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Assessment of A Patient with Liver Failure According to Marjory Gordon's Functional Health Pattern Model After Liver Transplantation from A Cadaver: Case Report

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ABSTRACT

Liver failure, which is common worldwide, occurs as a result of a variety of causes, including obesity, liver disease, high alcohol consumption, hepatitis B or C infection, autoimmune disease, and iron or copper overload. With advanced liver failure, the most common cause of which is chronic viral hepatitis, liver transplantation is the only treatment of choice. Recurrent hepatitis C or B infections occur as a late complication after transplantation. Both can be treated well after a liver transplant. Other chronic liver diseases may also recur. The aim of this case report is to share our knowledge and experience about the disease and the case with our colleagues. The patient's data were collected according to M. Gordon's functional health patterns. Nursing diagnoses were determined according to the North American Nurses Association (NANDA) classification. The patient was 27 years old, male, single, had a university degree, and lived with his family in a large city. The patient, whose mother also had hepatitis B, had undergone liver transplantation in 2008. In December 2021, the patient was admitted to the gastroenterology department because of increased pruritus and icteric manifestations on the sclera. Nursing diagnoses: Risk of infection due to the inability of hepatic Kupfer cells to perform phagocytosis function, fatigue, ineffective individual coping, disturbed body image due to diffuse icteric appearance, impaired liver function, risk of impaired skin integrity, and lack of knowledge. The nursing process was applied according to the identified nursing diagnoses. The patient was discharged 7 days after hospitalization following the determination of drug levels. Patient care is extremely important in the nursing profession. Planning the patient's care according to M. Gordon's Functional Health Patterns Model and conducting data analysis in line with the model's sub-dimensions were observed to solve the patient's problems in a short time, and nursing care was provided to the patient in a systematic manner.

Keywords: liver failure; nursing care; after transplantation

INTRODUCTION

The liver is the largest parenchymatous solid organ in the human body (Ozougwu, 2017). It removes harmful substances from the body (Ramadori et al., 2008). Liver failure develops after a long period of inflammation; fibrotic tissue and regenerative nodules occur in healthy liver parenchyma due to portal hypertension. The disease changes from an asymptomatic phase to a symptomatic phase (Lancet, 2021). Progressive portal hypertension, systemic inflammation, and liver failure drive disease outcomes. Treatment of liver failure focuses on treating the causes and complications. The disease results in end-stage and multiple organ failure. In some cases, liver transplantation may be required (Bucuvalas et al., 2006). The most prominent symptoms are weakness, fatigue, loss of appetite, nausea, vomiting, and diarrhea (Such and Runyon, 1998; Johnson and Cunha, 2001).

Complications often result in hospitalization, deterioration of quality of life and high mortality. The diagnosis is made based on anamnesis, physical examination, laboratory, and radiological examinations (Alam & Lal, 2016). Liver transplantation is the only treatment of choice in cases of advanced liver failure, the most common cause of which is chronic viral hepatitis (Squires et al., 2008).

It is highly important for the success of the treatment that the nurse, who plays an important role in implementing the treatment and maintaining the care, deals with the patient holistically and meets the needs of the patient physically, psychologically, socially, and mentally in light of a model (Soydan et al., 2020).

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The Functional Health Patterns developed by M. Gordon in 1987 consist of 11 headings: Health perception-health management pattern, nutritional-metabolic pattern, elimination pattern, activity-exercise pattern, sleep-rest pattern, cognitive-perceptual pattern, self-perception-self-concept pattern, role-relationship pattern, sexuality-reproductive pattern, coping-stress tolerance pattern, and value-belief pattern (Velioğlu, 2012).

Our aim in this case report is to share our knowledge and experience about the disease and the case with our colleagues. Data were collected from the patient according to M. Gordon's Functional Health Patterns. Nursing diagnoses were determined according to the North American Nurses Association (NANDA) classification.

METHOD

The patient was 27 years old, male, single, had a university degree and lived with his family in a large city. The patient, whose mother also had hepatitis B, had undergone liver transplantation in 2008. In December 2021, the patient was admitted to the gastroenterology department because of increased pruritus and icteric manifestations on the sclera. Nursing diagnoses: Risk of infection due to the inability of hepatic Kupfer cells to perform phagocytosis function, fatigue, ineffective individual coping, disturbed body image due to diffuse icteric appearance, impaired liver function, risk of impaired skin integrity, and lack of knowledge.

RESULT

Case Description

He is 27 an old male, single, a university graduate, and lives with his family in a metropolitan city. He received a cadaveric liver transplantation in 2008 in the general surgery department of a university hospital. Since 2016, he has undergone stent exchange with Endoscopic Retrograde Cholangio Pancreatography (ERCP) procedure every 6 months due to complaints of itching and jaundice. In 2020, the stent was removed again with ERCP and the choledochal balloon was swept and no stent was inserted because it was not needed again. In the post-procedure Magnetic Resonance Cholangiopancreatography (MRCP) imaging of the patient; liver position, contour, size were normal, parenchymal intensity was normal, portovenous structures were normal, spleen long axis size was measured 140 mm, which signaled an increase, millimetric lymph nodes were present in the paraaortocaval area, intrahepatic bile ducts in the right lobe appeared slightly dilated, sudden narrowing of the choledochal diameter reaching 3 mm at the hilar level and mild diffuse thickness increase in the wall in the same section were noted. Abdominal and Portal Venous Doppler Ultrasound showed no dilatation of the bile ducts and no thrombus. The diameter and flow directions of the portal vein and its component veins (splenic vein, superior mesenteric vein) and hepatic vein were normal. The hepatic artery is thin and patent at the hilus level and in the parenchyma. No occlusion/thrombus was observed. Spleen parenchyma echo homogeneity is normal and its dimensions are large. The long axis was found to be 141 m. Hepatitis B was diagnosed in his family history and in his mother.

Assessment of the Case According to Functional Health Patterns

1. Health Perception-Health Management

The patient states that he does not have enough information about his disease. He often asked questions to the health teams. The patient's vascular access was checked daily and changed when infection signs and symptoms were detected.

Nursing Diagnosis: 'LACK OF KNOWLEDGE' due to expressing a lack of knowledge about the disease.

Aim: To provide the patient with information about his/her illness.

Interventions:

1) The disease and all interventions were explained to the patient in understandable, plain language.
2) The patient was informed before each intervention.
3) The patient was informed about the treatment.
4) The patient was encouraged to ask questions.

Assessment:

The patient stated that he learned new information about his disease.

Nursing Diagnosis: 'INFECTION RISK' due to the inability of liver Kuppfer cells to perform phagocytosis function and the presence of invasive procedures.

Aim: To prevent possible infections

Interventions:

1) Body temperature was measured regularly.

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2) The importance of hand washing was highlighted.
3) The doctor was asked to increase fluid intake.
4) Attention was paid to aseptic techniques.
5) IV catheter entry sites were observed for infection (redness, temperature, swelling, pain).
6) Personal hygiene rules were explained to the patient.
7) The patient was closely monitored for infection findings.
8) Ventilation of the room was ensured.

Assessment:

No signs and symptoms of infection were observed during the hospitalization in the ward.

***Nursing Diagnosis**:* 'DISTORTION IN LIVER FUNCTIONS' due to weakness, rapid fatigue, lack of energy to go beyond performing activities of daily living, and deterioration in laboratory values of liver function.

Aim: To enable the patient to perform the daily activities he is able to do without fatigue and weakness.

Interventions:

1) Times of activity and rest were determined with the patient to reduce oxygen consumption. It was explained to the family.
2) Tolerance regarding activities was monitored.
3) Supported when he had difficulty walking.
4) Supported in activities he could not do.

Assessment:

It was ensured that the patient performed the activities of daily living at the highest level he could do without feeling fatigue.

2. Nutrition and Metabolic Status

The patient was fed according to regime 3. There is a deterioration in laboratory values of liver functions. The oral assessment guide is 7 (Oral Evaluation Guide is a guide in which voice, swallowing, lips, tongue, saliva, oral mucosa, gums, and teeth are evaluated from 1 to 3. A total oral mucosa score between 8-14 is the risk of oral mucous membrane deterioration, and 14-24 is considered oral mucous membrane deterioration) (Eilers et al., 1988; Ames et al., 2011).

3. Excretion Pattern

The bowel sounds of the patient were heard as 4/min. The patient stated defecation frequency as 1/day.

4. Activity and Exercise Status

The patient complained of fatigue and weakness while climbing stairs. 'Itaki Fall Risk Scale' was applied to determine the patient's fall risk. The scale score of the patient was found to be between 5 during his hospitalization in the clinic. (Itaki fall risk scale has a total of 51 points: 5 and below is considered as low risk, and 5 and above is considered as high risk) (SHGMKALİTEDB, 2021).

***Nursing Diagnosis**:* Disease-related 'TIREDNESS'

Aim: To enable the patient to participate in stimulating and stabilizing activities in physical, cognitive, emotional, and social dimensions

Interventions:

1) Restricted to bed rest.
2) The causes of the individual's fatigue were explained.
3) The person was allowed to express his feelings against the effects of fatigue on his life.
4) Exercise and rest periods, which are effective coping methods, were taught.
5) Physiological and psychological benefits of exercise were explained.

Assessment:

Planned interventions were applied, the patient verbally expressed that his fatigue decreased.

***Nursing Diagnosis**:* 'FALL RISK' associated with disease-related walking difficulties.

Aim: To take precautions against falls and prevent falls from occurring, to protect the patient from traumas

Interventions:

1) Factors that increase the risk of falls identified
2) The patient was administered the 'Fall Risk Scale'. The patient's scale score was found to be 5 during his hospitalization in the clinic.
3) The slipping man symbol showing the risk of falling was put in the patient's room
4) Adequate lighting in the patient room was ensured.
5) Care was taken not to have a slippery floor.
6) A safe environment was provided.

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7) The patient's bed borders were removed.
8) The health care team and patient relatives were warned about the risk of falling.

Assessment:

No falls were observed during the treatment.

5. **Sleep and Rest Pattern**

The patient stated that he slept 10 hours/day before hospitalization, but since he started to be hospitalized, his sleep pattern had deteriorated, and his sleep was 6 hours/day. The patient stated that he slept during the day, could not sleep at night, and felt tired.

Nursing Diagnosis: 'SLEEP PATTERN DISORDER' due to hospitalization.

Aim: To enable the patient to state that he has had enough sleep

Interventions:

1) The duration and amount of daytime sleep were limited, so the patient could sleep at night.
2) Noise and sounds were reduced.
3) A daytime activity program was established together.
4) Hospital orientation was ensured.

Assessment:

The patient stated that he could now fall asleep at night.

6. **Cognitive Perception Style**

The patient responded to person, place, and time. Glasgow Coma Scale score was 15. Hearing, touch, smell, and taste senses were normal. (Glasgow Coma Scale is a scale consisting of a total of 15 points that allows the evaluation of the state of consciousness of individuals. Scale scoring; 3-7 points: significant neurological damage (deep coma or death), 8-11 points: moderate neurological damage, 12-15 points: mild neurological damage) (Kondo et al., 2011).

7. **Self-Perception - Concept of Self**

It was observed that the patient responded positively to all the procedures related to his disease during his hospitalization in the ward.

Nursing Diagnosis*: 'DISORDER OF BODY IMAGE' due to diffuse icteric appearance*

Aim: To enable the patient to have a healthy body image and to limit the damage to the patient's thought structure

Interventions:

1) The patient was given time to express his thoughts and was asked to express his thoughts in a range where he felt comfortable.
2) The patient was listened to while expressing his thoughts, as far as possible, without interrupting him.
3) The patient was encouraged to participate in activities to divert his attention.

Assessment:

Relaxation was observed as a result of the patient sharing his thoughts.

8. **Role and Relationship Style**

The patient lives with his family. His mother, who stayed with him as a companion, stated that the patient had a good relationship with his family and friends and that he often spent time with them by making plans. During his stay in the hospital, his communication with the healthcare team was positive.

9. **Sexuality and Reproductive Status**

The patient stated that he had no sexual life.

10. **Coping and Stress Tolerance**

The patient frequently asked the healthcare professional questions about his illness, and during the taking of the patient history, he stated that his illness was being treated but that he still had concerns.

Nursing Diagnosis*:* 'ANXIETY' due to illness and hospitalization.

Aim: To find out the cause of the patient's anxiety and help to alleviate it

Interventions:

1) The patient inquired about the stress level to determine the factors causing anxiety.
2) A quiet environment was preferred so that the patient could communicate comfortably.
3) The patient was asked how he had dealt with stress in the past.
4) The patient was informed about the disease.
5) All practices were explained to the patient and his companion.
6) The patient was familiarized with the hospital environment.
7) The patient was given time to talk.

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Assessment:
It was found that the patient was relieved.

11. Form of beliefs and values
The patient stated that the disease was from God and that his process would end one day. It was observed that the patient often prayed and read religious books.

DISCUSSION

Our aim in this case report is to share our knowledge and experience with our colleagues by using diseases and facts. Data were collected from the patient according to M. Gordon's Patterns of Functional Health. Nursing diagnoses are established according to the North American Nurses Association (NANDA) concept.

It can affect the quality of life, such as fatigue, load, and activity intolerance in people around the toilet (Weisinger 2001). The patient complained of fatigue and was taken to bed rest, and exercises to relieve the patient's fatigue were planned. Planned use verbalized the use of patient fatigue.

Support and counseling are needed during the disease, especially for the patient and his family (Wright 1998, Marchesini 2001). Changes in the patient's body; Information should be given about edema, changes in consciousness, eating habits, bleeding, melena, hematemesis, and weight gain (Bas 1994, Canobbio 1996). In this case, the patient's disease and all interventions to diagnose the Lack of Knowledge were explained in understandable and plain language. The patient was informed before each intervention. The patient was informed about his treatment. The patient was encouraged to ask questions. The patient stated that he learned new information about his disease.

The patient was also given time to express his thoughts about Body Image Discomfort due to the diffuse icteric appearance, and he was asked to express his thoughts at a time when he felt comfortable. While the patient expressed his thoughts, he listened to the end as much as possible without interrupting. The patient was recommended to participate in activities to focus his attention elsewhere. Relief was observed after the patient shared his thoughts.

The course of the disease reveals anxiety and stress disorders in the patient (Aggarwal 2001; Marchesini 2001). This patient also verbally stated that his anxiety was high. The stress level was asked to learn about the factors causing anxiety. A calm environment was preferred so that the patient could communicate comfortably. He was asked how he had coped with stress in the past. The patient was informed about his illness. All applications were explained to the patient and his companion. Orientation was made to the hospital environment. Time was taken to listen to the patient. Relief was observed in the patient.

CONCLUSION

The nursing process was applied according to the identified nursing diagnoses. The patient was discharged 7 days after hospitalization following the determination of drug levels.

Patient care is extremely important in the nursing profession. Planning the patient's care according to M. Gordon's Functional Health Patterns Model and conducting data analysis in line with the model's sub-dimensions were observed to solve the patient's problems in a short time, and nursing care was systematically provided to the patient.

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