

Postoperative complications of liver transplant: evidence for the optimization of nursing care

Complicações pós-operatórias do transplante hepático: evidências para otimização da assistência de enfermagem

Las complicaciones postoperatorio de trasplante de hígado: evidencias para la optimización de la asistencia de enfermería

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ABSTRACT

Objective: To investigate the main and most frequent complications in postoperative liver transplantation and to point out the evidence for early detection and optimization of nursing care. **Method:** This is a descriptive-type study with a quantitative approach. All electronic records available in MvPep system from January 2012 to December 2014 were analyzed. The data were collected through a schematic form, and for the analysis, they were transferred to Microsoft Office Excel 2007, transcribed in the form of tables and transformed in graphs for better data visualization. **Results:** several complications were noteworthy such as neurological, pulmonary, respiratory, cardiac, hematologic, vascular, biliary, the graft itself, intestinal, peritoneal, surgical, infectious and kidney related. **Conclusion:** the need for a differentiated and individualized care to the transplant patient, with a keen and thorough look, was made evident, and the nurse is responsible for planning it.

Descriptors: Liver transplantation, postoperative complications, nursing care.

RESUMO

Objetivo: investigar as principais complicações mais frequentes no pós-operatório do transplante hepático e apontar as evidências para a detecção precoce e otimização da assistência de enfermagem. **Método:** trata-se de um estudo com abordagem quantitativa do tipo descritiva, foram analisados todos os prontuários eletrônicos disponíveis no sistema MvPep do período de janeiro de 2012 a dezembro de 2014. Os dados foram coletados por meio de um formulário esquematizado, e, para a análise, foram transferidos para o Microsoft Office Excel 2007, transcritos em forma de tabelas e transformados em gráficos para melhor visualização dos dados. **Resultados:** destacaram-se diversas complicações como as neurológicas, pulmonares, respiratórias, cardíacas, hematológicas, vasculares, biliares, as do próprio enxerto, intestinais, peritoneais, cirúrgicas, infecciosas e renais. **Conclusão:** evidenciou-se a

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necessidade de uma assistência diferenciada e individualizada aos transplantados, com um olhar aguçado e minucioso, sendo o enfermeiro o responsável por planejá-la.

Descritores: Transplante hepático, complicações pós-operatórias, assistência de enfermagem.

RESUMEN

Objetivo: Investigar las principales complicaciones más frecuentes en el postoperatorio del trasplante hepático y señalar las pruebas para la detección temprana y la optimización de los cuidados de enfermería.

Método: Se trata de un estudio con un enfoque cuantitativo descriptivo, se analizaron todos los registros electrónicos disponibles en el sistema MvPep desde enero de 2012 hasta diciembre de 2014. Los datos fueron recogidos a través de una forma esquemática, y para la análisis fueron transferidos a Microsoft Office Excel 2007, transcritos en forma de tablas y gráficos fueran realizados para una mejor visualización de datos.

Resultados: se destacaron varias complicaciones como neurológica, pulmonar, respiratorias, cardíacas, hematológicas, vasculares, biliares, el propio injerto, intestinal, peritoneal, quirúrgica, infecciosas y en el riñón.

Conclusión: se demostró la necesidad de una atención diferenciada e individualizada al paciente de trasplante, con una mirada penetrante y profunda, y el enfermero es el responsable de la planificación de la misma.

Descriptor: Trasplante de hígado, las complicaciones postoperatorias, los cuidados de enfermería.

INTRODUCTION

Liver transplantation is a life-saving procedure in patients with terminal chronic liver disease or acute liver failure when there are no other available clinical and surgical treatments.¹

Thus, in the postoperative period, fear of rejection and the possible need for re-transplantation is a constant stress for the recipient and its relatives. In addition to rejection, primary non-functioning of the graft; postoperative hemorrhage; hepatic artery thrombosis; biliary, cardiopulmonary, hematologic complications and infections are major risks that may lead to the failure of the procedure.²

The relevance of the present study is justified by the need and importance of the improvement of the care provided by the nurse professional, as well as the provision of effective and qualified care to the individual, due to the fact that the type of care reflects in the recovery of the person with the transplant.

Given this context, the present study aims to investigate the most frequent postoperative complications of liver transplantation and to point out evidence for early detection and optimization of nursing care, since it is configured as the role of the nurse to plan the care.

METHODS

This is a descriptive-type study, of quantitative approach. The descriptive research requires of the researcher a series of information about what it wants to research. This type of study intends to describe the facts and the phenomena of a certain reality, with an exact description of the phenomena and the facts, that escape from the possibility of verification through observation.³

The field study was performed through the analysis of 159 charts of patients who underwent liver transplantation from a total of 173 surgeries that occurred between January 2012 and December 2014, since, among the total surgeries, it was not possible to access the Electronic file of 14 patients in the homonymous system (MvPep) used by the research institution. Among the charts of patients analyzed, 60 underwent transplantation in 2012, 40 in 2013 and 59 in 2014.

The transplants were performed in a hospital institution, reference in geriatrics, transplants and high complexity surgeries, located in Rio de Janeiro - RJ.

The selection of the medical records followed the ensuing inclusion criteria: those that were available in MvPep electronic system from January 2012 to December 2014 in which the postoperative complications were described, regardless of gender and age. Regarding the exclusion of medical records, some criteria were considered: those not available in the electronic system, those that were not from the period from January 2012 to December 2014, those that were not explicit on gender, age and postoperative complications.

The process of data collection consisted of two stages, the first encompassing variables such as gender, age, date of liver transplantation; the second consisted of a list containing the name and date of the surgical procedure performed, provided by the sector responsible for the transplantation, which was used to execute the search of the electronic medical records in MvPep, from which it was possible to identify the complications presented in the postoperative period of the hepatic transplant.

The data were collected in the months of November and December of 2015. They were organized and tabulated in Microsoft Office's Excel 2007 program to obtain the results. As this was a study that aimed to assess the main complications of liver transplants, the technique became pertinent, since it was possible to make a detailed and careful analysis on the subject, based on the instrument applied, in order to respond the inquiries referenced as objectives without losing sight of the complexity of the phenomenon studied.

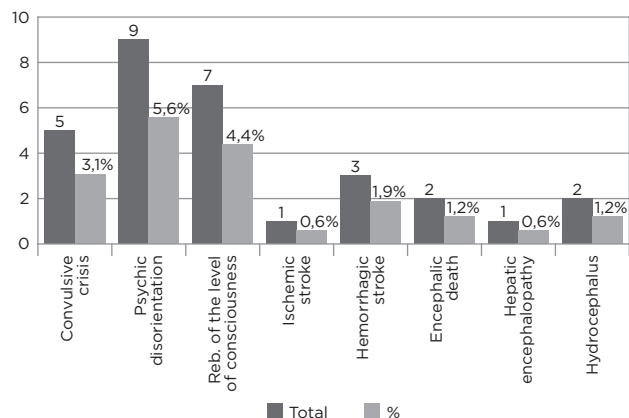
The present study complied with all the recommendations set forth in Resolution 466/12 of the Ministry of Health (MS), which deals with research involving human beings with regard to the fundamental ethical and scientific requirements for its realization. Considering the principles and ethical aspects, the research project was submitted and approved by the Research Ethics Committee of the Adventist University of Bahia, with Certificate of Acceptance and Ethical Appreciation No. 45465815.0.0000.0042. Therefore, the research obeyed the criteria of dignity, autonomy, privacy and secrecy.

RESULTS AND DISCUSSION

Through the analysis of the 159 electronic medical records, it was possible to observe that the participants of this research were mostly men, totaling 97 men and 62 women; the average age ranged from 19 to 75 years. From

the systematic review of each medical record described in the evolution of the patient, several postoperative complications were identified, which were categorically grouped, presented in graphs being numerically explained through their respective percentages. The data will be presented and discussed below.

Graph 1 - Neurological complications after liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015.



Source: authors

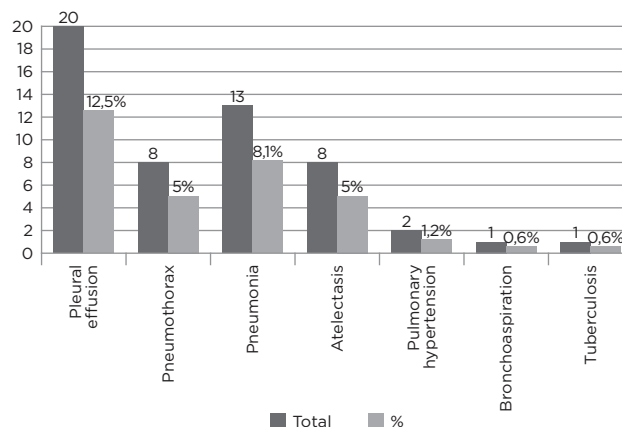
The analysis in search of the percentage of complications that arose revealed that the neurological changes in liver transplantation are important causes of morbidity and mortality, affecting 13.2 to 90% of the patients, and that the decreased level of consciousness is one of the alterations and may be a consequence of factors as varied as hypoglycemia, a potentially serious situation for the central nervous system (CNS) and cerebrovascular disease. Seizures affect 6 to 36% of patients and are usually single and generalized tonic-clonic, it can be attributed to important metabolic and hydro-electrolytic alterations of diabetes mellitus and the exacerbation of the condition.⁴

When an individual undergoes a procedure such as liver transplantation, unfortunately, the organ does not have the capacity to perform its functions immediately, compromising the functioning of the other systems of the organism, and as a consequence, some clinical complications such as those mentioned above become apparent.

Intercurrences may result from factors prior to the transplantation such as those related to alcoholism, hepatitis C virus infection and malnutrition, or transoperative alterations and difficulties with immunosuppressants, ranging from extrapyramidal side effects to infections, coagulopathies and postoperative infections.⁴

The most prevalent changes were psychic disorientation 5.6%, decreased level of consciousness 4.4%, convulsive crisis 3.1% and hemorrhagic stroke 1.9%, which, as mentioned, may be influenced by factors prior to the transplantation and are not exclusively due to the operative process, it must also be taken into consideration that the coagulation system is affected, causing undesirable complications, frequently irreversible, and can lead to the patient's death.

Graph 2 - Pulmonary/respiratory complications after liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015.



Source: authors

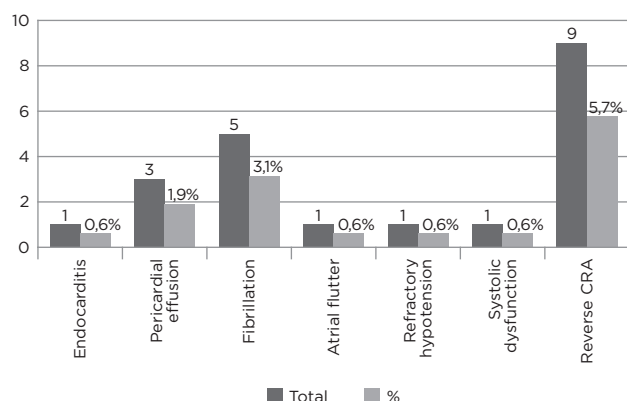
Surgeries of the thorax and upper abdomen are the major responsible for pulmonary complications. It is estimated that there is a reduction of 50% to 60% of vital capacity and 30% of residual functional capacity, caused by diaphragmatic dysfunction, postoperative pain and alveolar collapse. Abdominal surgical procedures promote disorders that reach their peak on the first postoperative day when the respiratory system becomes more vulnerable to postoperative pulmonary complications and the most intense ventilatory changes.⁵

It is worth mentioning that the nurse in the immediate postoperative period should develop a sharp eye when facing this profile of patients studied, contributing to the detection of alterations which can be intervened in such ways that guarantee the expected maintenance of the treatment.

Pleural effusion arise from an increase in intrapleural pressure caused by transudate or exudate in the interpleural space and has been identified as one of the most common complications in the immediate postoperative period in patients submitted to liver transplantation. Atelectasis mainly results from a direct local pressure in the lung parenchyma, caused by visceral dislocation from the bottom upwards (ill liver with greater volume and abdominal ascites and/or existing pleural effusion) and lead to a decrease in alveolar ventilation, while the perfusion may be slightly decreased. The chronic state of immunosuppression of these transplanted patients causes them to be at continuous risk of infectious pulmonary complications by opportunistic microorganisms, increasing significantly morbidity and mortality rates.⁶

Patients undergoing transplantation are usually immunosuppressed due to the treatment, so all healthcare professionals who deal directly with this specificity should be able to avoid contamination of these patients, as well as possible infections. We emphasize that it is of fundamental importance that the nurse performs the role of educator, developing actions such as training and orientation, favoring the awareness of all the team regarding the realization of appropriate assistance techniques.

Graph 3 - Cardiac complications after liver transplantation, obtained from the patients' charts. Rio de Janeiro - RJ, Brazil 2015.

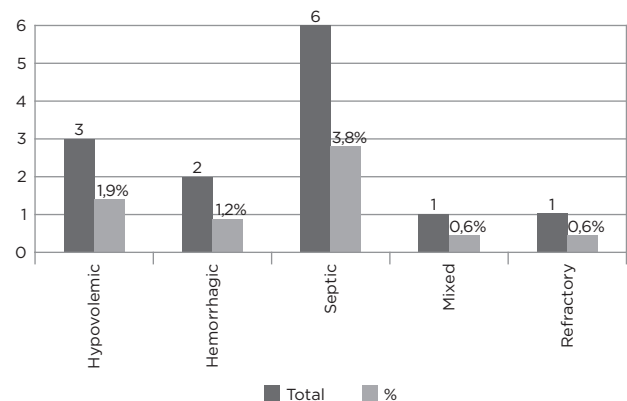


Source: authors

In view of the aforementioned graph, cardiac alterations are observed in patients submitted to transplantation, being potentially fatal, since the cardiac system, once compromised, affects the hemodynamic stability of the individual favoring a cascade of complications that can lead to a cardiorespiratory arrest (CRA) and death.

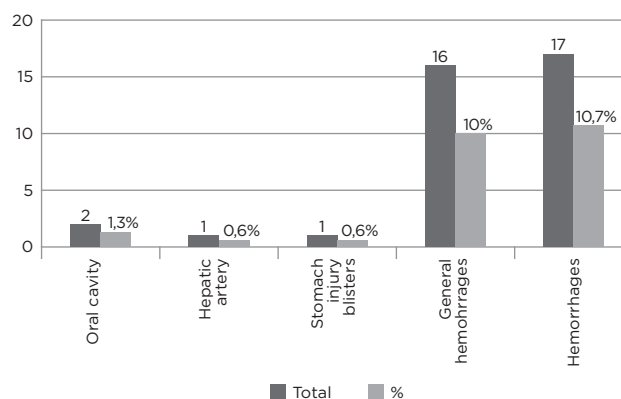
During CRA, the absence of circulation causes cerebral hypoperfusion, especially of the subcortical areas and the border territories between different cerebral arteries which, due to its lower perfusion, are more subject to ischemia.⁷ In addition to these complications, several others may arise, further compromising the entire body of the client in the postoperative period of liver transplantation.

Graph 4 - Shocks presented in the postoperative period of liver transplantation obtained from the patients' charts. Rio de Janeiro - RJ, Brazil 2015.



Source: authors

Graph 5 - Bleeding presented in the postoperative period of liver transplantation obtained from the patients' charts. Rio de Janeiro - RJ, Brazil 2015.

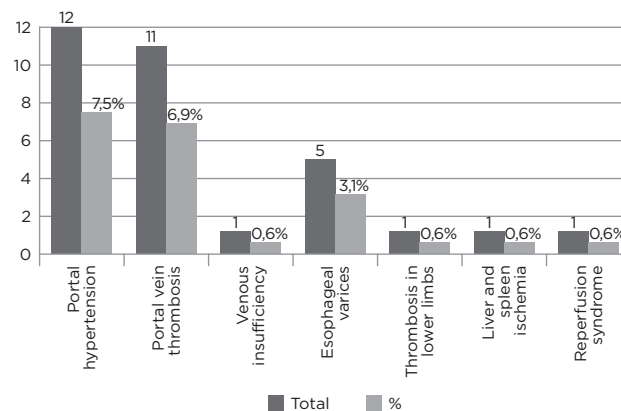


Source: authors

Many of the individuals who underwent liver transplantation presented a shock state as described in graph 4. Many factors are associated to this, such as surgical trauma, ischemia-reperfusion of the organs, changes in body temperature and release of endotoxins, these form an inflammatory cascade that may contribute to the development of postoperative complications, including, but not limited to, respiratory failure, renal dysfunction, hemorrhagic disorders, neurological dysfunction and abnormal liver-cardiac function and, finally, multiple organ failure.⁸

It is worth mentioning that the coagulation factor of these individuals is altered, since patients with chronic liver failure present decreased levels of the proteins involved in blood coagulation, favoring bleeding in several orifices and vessels as shown in graph 5, which may result in hemorrhagic shock, in some cases, without treatment conditions. This clinical situation requires a continuous observation of the entire multiprofessional team involved in the process of patient recovery.

Graph 6 - Vascular complications after liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015



Source: authors

In graph 6, the most frequent vascular complications were portal vein thrombosis, portal hypertension, and esophageal varices. Portal vein thrombosis is the most

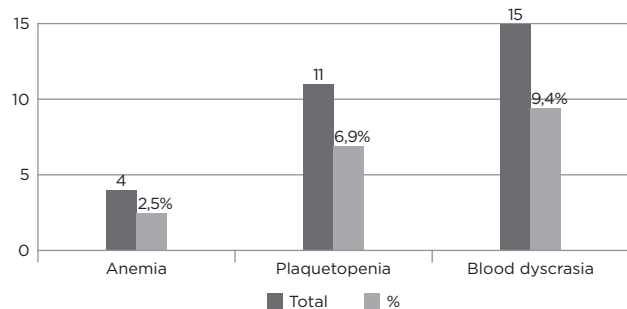
common cause of prehepatic portal hypertension. Arteriovenous fistulas, involving the liver or splanchnic circulation, are the second most common cause. Among the causes of portal vein thrombosis, there are: dehydration, shock states, malignant neoplasms such as hepatocarcinomas or hepatic metastases with portal invasion by extrahepatic tumors, portal vein compression, trauma, catheterization, increased resistance to flow (cases of Cirrhosis, Budd-Chiari). One may also present as complications, thrombosis of the portal vein or other vessels related to portal-splenic-mesenteric venous trunk.⁹

Portal hypertension (PH) represents a set of clinical, biochemical, laboratory and morphological manifestations that constitute the end product of chronic liver disease, of variable nature. Classically it is known that the most severe clinical manifestation of PH is represented by high digestive hemorrhage (HDH) due to rupture of varices. This complication accounts for 1/3 of the deaths in this group of patients.¹⁰

Through the identification of esophageal varices of small, medium or large caliber, smooth or rectilinear, it is possible to suspect a high potential risk for episodes of digestive bleeding, besides providing important data regarding signs of vascular flow obstruction, represented by venous thrombosis.¹⁰

Given the findings of the research and what is exposed in the literature, it is perceived that the patient who undergoes such procedure requires a differentiated nursing care, since the nurse spends twenty-four hours shifts with these patients in serious conditions. Hence, it is essential to observe carefully the clinical signs that may be suggestive of complications, especially in the first hours after transplantation, which is considered one of the most critical moments.

Graph 7 - Hematologic complications after liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015.



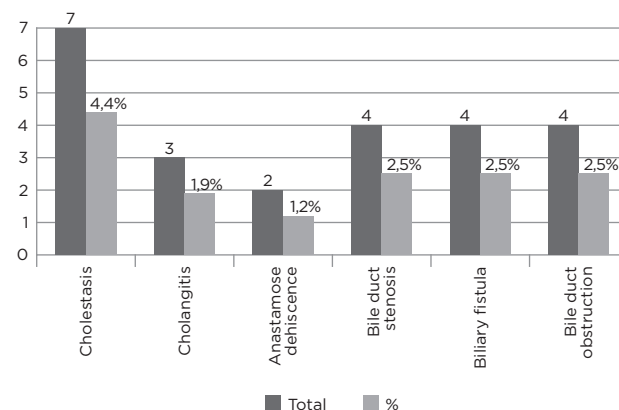
Source: authors

The hematological complications shown in graph 7 appears due to the clinical situation of the patient, the presence of blood dyscrasias (leucopenia, agranulocytosis or aplastic anemia) occurs due to the use of some medications during the treatment such as antibiotics, antivirals and anticonvulsants. The association between antibiotics and blood dyscrasia is particularly strong, mainly in patients treated with several classes of antibiotics. Antiviral agents may also be associated with severe hematological

changes. As an example, pegylated interferon- α -2a-induced thrombocytopenia can be mentioned in patients undergoing therapy with these immunomodulators for treatment of hepatitis C. Valproic acid, an anticonvulsant drug, is capable of causing depression of bone marrow activity, resulting in medullary aplasia or myelodysplastic syndrome, with occurrence of peripheral cytopenia that may affect one or more cell lineages. As a result, it is possible to observe platelet count, neutropenia and/or erythrocyte macrocytosis, with or without anemia.¹¹

It should be noted that according to the charts analyzed, the patients submitted to liver transplantation used the classes of medications mentioned above, which, among other factors, may justify the hematological findings arranged in the last graph.

Graph 8 - Bile complications after liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015.



Source: authors

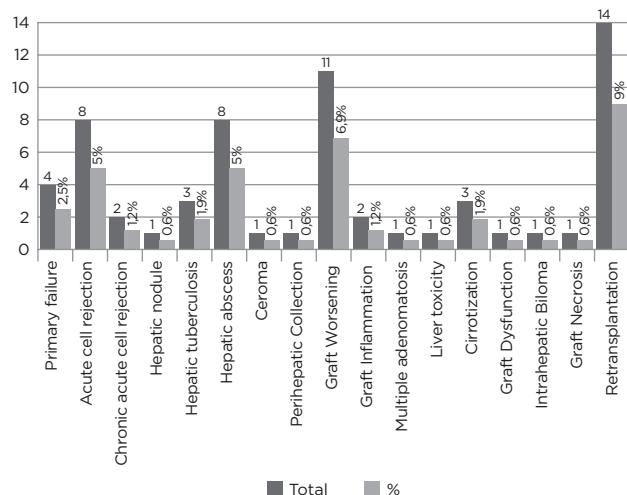
The most diverse biliary complications are common and frequent in the postoperative period of liver transplantation for recipients and even for living donors. Graph 8 presents some of these complications that were recorded in the charts analyzed.

Complications of the biliary tract continue to be a common source of morbidity and mortality. Some authors call it the "Achilles heel" of liver transplantation. Biliary fistula and stenosis are the most common complications of the biliary tract, but Oddi sphincter dysfunction, haemophilia, and biliary obstruction of the cystic duct by mucocele or calculi are also observed. Biliary complications can occur in 6% to 39.5% of patients submitted to liver transplantation, being more frequent after *inter vivos* transplantation. The development of complications can be determined by a number of factors, such as: baseline disease, previous biliary operation, type of anastomosis, disproportion between the size of donor and recipient biliary duct, inadequate extension of the biliary graft and the anatomical complexity of the right biliary duct, which may result in the anastomosis of more than one biliary branch. Other important factors which may contribute to the development of biliary complications are: use of biliary drains, infection (cytomegalovirus, CMV) and ischemia.¹

These complications are independent of nursing care because they are directly related to the anatomic-physiological conditions of donor and recipient, not exempting the nursing staff to provide the necessary assistance in order to minimize the consequences of these complications.

Studies have shown that 5% to 30% of the recipients develop biliary complications in the post-transplantation, among them the most common are biliary fistulas and stenosis, however, Oddi sphincter dysfunction, haemophilia, cystic duct obstruction by mucocele, gallstones and recurrences of the underlying disease such as primary biliary cirrhosis and primary sclerosing cholangitis are also observed.¹²

Graph 9 - Graft complications after liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015.



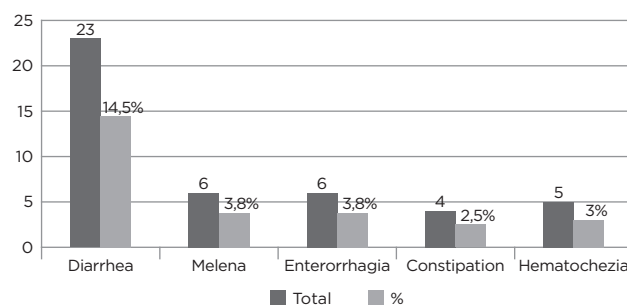
Source: authors

After systematic analysis of the charts, it was noted that there were some complications related to the graft as shown in graph 9, the most representative were acute cell rejection, graft worsening, primary failure, hepatic abscess, and primary non-functioning of the graft, among others already discussed in the course of this study that culminated in 14 retransplantations as put on the chart in question.

Allografts (transplantation between individuals of the same species, however genetically different) can be rejected by a humoral cell-mediated immune reaction of the recipient against transplant antigens (histocompatibility) present on the membranes of the donor cells. The lymphocyte-mediated immune response against transplant antigens is the main mechanism of acute rejection. Cell-mediated rejection can be reversed, in many cases, by the intensification of immunosuppressive treatment.¹³

Chronic rejection is much rarer, occurring in a lower percentage, represented in this study by 1.2%. The abscesses that arise due to some inflammatory infiltration in the subendothelial spaces represent 5% of the patients studied.

Graph 10 - Intestinal complications after liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015.



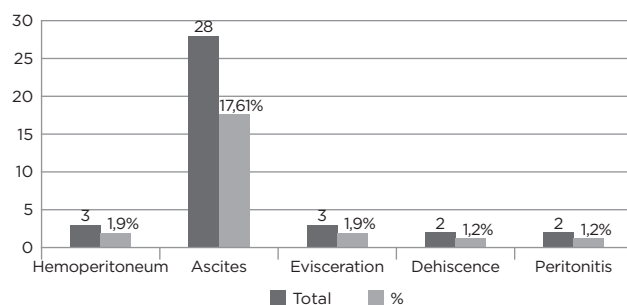
Source: authors

Transplanted patients may frequently present diarrhea, which is a clinical condition that can generate large impacts on nursing care, a situation that is significantly represented above in the chart. As some literature states, the causes of gastrointestinal tract infections in transplanted patients may be candida, herpes, and *Clostridium difficile*; and are most common in the esophagus, leading to esophagitis. Cytomegalovirus and other viruses are primarily responsible for infections. The clinical picture may present as dysphagia, odynophagia, nausea, vomiting, abdominal pain, gastrointestinal bleeding, perforation or diarrhea.¹⁴

It is possible to notice that there were cases of patients with intestinal bleeding, presented in a variety of ways, and it is important to take into account that patients bearing diseases with coagulation deficits, more often women of reproductive age, are susceptible to spontaneous intra-abdominal bleeding, including association with liver failure and thrombocytopenia. The rupture of esophageal varices accounts for about 70% of the first episode of upper gastrointestinal bleeding in patients with portal hypertension.¹⁵

Intestinal changes can be seen through the appearance, color and odor of feces eliminated by the patient and may represent a worsening of the clinical situation of the transplant patient, thus, the perception, the communication and the registers of the nursing team are essential for taking appropriate therapeutic measures, in order to reverse the case presented.

Graph 11 - Peritoneal complications after liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015.



Source: authors

Liver transplant patients, in addition to specific alterations, tend to develop abdominal complications, emphasizing that ascites was the most prevalent when compared to the others, however, the disease most associated with ascites is hepatic

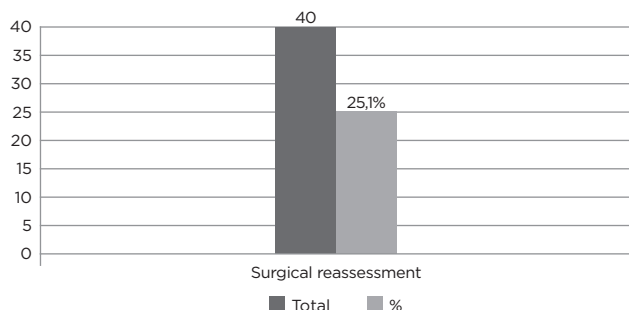
cirrhosis, and its development is the end result of a series of anatomical, pathophysiological and biochemical abnormalities.¹⁶

It is worth noting that cases of evisceration and dehiscence have been quantified, and as the literature states, there is an association between surgical wound (SW) infection and suture dehiscence, which may occur due to infection or over resection, with tension in the flap, ischemia and interference in cicatrization. Suture dehiscence is considered one of the most serious abdominal surgical complications, with a mortality rate of 10% and it is characterized as a surgical emergency due to the risk of evisceration, which usually occurs between the fourth and the fourteenth day after surgery.¹⁷

It is important that, during all phases of the transplant process (pre, trans and postoperative), the multiprofessional takes hold of the recommended aseptic and sterile techniques at all moments of SW manipulation, aiming to reduce the risk of contamination and possible infections, since the production and protein synthesis are compromised favoring the retardation of the healing process, thus increasing the risk of dehiscence and evisceration.

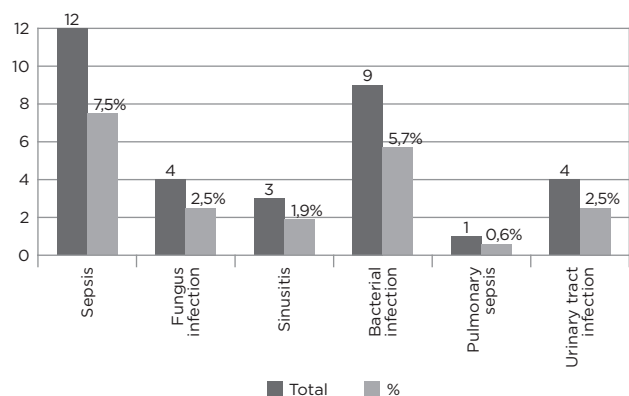
Spontaneous bacterial peritonitis is considered the main and most important infection that affects patients with cirrhosis, and its incidence ranges from 7-30%. Clinically it has a clinical picture of fever, abdominal pain, gastrointestinal symptoms or multiorgan dysfunction, which includes hemodynamic instability, encephalopathy and renal failure. However, an asymptomatic condition can also occur in about 50% of cases.

Graph 12 - Surgical complications after liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015.



Source: authors

Graph 13 - Infectious complications after liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015.



Source: authors

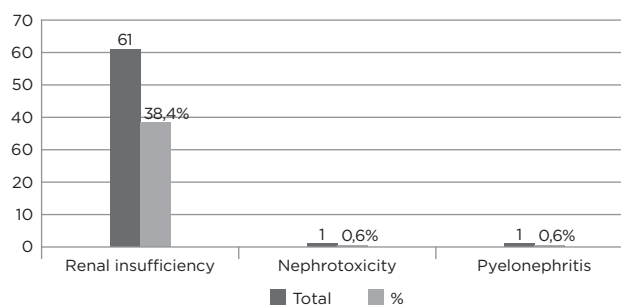
Considering graph 12, it is clear that there was a significant percentage of surgical complications that required reassessments and it was possible to observe in the registers contained in the medical records, during the data collection process, that this situation arose from intra-abdominal hemorrhages, hepatic artery bleeds, infectious processes that required cavity lavage, among other factors that allow the patient to be exposed to a greater surgical risk.

Since the 1980s, it has been described that infections (bacterial, fungal and viral) are among the most frequent and serious complications during the first year after liver transplantation. From the second to the sixth month, the persistence of surgical complications and bacterial infections may still occur, but opportunistic fungal and viral infections begin to be more frequent. In this period, the chronic or ductopenic rejection of the graft has its peak of occurrence.¹⁹

In the long term, immunosuppression may also facilitate the appearance of neoplasias that did not previously exist. Factors associated with post-transplant infections appear to be varied, and may be related to immunosuppression, receptor characteristics, or peculiarities of the surgical procedure and transplanted organ.¹⁹

It should be emphasized that this type of patient should receive all the care in a way that contributes significantly to the non-contamination of the individual, allowing it to have an adequate recovery, besides paying attention to the strict administration of prescribed medications, which are responsible for the reversion or even prevention of an infectious condition, since as evidenced, the opportunistic pathogens can settle, representing a serious complication that can cause death.

Graph 14 - Kidney complications after liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015



Source: authors

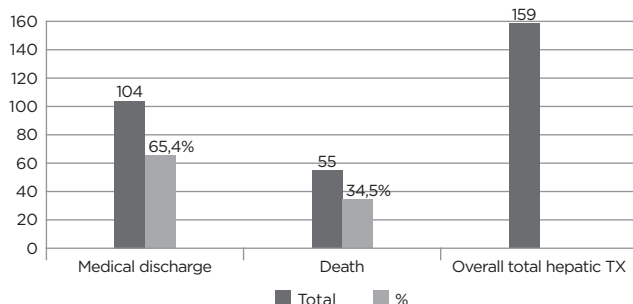
The data presented in graph 14 depict the renal complications presented by the individuals selected for research, with the highest number of cases being acute renal failure (ARF). This may be justified by the baseline pathology of the participants, most of which had hepatitis C infection, cytomegalovirus, alcoholic cirrhosis and other types of infection.

Patients with cirrhosis are susceptible to a wide variety of complications, including hepatorenal syndrome defined as a type of acute cirrhotic-only pre-renal ARF, non-responsive to volume expansion. ARF can be divided into three types: pre-renal (hypoperfusion without glomerular or tubular lesion,

responsive to volume expansion), renal (eg: acute tubular necrosis) and post-renal (eg: urinary tract obstruction). In cirrhotics, however, this differentiation is difficult, since predisposing factors of pre-renal azotemia may also precipitate acute tubular necrosis (ATN) and Hepatorenal Syndrome (HRS).²⁰

During the analysis it was possible to perceive, at various times, medical reports of non-responsiveness to administered volumes, and it became necessary to dialyze the patient because it presented “poor renal function” through clinical and laboratory findings, thus characterizing HRS.

Graph 15 - Final outcome of patients submitted to liver transplantation, obtained from patients' charts. Rio de Janeiro - RJ, Brazil 2015.



Source: authors

Patients who presented an adequate clinical response to obtain discharge were 64.4%, although at other times they had to return to the hospital due to certain complications, since as we are aware, it is an immunocompromised patient, sometimes contracting microorganisms that require hospitalization for diagnoses and treatment.

The frequency and cause of death differ with post-transplant time. Most deaths still occur within the first three months after transplantation and are usually due to infection, technical complications of the procedure, and primary non-functioning of the graft. The survival of transplanted patients has been progressively increasing, reaching values between 60-70% in five years, characterizing good quality of life that provides complete rehabilitation in the psychosocial-economic context.¹²

There were also patients who, despite the complexity of the transplant, were able to leave the hospital, but after months or even years, as seen in medical records, they returned to the service with several alterations, and it was not possible to revert their condition, resulting in death. They represented 34.6% of the cases.

CONCLUSION

The information obtained through the analysis explained the complications presented in the immediate and late postoperative period of liver transplantation, allowing a better understanding of the complexity involved in the procedure in all its dimensions, considering that the liver is one of the most important organs of the body and that it assembles numerous functions, interfering in many systems in the organism.

Patients who undergo transplants are subject to several complications evidenced in the present study, such as neurological, pulmonary, respiratory, cardiac, hematological, vascular, biliary, graft-related, intestinal, peritoneal, surgical, infectious and renal. Through this context, it becomes evident the need for a differentiated and individualized care, with a sharp and detailed look, being the nurse responsible for planning and managing it in a way that enables the patient to respond satisfactorily to the proposed treatment through the continuity of care carried out in a systematized way that guarantees registration and communication among the teams of the different areas involved in the process, thus contributing to the reduction of hospitalization and rehabilitation time, favoring their return to daily activities.

It is, therefore, the responsibility of the multiprofessional team, with an emphasis on nursing, to provide guidelines and to prepare the individual and its family during the entire hospitalization period and then to hospital discharge, in order to promote independence and quality of life and to prevent complications and future re-admissions. From this context, it is necessary to highlight the relevance of the nurse professionals to have a broader understanding concerning complications, continuously seeking the pertinent knowledge on the subject addressed so that they can act re-educating and disseminating knowledge in order to achieve a successful care.

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