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0001 Diagnostics and management of coronary artery perforation during percutaneous coronary intervention

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Coronary artery perforation is a serious and life-threatening complication of percutaneous coronary intervention (PCI) since it is associated with high risk of intrahospital mortality (7-8%). It has an estimated incidence of 0.4-0.5%. The main predictors of coronary perforation are: complex lesions (especially calcified lesions), chronic total occlusion, elderly patients, female gender, the use of atheroablative devices, IVUS or cutting balloon, stenting of myocardial bridging and the use of balloons that are larger than 20% of the reference vessel diameter. The severity of coronary perforation has traditionally been classified into three types (Ellis classification). Type III is associated with a 5-fold increase of 30-day mortality and a 13-fold increase of in-hospital major adverse events. Management is dependent upon the Ellis classification. The primary aim is to seal the perforation and prevent pericardial haemorrhage and cardiac tamponade. The treatment of coronary perforation includes immediate prolonged balloon inflation at 2 to 6 atm for at least 10 min, combined with intravenous administration of protamine-sulphate to reverse the effect of heparin. If the first balloon tamponade fails, a second low pressure inflation should be performed for 15-45 minutes using a perfusion balloon catheter if possible. Most type II perforations are successfully managed with prolonged balloon inflation; however, type III usually require the implantation of covered stents. In a case of cardiac tamponade and hemodynamic instability, pericardiocentesis with saline infusion and vasopressor and inotropic stimulation should be performed. If prolonged balloon inflation fails to seal perforation in a distal coronary segment, then the embolization with metal coils, gelatin foam, polyvinyl alcohol, thrombin, autologous blood clots, or glue (cyanoacrylate) should be performed. Surgical treatment is necessary in a less than 10% of cases.

0002 When Motherhood and Heart Failure Intertwine: Between Love and Risk

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Introduction: Motherhood, as an expression of the deepest form of love, is often confronted with numerous medical challenges, especially when intertwined with serious conditions such as heart failure, thus opening a complex dialogue between the desire for life and the risks to health. Among these conditions, peripartum cardiomyopathy (PPCM) holds a distinctive place as a rare but potentially life-threatening disease that occurs toward the end of pregnancy or within the first five months postpartum. This condition is characterized by reduced left ventricular systolic function in

the absence of other clearly identifiable etiological factors of heart failure. PPCM diagnosis is often delayed due to symptom overlap with normal physiological changes during pregnancy and the postpartum period. Despite advances in the understanding of PPCM, it still carries a high risk to maternal life, with significant morbidity and mortality.

Case report: This case report provides an overview of the etiology, diagnostic challenges, treatment strategies, and outcomes associated with peripartum cardiomyopathy. It describes a 47-year-old patient who achieved her first pregnancy after seven unsuccessful IVF attempts using a donor oocyte, with her struggle for motherhood continuing immediately postpartum due to the development of peripartum cardiomyopathy. At the same time, the newborn presented with severe pulmonary hemorrhage, requiring mechanical ventilation and intensive neonatal care, resulting in a complex "battle on two fronts." The clinical presentation of PPCM included severe heart failure with a reduced left ventricular ejection fraction (EF 25%) and typical symptoms of cardiac insufficiency. The patient was treated in the intensive care unit according to current adult heart failure guidelines and recommendations for peripartum cardiomyopathy. During hospitalization, comprehensive diagnostic procedures were performed, including transthoracic echocardiography and other non-invasive imaging techniques, confirming the diagnosis. Signs of heart failure resolved within three weeks, and left ventricular ejection fraction fully recovered and remained stable throughout a one-year follow-up period.

Conclusion: Early recognition of peripartum cardiomyopathy and the implementation of a comprehensive multidisciplinary approach were essential for the patient's complete clinical resolution. This case also raises new dilemmas, posing significant questions regarding the safety of future pregnancies and emphasizing the need for an individualized approach and careful monitoring.

0003 Significant Challenges on the Road to Recovery – How Much Do Obstacles Hinder Us? From STEMI to Hemorrhage and Sepsis: A Case Report of a 63-Year-Old Patient with Triple-Vessel Coronary Artery Disease

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Management of patients in the Coronary Care Unit is associated with numerous challenges in daily clinical practice. In addition to complications inherent to coronary artery disease itself, the increasing incidence of nosocomial infections, the rise of antimicrobial resistance, and the occurrence of adverse drug reactions further worsen outcomes of patients, mostly chronically ill with multiple comorbidities.

We present the case of a 63-year-old female admitted with symptoms consistent with unstable angina pectoris. Shortly after admission, she experienced recurrent anginal pain, and a follow-up ECG revealed ST-segment elevation in the anterior

leads. Within minutes of symptom onset, she suffered cardiac arrest with an ECG pattern of ventricular fibrillation. Prompt cardiopulmonary resuscitation (CPR) restored spontaneous circulation. Hemodynamically unstable and mechanically ventilated, she was transferred to the catheterization laboratory. Coronary angiography confirmed triple-vessel coronary artery disease with a culprit lesion in the mid-left anterior descending (LAD) artery, which was successfully revascularized. Post-intervention, the patient remained in severe cardiogenic shock, soon complicated by massive nasal and oral bleeding, leading to life threatening anemia. During hospitalization, she developed severe sepsis with acute exacerbation of chronic kidney disease. Despite the complexity of her condition and multiple potentially fatal complications, intensive hemodynamic and laboratory monitoring, and a careful, comprehensive and dynamic clinical approach resulted in a complete recovery. The patient was discharged home in good condition and returned to her daily activities.

Acute myocardial infarction with cardiac arrest and cardiogenic shock, complicated by major bleeding and sepsis, represents one of the most challenging clinical scenarios, requiring a multidisciplinary approach and continuous weighing of therapeutic benefits against risks. Guided by these principles, coordinated teamwork among physicians of different specialties through adherence to current evidence based guidelines prevented a fatal outcome and enabled full recovery in a case where prognosis was deteriorating daily.

O004 From Endocarditis to... (case report)

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Introduction: Fever of unknown origin remains one of the most challenging diagnostic scenarios in clinical medicine. Owing to its often nonspecific presentation, it encompasses a heterogeneous group of conditions of varying etiologies— infectious, autoimmune, neoplastic, and other rarer causes. Such cases typically demand a multidisciplinary approach and a broad differential diagnosis.

Method: Case report.

Results: A 70-year-old patient was admitted with prolonged fever, laboratory evidence of chronic inflammation, and echocardiographic suspicion of vegetation on the native mitral valve. An initial diagnosis of subacute infective endocarditis was made, and targeted therapy was commenced according to established protocols; however, the clinical response was unsatisfactory. Extensive microbiological investigations—including throat and nasal swabs, urine cultures, blood cultures, and specific fungal testing— gave sterile results. The patient's hospital course was complicated by neurological deficits, presenting as quadriparesis (more pronounced in the lower limbs) and dysarthria. Following transesophageal echocardiography and the exclusion of infective endocarditis, specialists in infectious diseases, pulmonology, hematology,

and immunology joined the diagnostic process, progressively narrowing the differential. Introduction of corticosteroid therapy resulted in near-complete resolution of neurological symptoms. Despite extensive prior immunological, radiological, and laboratory work-up that provided no definitive direction, the pivotal diagnostic step was a PET/CT scan revealing diffuse inflammation of the large arterial vessels, raising strong suspicion of giant cell arteritis.

Conclusion: Reports in the literature rarely describe the differential diagnosis of infective endocarditis versus autoimmune diseases, where the underlying condition is often arteritis and ischemia of targeted organs. This case highlights how coordinated multidisciplinary collaboration—paired with recognition of medicine as a complex and wide-ranging discipline—can lead to the identification of a rare diagnosis and the successful treatment of the patient.

O005 Dual Antiplatelet Therapy in the Conflict Zone: Navigating Between Thrombosis, Hemorrhage, and Therapeutic Resistance

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We report the case of a 76-year-old female patient presenting with acute ST-elevation myocardial infarction (STEMI) who underwent successful primary percutaneous coronary intervention (PCI) of the obtuse marginal branch of the left circumflex artery (LCx), with implantation of two drug-eluting stents (DES). Following initiation of dual antiplatelet therapy (aspirin plus ticagrelor) and prophylactic low-molecular-weight heparin at therapeutic dosage, the patient developed acute abdominal pain within six hours. Diagnostic workup revealed colonic perforation, prompting urgent laparotomy. Intraoperatively, a marked hemoglobin drop necessitated blood transfusion. De-escalation of DAPT was performed by discontinuing aspirin and switching to clopidogrel, with concurrent reduction of anticoagulation. Despite these adjustments, bleeding persisted until day seven. Platelet function testing using Multiplate demonstrated absence of clopidogrel responsiveness, while rotational thromboelastometry (ROTEM) indicated preserved global hemostatic function.

This challenging clinical scenario highlights a critical question: How should antiplatelet and anticoagulant therapy be optimally managed in patients with both high thrombotic risk and ongoing bleeding, particularly when conventional therapeutic strategies prove ineffective?

O006 Cardiac Surgical Management of Complications Following Interventional Cardiology Procedures

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Cardiac surgery is mostly elective, and emergency surgeries, depending on the nature of the institution, account for between 1% and 20% of the operative volume.

For our topic, the most important are emergency surgical myocardial revascularizations, mechanical complications of acute myocardial infarction and failed PCI procedures, aortic dissections, cardiac injuries, and a subset of iatrogenic injuries. Because the number of patients on antiplatelet therapy is increasing daily, and this trend is expected to continue.

The significance and relevance of the topic are also supported by well-documented and published facts that, if perioperative and postoperative hemostasis is not adequate, and if the need for blood and blood product transfusion is high, it opens a wide range of serious postoperative complications.

In cardiac surgery, these typically include atrial fibrillation and other rhythm disturbances, infections, prolonged ventilation and hospital stay, neurological complications, all of which lead to increased morbidity and mortality rates.

Various cardiovascular associations have provided clear guidelines and strategies for discontinuing antiplatelet drugs prior to surgery.

However, the strategy for emergency cardiac surgeries—where there is no timeframe or possibility to discontinue therapy—is not clearly defined, not standardized, and there is significant variability in treatment approaches.

Potential specific antidotes are mostly still in the research phase or are extremely limited in clinical use, and there is also a lack of significant clinical studies, especially in the field of cardiac surgery.

There are general and local perioperative and postoperative methods.

The most widely accepted strategy is the use of platelets in adequate doses, especially if functional testing suggests it.

Specifically, in aortic dissections—regardless of dual antiplatelet therapy—we always use platelets (which I will explain further later), while in other types of operations, we wait for the results of platelet function tests, especially because there are individual differences in response to antiplatelet therapy. In addition to platelets, tranexamic acid, prothrombin complex concentrate, cryoprecipitate, and plasma are also used.

An important factor for both outcome and hemostasis is the choice of grafts.

Sometimes the strategy is to reduce vulnerable surfaces and the number of open serous cavities—especially the pleura when harvesting the internal mammary artery—which is why venous grafts are occasionally preferred. Depending on hemodynamic stability, the assessment of the fatal potential of ischemia-reperfusion injury, and the type of antiplatelet drug, we choose between beating heart revascularization (off-pump) or cardiopulmonary bypass with cardioplegic arrest.

One specific feature of cardiac surgery is the possibility of using hemoadsorption systems.

This is a system with biocompatible filter layers and beads, which creates a large adsorptive surface. It is used to remove

cytokines, interleukins, metabolic products, toxins, and other small to medium-sized hydrophilic molecules.

It can be integrated into various extracorporeal systems—cardiopulmonary bypass, extracorporeal membrane oxygenator (ECMO), or placed on a hemodialysis platform, and though rarely, it can also be used in trauma or neurosurgery in addition to cardiac surgery.

Given the fact that we do not have definitive guidelines regarding hemostasis in emergency cardiac surgeries on dual antiplatelet therapy, as a conclusion—and based on available literature, our clinic's experience, the evident progress in surgical techniques and materials, and accumulated knowledge across different medical fields—I would highlight the following sentence as the key conclusion: There is a clear trend (in treatment success) toward reducing the incidence of postoperative bleeding after emergency cardiac surgery in patients on dual antiplatelet therapy.

O007 Treatment of life-threatening bleeding occurred after percutaneous coronary intervention by radiography endovascular procedures of embolization of the bleeding blood vessel

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Taking into account the significant median mortality risk of 17.8% among patients with bleeding after dual antiplatelet therapy (DAPT) administration, hospitals that treat patients with percutaneous coronary interventions (PCI) must be logistically prepared to take care of the most severe forms of bleeding. In cases of severe or life-threatening bleeding, it is necessary to apply measures of systemic and local hemostasis in addition to measures of hemodynamic stabilization.

Endovascular intervention of embolization of a bleeding blood vessel with a biocompatible material as a minimally invasive technique takes an increasingly important place in the treatment algorithm for major bleeding.

Prior definition of the site of bleeding by CT angiography enables rapid application of selective angiography as the first step in the endovascular embolization method. The application of classic surgical methods of solving major bleeding episodes, such as tamponade of retroperitoneal hematoma according to Mikulicz, is necessary especially in cases where the hospital does not have the logistical capabilities to apply endovascular embolization. In particularly complex cases, the definitive care of the patient sometimes

requires cooperation with the surgical team. Endovascular interventions by embolization of a bleeding blood vessel due to low invasiveness result in faster recovery, less tissue damage, reduce the risk of infection and problems with wound healing.

We present a 75-year-old patient who, after a myocardial infarction of the inferoposterolateral wall type STEMI, who is being treated with primary PCI Cx, ticagrelor, aspirin and enoxaparin, whose course of treatment is complicated by the onset of severe anemia of 65 g/L, the finding of three retroperitoneal hematomas, the largest of which is 226 x 55 x 67 mm in size. By embolization of hypogastric upper artery and upper lumbar artery with embosphere method, the bleeding was stopped, and by applying additional supportive measures, the clinical condition was stabilized.

Another patient, 47 years old, treated for anterior wall STEMI myocardial infarction and atrial fibrillation with percutaneous balloon angioplasty of LAD, aspirin, ticagrelor and enoxaparin, had a large hematoma of the right arm and right lateral thoracic wall with a drop in hemoglobin level to 58 g/l. Active bleeding from the branches of the a.xillaris detected by CT was treated with endovascular embolization of the a.subscapularis et a.intercostalis superioris lat dex.

Synchronized and timely cooperation of a multidisciplinary team with the technique of endovascular embolization can successfully treat even the most severe forms of bleeding.

O008 Management of fluid balance in patients with renal insufficiency and heart failure in cardiac intensive care units

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INTRODUCTION: Fluid balance in patients with simultaneous renal insufficiency and heart failure represents one of the greatest therapeutic challenges in internal medicine and cardiology practice. Circulatory overload increases the risk of hospitalization and mortality in this patient population, while aggressive diuretic therapy can worsen renal function. Therefore, an integrated approach based on a careful assessment of hemodynamic status and an individualized fluid management strategy is necessary.

CONTENT: According to internationally recognized data, 20-30% of patients in cardiac intensive care units develop acute renal failure, which additionally compromises the excretion of sodium and water with worsening of the cardiac volume load. Also, over 30% of patients with chronic heart failure who are hospitalized in cardiology intensive care units have pre-existing chronic renal failure that progresses to the development of cardiorenal syndrome with an additional decrease in cardiac output and activation of the RAAS and the sympathetic nervous system, which leads to even greater retention of sodium and water. Daily fluid intake should be

equal to the sum of diuresis + insensible losses (perspiration, respirator, drains).

In intubated patients on mechanical ventilation insensible losses are usually 400-600 ml/day and increase by 200 ml after a 10C rise in body temperature in febrile patients. This means that fluid intake is limited to 500-800 ml/day in oligoanuric patients. Cardiac patients are particularly sensitive to volume changes, whether it is overload that causes deterioration of cardiac function and pulmonary edema, or excessive fluid removal that results in hypotension and deterioration of cardiac and renal perfusion.

To assess the volume status, the following are used: clinical parameters (orthopnea, jugular venous distension, hepatomegaly, edema, pulmonary crepitus), laboratory markers (urea, creatinine, electrolytes, osmolality, NT-pro BNP), instrumental methods (central venous pressure, pulmonary arterial pressure, monitoring of arterial pressure, heart frequency and oxygen saturation, echocardiography with assessment of ventricular filling and pulmonary hypertension, lung ultrasound with detection of B-lines as a marker of interstitial congestion, bioimpedance and invasive monitoring in critically ill patients) as well as body weight and diuresis monitoring (gold standard in daily clinical practice).

Therapeutic principles are based on: restriction of sodium and fluid intake, diuretic therapy, application of vasodilators and neurohumoral blockade, and in case of diuretic-refractory fluid overload or terminal renal insufficiency, intermittent dialysis with isolated ultrafiltration or continuous dialysis procedures in hemodynamically unstable patients.

CONCLUSION: Management of fluid balance in patients with renal insufficiency and heart failure implies a balance between preventing congestion and preserving renal perfusion. Optimal fluid balance implies the absence of deterioration of renal or cardiac function and requires a multidisciplinary approach with the teamwork of cardiologists, nephrologists and anesthesiologists/intensivists.

O009 Nutritional status assessment and personalized approach to enteral nutritional support in patients treated in cardiac intensive care

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8% - 57% of cardiology patients, depending on the severity of heart failure at admission, are malnourished. On admission to the ICU, 23 - 34% of patients are already malnourished.

What is malnutrition? By definition it is: "a subacute or chronic state of nutrition in which a combination of varying degrees of over- or undernutrition and inflammatory activity has led to a change in body composition and diminished function." We have four elements that go into assessing nutritional status: measurement of nutrient balance, measurement of body composition, measurement of inflammatory activity and measurement of muscle, immune

and cognitive function.” The term malnutrition has remained a synonym for cachexia, undernutrition.

The following eating disorders are seen in clinical practice in critically ill patients: malnutrition/ malnutrition, sarcopenia and "frail" patients, overweight/obesity, lack of micronutrients, Re-feeding syndrome. The question arises as to how to transplant a patient who is malnourished or has a nutritional problem. For this reason, protocols, scoring systems, and risk assessment have been developed. To assess nutritional status and nutritional risk, we use the following procedures: anamnesis and clinical examination, assessment tests nutritional risk, anthropometric measurements, laboratory tests, functional measurements, bioimpedance analysis – BIA. In our daily practice, we use the determination of body mass index, weight loss, and NRS 2002.

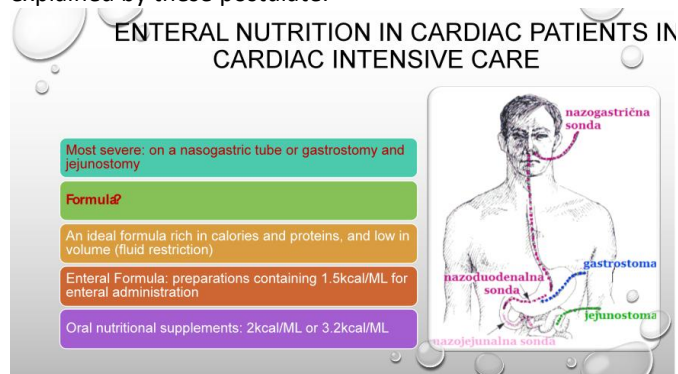
The general rule is that all patients should receive nutritional therapy. That is, they should be fed. Malnutrition and undernutrition are closely related to an increase in the number of complications and poor treatment outcomes. This applies to all branches of medicine, not just surgery.

Therefore, all critically ill patients should start nutritional therapy immediately after HD stabilization (after optimization of fluids, stabilization of vasopressor dose, present trend of decreasing lactate value and correction of metabolic acidosis, MAP>60mmHg). This certainly applies to critically ill cardiac patients.

The main routes of nutrition are oral and enteral. Enteral nutrition includes nutrition via nasogastric tube, gastrostomy, and jejunostomy. We use parenteral nutrition only when enteral and oral nutrition are not possible or as a supplement to them to achieve a nutritional goal.

Energy and amino acid requirements are the same whether enteral or parenteral nutrition is used. According to ESPEN and ASPEN guidelines, this is 15 to 25 kcal/kg of energy per day in the first 7 to 10 days and 0.8 to 1.3 g/kg/day of amino acids, when the patient is hemodynamically stable. Individual, personalized formulas are prepared for each patient.

Enteral nutrition in cardiac patients in cardiac intensive care is explained by these postulate:



Continuous clinical, laboratory and metabolic monitoring of these patients is necessary.

0010 Personalized nutritional support principles for patients in the cardiology intensive care unit

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For patients with cardiovascular disease in the ICU, modifying energy and nutrient intake is necessary compared to standard recommendations, along with adjustments to certain macronutrients and micronutrients, in order to prevent disease progression and malnutrition. Nutritional deficiency can occur as early as 3 days in more severe patients, and typically begins around 5-6 days. All patients should be carefully monitored by doctors and dieticians to provide timely nutritional support and prevent potential consequences. Specifically determining energy and protein intake depends on the patient's condition, the degree of catabolism, the presence and degree of infection, and the inflammatory response.

Patients' energy needs depend on whether they have comorbidities and whether they have moderate or severe malnutrition. Energy needs can be determined by direct and indirect methods and formulas. Indirect calorimetry is the gold standard. It is usually dosed 20-25 kcal/kg/day for a healthy person at rest, and if the patient is immobile, 25-30 kcal/kg of body weight daily, or 1,800-2,100 calories for a body weight of 70 kg in total. In critically ill patients, this intake is reduced because they are unstable (20 kcal per kg of body weight and 1 g of protein per kg of body weight). For patients with cancer, intake should be 30-35 kcal/kg/day. At 30 kcal per 1 kg of dry matter in the feed, up to another 1.5 g of protein can be added, because the goal is to prevent proteins loss (so that they are not used as a source of energy), and in order to meet the caloric intake from carbohydrates and fats. In nephrological patients (acute and chronic renal failure, dialysis patients), hypoproteinemia needs to be corrected, with the general restriction of electrolyte intake (sodium, potassium, calcium, phosphorus, magnesium). It is obligatory to calculate the intake of protein and fluids consumed, with smaller and more frequent meals, and adequate supplementation (vitamin D, iron). Enteral nutrition is usually delayed until cardiovascular stability is established because of hypoperfusion, and since the vasoactive medications limit blood flow through the intestines. However, early enteral nutrition can preserve the integrity of the intestinal mucosa, reduce the incidence of septic episodes, and decrease the frequency of mechanical ventilation-associated pneumonia.

The reason for nutritional status monitoring is to ensure adequate nutrition and to correct the amount of supplemental nutrition, in order to avoid refeeding syndrome, reduce the effect of catabolism, especially in critical patients, as they are highly catabolic, as well as in patients with high energetic needs. Hypermetabolism is accompanied by a slight increase in energy expenditure of 100 to 300 kcal/day and can lead to losses of 0.5-1 kg per week.

The timely application of the nutritional care process and medical nutrition therapy will reduce numerous health risks, as well as the risks of complications from the underlying disease, and will help with faster body recovery.

O011 Parenteral nutritional support in patients treated in cardiac intensive care units

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Nutritional recommendations for healthy people in order to prevent cardiac diseases are well known. They are based on reduced intake of saturated fatty acids, salt, red meat, alcohol,...

The diet of cardiac patients in the intensive care unit is completely different. Chronic cardiology patients have their own characteristics that are complicated so that the patient becomes critically ill. Who is a critically ill patient? A critically ill patient is one who has an acute deterioration, requires constant monitoring of vital parameters and support of vital functions. That support can be in the form of vasopressors, mechanical ventilation, support for kidney function,... Cardiac patients can become critically ill due to an acute worsening of the underlying disease or due to other diseases that have led to critical illness. There we have examples of sepsis caused by infection, trauma, pneumonia,...

One of the characteristics of patients with chronic cardiomyopathy is "cardiac cachexia". There are different definitions of "cardiac cachexia". One definition is a loss of more than 6% of normal body weight, without edema, over a period of 6 months or more. These patients have edema (increased amount of extracellular fluid), osteoporosis, hypoalbuminemia, lack of fat, ...

The basic nutritional recommendations for patients with chronic heart failure are based on the use of supplements with: branched-chain amino acids, anti-inflammatory and antioxidant properties.

One mitigating circumstance in these critically ill patients is the preservation of the gastrointestinal tract. The majority of patients have the possibility of oral intake of food. In the event that such a patient cannot have oral intake, a nasogastric tube (NGT) is used. All recommendations state that oral and enteral intake have an advantage over parenteral intake. Parenteral intake of energy, macro and micronutrients, is recommended as a supplement to enteral intake or in cases where enteral intake is not possible.

According to Aspen recommendations, energy intake in a critically ill patient is 15 to 25 kcal/kg per day in the first 7 to 10 days. Regarding amino acid intake, the recommendation is to consume 0.8 to 1.3 g/kg/day, when the patient is hemodynamically stable. This applies to both parenteral and enteral nutrition.

Critically ill cardiac patients should be fed. One should be aware of the existence of pre-existing malnutrition and the

risk of malnutrition. For adequate nutrition, use supplements added orally, via NGT if necessary and parenterally. Provide critically ill patients with adequate protein and energy intake with constant clinical and laboratory monitoring.

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