart diseases

- **Personal history** – last MI, acute cardiac failure, coronary intervention
 - ask for load tolerance (dyspnoe, chest pain e.g. at going upstairs), leg oedemas
- **Coronary artery disease** – after PCI- wait 1 week, after IM, CABG, PCI with BMS 4-6 weeks, don't stop Aspirine! At DES clopidogrel 6-12 months –individual approach
- MI, UAP, AP III.-IV. st. CCS despite of maximal medication – SKG, PCI without stent before op.
- **Decompensated cardiac failure** – diuretics, compensation before operation

Heart diseases II

Valvular heart diseases

- aortic stenosis(or rare mitral stenosis)-
echocardiography+symptoms (dyspnoe, syncopa)–
according the results indication of heart operation or
valvuloplasty before non-cardial operation
- regurgitative valvular defects – according NYHA class
- Prevention of endocarditis with i.v. ATB
- Valve prothesis – ATB+ LWMH full dose
- In general most risky is peroperative hypotension –
hydratation, adequate antihypertensive therapy, fast
blood supply at bleeding

Heart diseases III

Arrhythmias –most frequent atrial fibrillation-risk of recidives –pre-medication with beta-blockers, at persistent ventricular tachycardias cardioverter/defibrillator

- at bradycardia under 40/min., AVB II.-III.st. - cardiac stimulation temporary/permanent

Pacemaker – electrical kauterization may inhibit PM –operation of neck, chest, upper abdomen – re-programming of PM before, switch off defib.

Evaluation of risk of operation

- **Patient risk** – gravity and number of comorbidities, age, functional status
- **Risk of operation** – high: major abdominal, chest, orthopaedic operations
 - middle: smaller abdominal surgery, operation of carotides
 - small: laparoscopy, arthroscopy, breast operation
- **For decision is necessary internist, anesthesiologist, surgeon and ... educated patient**

Education and informed agreement of patient – psychological and juristic aspect – risk of conservative treatment and contemporary handicap compared to the risk of operation.

Postoperative care

- **Blood loss** – hypotension, cardiac ischaemia, stroke, cardiac failure – blood transfusion
- **Intensive care unit** – monitoring of ECG, BP check á 15 min., á 1 hour, oxygen saturation, body temperature, respiratory frequency, bilantion of fluids
 - optionally - Glycaemia, CVP
- **Basis of postoperative care is substantial visit!**
 - ask for pain, another complaints, breathing problems, cough, apetite, diarhoea, vomiting
 - objective examination: breathing, hydratation, cardial failure, jugular veins, lung auscultation, leg oedemas

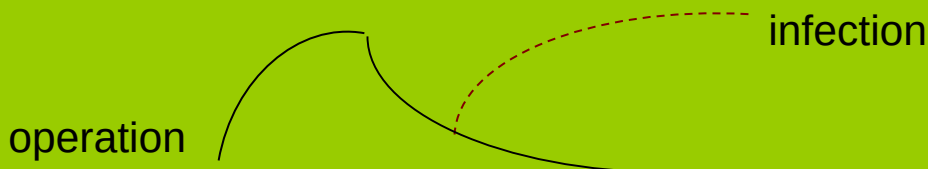
Cardiac complications

- Most risky are first 3 days after operation
- **Atrial fibrillation** – check pulses at visit
- **Cardiac failure** – dyspnea, leg oedemas –at laying patients on backside of drunsticks and trunk
- **MI, pulmonary embolism** – unspecific breathing problems, chest pain, sudden weakness, temporary hypotension and fall of oxygen saturation – EKG, TnI, CT-angiography of lungs

„Global status worsening“

- **Symptoms:** apathy-agitation, consciousness, lability of diabetes
- **Reasons** – infections-wound, respiratory and uroinfections are most frequent, dehydration, delirium
- **What to do:** anamnestical, physical and laboratory screening - KO+diff., CRP, minerals, urea, kreatinin, urine
- **Inflammation**
 - CRP changes -reaction to operative tissue injury, for differential dg. can help procalcitonin

CRP maximum 3-rd-5-th day



„Global status worsening II“

- **Dehydration** – elderly patient are not thirsty, appetitloss, diarrhoea(e.g. after ATB therapy)
 - physical and laboratory signs (rise of urea, kreatinine)
 - Peroral and parenteral hydration
- **Delirium** (usually at patients with dementia) – anaesthesia, change of surrounding, pain, inflammation and other somatic problems – consciousness, agitation – treating with antipsychotic drugs, looking for reason(infection, dehydration)

Malnutrition

- **Frequency** – 20-40% of patients over 65 years (often already before operation with worsening after)
 - pain, fatigue, dyspepsia after drugs
- **Consequences** – immunodeficiency – infectious complications in wound and also systemic
 - muscle weakness – rehabilitation exercise problems, laxation of endoprotheses, expectoration problems with risk of respiratory infections
 - apathy and depression – problems with cooperations
- **How to detect?** – ask for appetite loss, dyspepsia, control amount of foods eaten by patient, laboratory- albumin, prealbumin
- **What to do?** - slight, short-term problem – sipping (Nutridrink, Fresubin etc.)
 - advanced problem- nutritional therapist examination, nasogastric tube, parenteral nutrition, PEG

Others complications

- **Laryngospasm/bronchospasm** – irritation after intubation(especially at pre-existing respiratory infection) – corticoids, theophylline, betamimetics, anticholinergics
- **Breathing attenuation, vomiting** after anaesthesia – substential observation first 2 hours
- **Gastric ulceras** - stress, NSA drugs –nausea, vomiting, abdominal pain, but also asymptomatic acute GIT bleeding – PPI in prevention, take care of unspecific dyspeptic complaints, per rectum examination if suspicion for bleeding

Remember: To be rich and healthy
is the best! 😊

