In some surgical patients immunosuppression is easily apparent and directly caused by known underlying disease or treatment. In others, although induced by the underlying disease, immunosuppression may be less obvious. 

Perioperative management of immunocompromised patient is mostly directed by the fact that immunosuppression itself does not cause pathology, but does leave the patient prone to infection. Immunodeficiency can be broadly characterized as congenital (primary) or acquired (secondary). The majority of immune deficiencies that are of interest to the anaesthetist are acquired. They can be present both in children and adults, in a huge variety of patients that are presented preoperatively. Most of them do not require different than usual perioperative anaesthetic management. However, in some of them specific aspects of treatment should be considered, such as HIV infected, cancer, transplant patients, and those scheduled for organ transplantation.

Key words: preoperative assessment, immunocompromised patient, surgery, anesthesia

INTRODUCTION

In some surgical patients immunosuppression is easily apparent and directly caused by known underlying disease (e.g. hematological malignancy) or treatment (e.g. drugs to prevent organ rejection, or a side effects of cancer chemotherapy). In others, although induced by the underlying disease, immunosuppression may be less obvious (e.g. following traumatic injury or sepsis, or as a response to postoperative or intensive care therapy with steroids). Perioperative management of immunocompromised patient is mostly directed by the fact that the immunosuppression itself does not cause pathology, but does leave the patient prone to infection. There is no good clinical test to measure the degree of immunosuppression; the clinician must simply maintain a high index of suspicion.

Immunocompromised patients of most concern to anaesthetists are those with known, preoperatively present immunosuppression, such as patients with cancer, human immunodeficiency virus (HIV), or those on immunosuppressive therapy for organ transplants or autoimmune diseases.

Lately, immunomodulation that occurs in virtually every surgical patient is becoming topic of interest.\(^1\)\(^2\) Our present knowledge indicates that anaesthesia and surgery, as well as individual patient and procedure variants, induce general immune response of certain degree. Further research is required for it’s better understanding as well as optimal management during the perioperative period.

OVERVIEW OF THE IMMUNE SYSTEM ABNORMALITIES

The immune system is divided into two major components, the innate system and the adaptive system\(^1\)\(^3\). The innate immune system is the first line of defense for a host and it does not require prior exposure to the offending agent. The key elements of this system are phagocytic cells, natural killer cells, the complement system and other circulating and secreted proteins. The phagocytic cells include neutrophils, macrophages, and monocytes. The adaptive system is a highly specific system with more delayed response. The response of this system becomes more rapid after memory to specific antigen has been developed. The key elements of this part of immune system are lymphocytes, antigen presenting cells, humoral mediators and cytokines. The adaptive immune system also has two portions based on the primary type of lymphocytes involved, T cells or B cells.

Immunodeficiency can be broadly characterized as congenital (primary) or acquired (secondary)\(^1\)\(^3\).
Congenital deficiencies can affect both innate and adaptive immune system. Disorders of the innate immune system are less common than those of the adaptive system. Usually, they present during childhood with infections caused by common pathogens that are unusually severe, or as opportunistic infections.

The majority of immune deficiencies are acquired. They can be apparent both in children and adults, in a huge variety of patients that are presented to the anaesthetist prior to surgery (Table 1). Most of the time, concerns about infection during the surgical treatment and meticulous aseptic techniques are the only deviation from usual practice. However, in some patients there are specific aspects in the anaesthetic management. These patients are: HIV infected and cancer patients, as well as patients with organ transplants and those scheduled for organ transplantation.

**HIV INFECTED PATIENTS**

The acquired immunodeficiency syndrome (AIDS) was first described in adults and children in 1981-1982. The disease is caused by the human immunodeficiency virus (HIV), which was isolated in 1983. In 2007, there were 33 million people who were living with HIV and 2.7 million were newly infected. It has been estimated that 20-25% of HIV-infected patients require surgery at some point during their illness.

Diagnosis and classification of HIV infection according to the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC), depend upon the demonstration of antibodies to HIV and/or the detection of HIV or one of its components.

HIV infection is classified according to its associated clinical symptoms (Table 2), as well as the severity of immunological depression reflected by age-related CD4+ T cell counts. The diagnosis of advanced HIV infection is made when the patient is in stage 3 or 4 and/or has advanced immunodeficiency. Severe clinical conditions and/or severe immunodeficiency are known as AIDS.

One of the most important clinical features of AIDS is multi-organ system involvement. This may be a direct consequence of HIV infection as a result of an opportunistic infection or neoplasm, or related to other causes, such as side effects of administered medications.

**Antiretroviral therapy**

Presently, treatment of HIV infection includes administration of the antiretroviral agents (ARVs). Usually combination of these drugs from different classes is used to provide more effective treatment with less overall toxicity and a lower likelihood of the emergence of resistance. This therapeutic approach is termed highly active antiretroviral therapy (HAART). ARVs are classified into four classes according to the mechanisms of inhibition of viral replication:

1. Reverse transcriptase enzyme inhibitors
2. Protease enzyme inhibitors
3. Integrase inhibitors
4. Entry inhibitors.

Although very effective in treatment of HIV, antiretroviral agents have several important adverse effects:

1. Mitochondrial dysfunction: lactic acidosis, hepatic toxicity, pancreatitis, peripheral neuropathy
2. Metabolic abnormalities: fat malnutrition, dyslipidaemia, hyperglycaemia and insulin resistance; and bone disorders such as osteopenia, osteoporosis and osteonecrosis
3. Bone marrow suppression: anaemia, neutropenia and thrombocytopenia

Aside from having these adverse reactions that may be of concern to anaesthetist, important issue is potential interactions between antiretroviral agents and anaesthetic drugs. These interactions go in both directions:

1. Anaesthetic agents may induce pharmacodynamic changes to affect the efficacy and toxicity of ARVs, and
2. Pharmacokinetic effects of ARVs can affect the absorption, distribution, metabolism and elimination of anaesthetic drugs.

Pharmacodynamic interactions are easily managed by avoiding anaesthetic agents that may potentiate side effects such as renal and hepatic dysfunction. However, some issues remain unclear, such as enhanced mitochondrial toxicity and lactic acidosis related to propofol and nucleoside/nucleotide analogues reverse transcriptase inhibitors; therefore, it might be wise to avoid propofol infusions in patients receiving ARVs.
Altered pharmacokinetics is a more complicated type of interaction and is mostly mediated through inhibition or induction of hepatic liver enzyme, particularly CYP450 (CYP) 3A4 enzyme. However, all data regarding drug interactions in these circumstances are scarce, and clear guidelines as well as clinical implications are not evident.

**Preoperative assessment**

HIV infected patients’ population is very heterogeneous. They may present without any symptom or sign of the disease, as well as being in the advanced stage with a variety of already existing complications. Systematic approach during the preoperative assessment is necessary and includes: detailed history of the disease, physical examination and a variety of laboratory tests for the evaluation of the status of HIV infection, organ involvement and drug side effects. Laboratory investigations include complete blood count and clotting function tests to exclude coagulation abnormalities. Biochemical tests such as serum glucose and electrolytes, and renal and liver function tests are necessary, as HIV infection or medications in use may cause metabolic, renal or liver dysfunction. Chest radiography is indicated in every patient to screen for tuberculosis or other opportunistic pulmonary infections. Cardiac evaluation, such as electrocardiography and echocardiography, are important to identify cardiomyopathy.

During the preoperative assessment, anaesthetist should take some more facts into account in order to plan appropriate management during the whole perioperative period.

First of all, every effort should be made to continue ARVs during the perioperative period to diminish drug resistance, as long as it is compatible with surgery and the patient’s gastrointestinal function. Problem exists, since there are only few ARVs that are available in the parenteral formulation (zidovudine and enfuvirtide). On the other hand, there is no study on ARV therapy during the perioperative period.

Although continuing therapy is necessary, no clear instructions for overcoming these problems exist.

No particular anaesthetic technique proved to be better than the other. Choice is obviously determined by stage of the disease and coexisting pathology. However, safety in performing regional anaesthesia to HIV patients is of major concern because some CNS comorbidity may be present. There are studies showing that central neural blockade and epidural blood patch may be used safely in obstetrical patients with HIV, provided that patients are free of any neurological symptoms. However, risks of developing neurologic complications after central neural blockade in this group of patients are not known. It is essential to perform detailed preoperative neurological assessment and to document any neurological deficit before anaesthesia.

It is known that blood transfusion may increase HIV viral load in patients with advanced HIV infection. Thus, blood transfusions should be avoided in the perioperative period as long as that does not compromise patient safety.

Last, but not the least, strict precautions on prevention of infections from and to HIV infected patients should be applied. Universal precautions and appropriate sharp object handling should be employed. Each institute should have a protocol in case of occupational exposure, and in case it happens post exposure prophylaxis need to be started without delay. Fortunately, there is no report on HIV transmission during anaesthesia.

**PATIENTS WITH CANCER**

Cancer is the second leading cause of death in the developed world. Over half a million deaths were attributed to cancer during 2004. Approximately half of cancer patients will develop metastatic disease, and over 70% of them will develop symptoms from either their primary or metastatic disease. Increasing number of patients will have surgical intervention at some point of their treatment, usually for resection of the primary tumor or for emergency surgery for the complications of the disease.

Cancer itself may have different systemic effects that may influence physical status of the patient. Aside from that, a numerous anti-cancer drugs have been used in treating malignant disease, and these therapies do have sig-

### TABLE 2

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Asymptomatic)</td>
<td>No symptoms, persistent generalized lymphadenopathy</td>
</tr>
<tr>
<td>2 (Mild symptoms)</td>
<td>Moderate weight loss (less than 10% of body weight), recurrent upper respiratory tract infection, oral and skin lesions</td>
</tr>
<tr>
<td>3 (Advanced symptoms)</td>
<td>Severe weight (more than 10% of body weight), chronic diarrhea, persistent fever, oral lesions or candidiasis, pulmonary tuberculosis, severe bacterial infections, anemia, thrombocytopenia, neutropenia</td>
</tr>
<tr>
<td>4 (Severe symptoms)</td>
<td>Wasting syndrome (more than 10% of body weight, or body mass index less than 18.5), chronic diarrhea, persistent fever, recurrent bacterial infections, opportunistic infections, encephalopathy, nephropathy, cardiomyopathy, malignancy</td>
</tr>
</tbody>
</table>
significant consequences for the patient. Immunosuppression is just one of the possible issues that must be considered before or during surgery.

Systemic effects of the cancer

Pain, psychological distress and depression are present in the majority of oncology patients (up to 70-75%)\(^ {16,18}\). Approximately half of all cancer patients develop cachexia\(^ {16}\), characterized by anorexia, weight loss, weakness, poor performance and impaired immune function\(^ {16}\). However, most of the systemic effects are the result of the chemotherapy applied to the patient during the course of treatment (Table 3).

In general, anti-cancer chemotherapeutic agents may be classified as alkylating agents, anti-metabolites, plant alkaloids, antibiotics, hormones, and miscellaneous agents (Table 3). Each drug may be associated with different organ toxicities. Toxic effects to vital organs, such as heart, lungs, liver, kidneys, and central nervous system are of particular importance for the perioperative period. Cardiac and pulmonary toxicity are of major concern.

Cardiac toxicity. Different anti-cancer drugs may cause cardiac toxicity, and cytostatic antibiotics of the anthracycline class are the best-known chemotherapeutic agents causing this complication. Cardiac toxicity is rare with some agents, but may occur in >20% of patients treated with doxorubicin, daunorubicin, or fluorouracil\(^ {19}\). Clinical cardiac toxicity after anti-cancer chemotherapy may appear early, during or shortly after the treatment, and late, when it may not be apparent for months, or even years, after completed chemotherapy. Detailed clinical assessment is necessary when a patient has positive history of cardiac toxicity, or when high suspicion of cardiac involvement is present. ECG, echocardiography, stress testing and angiography should be considered as indicated\(^ {16}\).

Pulmonary toxicity. The pulmonary toxicity of cancer chemotherapy can be considered as early or late, with approximately two months being the arbitrary dividing line. The early onset syndromes include inflammatory interstitial pneumonitis, non-cardiogenic pulmonary edema, and the less common occurrences of pleural effusion or bronchospasm. The most common and important late-onset toxicity is that of pulmonary fibrosis. Among the various agents, bleomycin is the most important cause of pulmonary fibrosis. Bleomycin produces pulmonary toxic effects in 2-40% of patients receiving the drug\(^ {20}\), and up to 25% of patients with previous bleomycin therapy may develop postoperative respiratory insufficiency necessitating prolonged postoperative tracheal intubation\(^ {17,21}\). Excessive fluid intake, perioperative transfusion, decrease in vital capacity, and duration of surgery are additional factors predisposing to postoperative respiratory insufficiency. A controversial question is the issue of provoking lung injury by high inspiratory oxygen fractions (FiO\(_2\)) months or years after exposure to bleomycin, since lung injury is mediated via oxidant pathways. For clinical practice, it seems reasonable, as in any other patient, to use the lowest inspired oxygen fraction compatible with adequate tissue oxygenation.

### Table 3

<table>
<thead>
<tr>
<th>Class</th>
<th>Agents</th>
<th>Specific effect</th>
<th>Organ toxicity</th>
<th>Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkylating agents</td>
<td>Disulfan, Chlorambucil, Cyclophosphamid, tiotrepa, , Melphalan, Isosofamide</td>
<td>Rapid tumore destruction products increases in purine and pyrimidine causing uric acid nephropathy</td>
<td>MS, CNS, GI, HC, Ca, R, D, Immunosupression</td>
<td></td>
</tr>
<tr>
<td>Antimetabolites</td>
<td>Metotrexate, Mercaptopurine, Fluorouracil, Gemcetabine, 5-FU</td>
<td>Myelodepressive effects</td>
<td>MS, GI, D, R, N, Ca, Immunosupression</td>
<td></td>
</tr>
<tr>
<td>Nutral products, Vinca alkalodes</td>
<td>Vinblastine, vincristine, Docetaxel, Paclitaxel, Etoposid</td>
<td>Leukopenia, neutrotoxicity, peripheral and autonomic neuropathy</td>
<td>CNS&lt; MS, GI, C, D</td>
<td></td>
</tr>
<tr>
<td>Antibiotics</td>
<td>Bleomycin, Doxorubicin, Idarubicin, Daunorubicine, Mixantrone</td>
<td>Pylmonary fibrosis, cardiac toxicity</td>
<td>MS, R,D</td>
<td></td>
</tr>
<tr>
<td>Modifier of biological response, Hormones</td>
<td>Interferone-α, Tamoxifen, Letrozole, Flutamide, aromatase inhibitors, oestrogen</td>
<td>Myelosupression, Glucocorticoid may need substitution during perioperative period</td>
<td>Coag, MS, HC, GI</td>
<td></td>
</tr>
</tbody>
</table>

CNS-central nervous system, including nausea and vomiting, GI-gastrointestinal system, C-cardiac toxicity, CA-cardiogenic, D-dermatotoxicity, alopecia, MS-myelosupression, N-nephrotoxicity, R-respiratory system, HC-hemorrhagic cystitis, Coag-coagulation system
Anticancer drugs and interaction with anaesthetics

Since interactions between anticancer chemotherapeutic agents and anaesthetic substances are mostly investigated in in vitro studies, the clinical relevance of these findings remains an open question.

Preoperative assessment

Cancer patient may be challenging and the assessment should balance the risk associated with disease progression and one associated with treatment.

The preoperative cancer patient is frequently in relatively poor physical condition, with poor nutritional status, considerable pain, physiologic abnormalities, and significant comorbid conditions.

Following a thorough history and physical examination further investigations may be required. For major procedures in most cancer patients, laboratory studies should include a complete blood count, serum electrolytes, liver function tests, and coagulation profile. A 12-lead electrocardiogram, echocardiography, stress test or angiography may be advisable.

Most of the cancer patients are immunocompromised which makes them prone to infectious complications. Identification of correctable causes of anaemia, leukopenia and thrombocytopenia, and appropriate therapy, including replacement of blood elements, bone marrow stem cell stimulation and maintenance of coagulation homeostasis, may improve patient’s survival. Studies assessing nutrition in cancer patients suggest a reduction in infectious complications, protein catabolism, and inflammatory markers with preoperative or early postoperative feeding. Although it may be preferable to anaesthetize patients only after any coexisting medical conditions have been successfully mitigated, some cancer operations, while not true emergencies, could not be delayed too long to avoid cancer spreading.

There are some experimental and clinical studies demonstrating positive effects of regional anaesthesia on the outcome of cancer patients. A retrospective study in breast cancer patients found that paravertebral anaesthesia in comparison with general anaesthesia was associated with a 79% decrease in the incidence of cancer recurrence or metastases 3-4 years later. A similar retrospective study in men who had radical prostatectomy under general anaesthesia with morphine analgesia compared with general anaesthesia and epidural analgesia combined found that the epidural technique was associated with a 65% reduction in biochemical recurrence of prostate cancer.

Possibility that choice of anaesthesia could influence long-term outcome by modulating immune response appears very interesting and challenging and prospective and randomized studies are needed to provide more certain answers.

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### TABLE 4

CURRENT IMMUNOSUPPRESSIVE DRUGS FOR TREATING ORGAN TRANSPLANTED PATIENTS

| 1. Induction of immunosuppression       | Basiliximab or Dacrizumab            |
|                                       | Alemtuzimab (Campath-1H)            |
|                                       | Rapamycin                            |
|                                       | Antlymphocyte of Antithymocyte globulins |
|                                       | OKT3                                 |
| 2. Maintenance immunosuppression      | Tacrolimus of Cyclosporine           |
|                                       | Mycophenolat Mophetil               |
|                                       | Azathioprine                         |
|                                       | Rapamycin                            |
|                                       | Corticosteroid: Prednisone           |
| 3. Anti-rejection immunosuppression    | Basiliximab of Dacrizumab           |
|                                       | Alemtuzumab                          |
|                                       | Antlymphocyte or Antithymocyte globulins |
|                                       | OKT3                                 |
|                                       | Corticosteroid: Methylprednisolone   |

Alemtuzumab (Campath-1H)=Monoclonal anti CD52 antibody; Basiliximab or Dacrizumab = Interleucine 2-receptor antagonist; OKT3=Monoclonal antibodies against CD3 antigen of the surface of tuman T lymphocytes; Tacrolimus or Cyclosporine=Calcineurine inhibitors; Rapamycin=Signal transduction blocker in T lymphocytes
ORGAN TRANSPLANT PATIENTS

Only in the USA, over 20000 patients are transplanted yearly, and transplant programs are developing all over the world. Survival rate of transplanted patients is very high, extends up to 90% for the first year from the operation. Obviously, there is a large population of surviving transplanted patients that may be involved in surgical treatment for reasons other than transplantation itself. Anesthetists who are not otherwise involved in treating patients undergoing transplant surgery may become challenged to anesthetize transplanted patients for nontransplant surgery.

Organ transplant presents the host with an array of both foreign antigens and, to varying extents, immunologically active cells. The response of the host (and sometimes of the graft) must be suppressed for survival of both the graft and the recipient. That is why transplant recipients are always under various regimens of immunosuppression. Cyclosporine has been associated with the first successful cases of organ transplantations, but nowadays, newer drug, tacrolimus is often used and is becoming a drug of choice for many patients.

The major classes of agents used are: glucocorticoids, calcineurin inhibitors, antimetabolites, and antibodies (Table 4). All of these drugs have significant side effects that may have a direct impact on anesthetic and perioperative management.

Immunosuppressive therapy during the perioperative period

Prevention of the transplanted organ rejection is one of the major responsibilities for the medical team involved in treating transplanted patients. Immunosuppressive therapy should be continued during the perioperative period and adjusted as needed, particularly in the presence of hepatic or renal insufficiency. Also, it should be adjusted to adapt to the immune imbalance brought by severe stress. The blood levels of cyclosporine or tacrolimus must be monitored daily during the perioperative period.

To maintain therapeutic blood levels, it is important to administer oral cyclosporine or tacrolimus 4-7 h before surgery. The dose of other immunosuppressive drugs should not be altered perioperatively unless the route of administration needs to be changed from oral to intravenous. The oral dose of prednisone is equal to the intravenous methylprednisolone dose. Oral and intravenous doses of azathioprine are approximately equivalent. The experience from the renal transplant population points out that a supplemental "stress-coverage" steroid dosage is probably not necessary, except in transplant recipients recently withdrawn from steroid therapy.

Interactions between immunosuppressive and anesthetic drugs

Only cyclosporine interaction with anesthetics has been extensively studied. Information on newer drugs is limited.

Propofol infusion does not modify the cyclosporine blood levels in humans. Prolonged neuromuscular block after vecuronium and pancuronium administration in patients receiving cyclosporine has been described. Similarly, neuromuscular block induced by vecuronium and atracurium is enhanced with cyclosporine and, to a lesser degree, its solvent, cremophor. Therefore, patients receiving cyclosporine as immunosuppressive therapy may require a smaller dose of nondepolarizing muscle relaxant, and the recovery time may be prolonged.

Preoperative assessment of the organ transplant patients

Preoperative evaluation and testing of the organ transplant patients should be individualized and guided by patients’ history. However, there are some general principals that should be applied when dealing with organ transplant patient undergoing non-transplant surgery.

It is advisable to communicate early with the transplant center, particularly regarding immunosuppression regimens. These should be adjusted under the new circumstances and that can be better managed using experienced team recommendations.

The preoperative assessment of transplant recipients should focus on graft function, rejection, presence of infection, and function of other organs, particularly those that may be compromised due to either immunosuppressive therapy or dysfunction of the transplanted organ.

The presence of rejection should always be ruled out preoperatively. There is some evidence that patients who undergo surgery during a period of rejection have higher morbidity. Progressive deterioration in organ function tests is usually result of the rejection, and should be suspected if functional tests of the transplanted organ are abnormal.

Infection is a significant cause of morbidity and mortality after transplantation. Immunosuppression undoubtedly plays a role in the development of infections and they may be bacterial, viral, fungal, as well as protozoan. Infections must be ruled out before surgery.

Renal function may be compromised because of immunosuppression therapy, but also as a result of nephrotoxic effects of some drugs co-administered with cyclosporine or tacrolimus. Renal dysfunction should be assessed preoperatively.

Testing of the patient’s cardiopulmonary status should include at least a 12-lead electrocardiogram, and chest radiography. Echocardiography is helpful to screen for gross cardiac abnormalities and if clinically indicated, pulmonary function testing and a dobutamine stress echo-cardiography test should be considered.

Laboratory evaluation should include complete blood count, assessment of metabolic, acid-base, fluid, electrolyte and coagulation status, as well as standard liver and renal function tests.

Anaesthetic management does not much differ from other, non-transplant patients. Standard premedication, as well as most of the usual anaesthetic techniques (general, regional, neurolept anaesthesia) have been used. The type of surgery, the anesthesia planned, and the equipment...
available determine the choice of perioperative monitoring techniques. Perioperative invasive monitoring requires fully aseptic techniques and should be discussed in terms of the risk-benefit ratio. It is important to keep in mind that some of the transplanted organs, such as heart and lung are denervated, and do have some specific physiology that should be well understood.

**Meticulous aseptic technique is advisable to minimize the risk of infection.**

Fighting infectious complications is of highest priority. These patients are at high risk of a variety of infections that have high impact on mortality, graft function or graft loss.

Unfortunately, there is currently no data or expert opinion to support significant deviation from usual practice when administering prophylactic antibiotics for immunosuppressed patients before surgical procedures.

However, the use of prophylaxis even for "clean" cases in particularly high-risk patients has been advocated. This is based on judgment and with some supporting evidence. Immunosuppressed patients are sometimes maintained on routine prophylactic antibiotics (i.e. sulfonamide and trimethoprim in the early post-transplant period of peak immunosuppression), which should be continued, re instituted, and/or substituted in the perioperative period.

**CONCLUSION**

Immunocompromised surgical patients population is heterogeneous. Most of them, other than being prone to the infectious complications, require usual anesthetic approach. However, some of them are challenging and anesthetist being involved in their management should be aware of the particular problems that may arise during the treatment.

Aside from treating already immunosuppressed patient, interesting topic in the future would be immunomodulation that occurs in virtually every surgical patient. Possibility that choice of anaesthesia could influence long-term outcome by modulating immune response is very interesting and challenging. Further studies, prospective and randomized, are needed to give more answers to these questions.

**SUMMARY**

**PREOPERATIVNA PRIPREMA BOLESNIKA SA KOMPROMITOVANIM IMUNIM SISTEOM**

Kod nekih hirurških bolesnika imunosupresija je jasno uočljiva i direktno prouzrokovana bolešću ili terapijom koja sa primenjuje. Medjutim, u pojedinim slučajevima, iako izazvana postojećom patologijom, imunosupresija ne mora biti evidentna.

Lečenje imunokompromitovanog bolesnika u perioperativnom periodu određuje činjenica da sama imunosupresija ne predstavlja posebnu bolest, već dovodi do predisponiranosti za nastanak infekcija.

Imunodeficijencija se može podeliti na dve grupe: primarnu ili kongenitalnu i sekundarnu ili stećenu. Anestezolog se češće susreće sa sekundarnim imunodeficiencijama, kako kod dece tako i kod odraslih. Većina hirurških imunokompromitovanih bolesnika ne zahteva poseban anesteziološki pristup tokom perioperativnog perioda. Medjutim, za pojedine grupe bolesnika postoje specifičnosti u lečenju, kao što su to bolesnici sa HIV infekcijom, malignitetima, transplantiranim organima, ili oni koji se tek pripremaju za transplantaciju.

Ključne reči: preoperativna priprema, imunokomromitovan pacijent, hirurgija, anestezija

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