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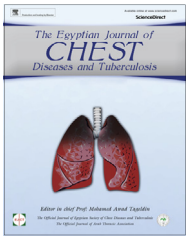

ORIGINAL ARTICLE

Assessment of pulmonary hypertension in patients with liver disease pre and post liver transplantation

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KEYWORDS

Pulmonary hypertension;
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Abstract *Background:* Both hepatopulmonary syndrome and portopulmonary hypertension are associated with chronic liver disease. Liver transplantation is considered a controversial solution.

Aim: The aim of this work is to assess pulmonary hypertension in liver disease patients pre and post liver transplantation. Studying the impact of pulmonary hypertension on hemodynamic of the patients in hospital after liver transplantation.

Patients and methods: Echo cardiographic examination pre and post liver transplantation after at least 3 months was conducted on 20 patients with chronic liver diseases and pulmonary hypertension who underwent liver transplantation to estimate mean PAP and degree of tricuspid regurgitation.

Results: The present study was conducted on 20 patients consisting of 18 males (90%) and two females (10%) with mean age 47.8 ± 8.9. It showed that mean pulmonary arterial pressure improved after liver transplantation 24.65% ± 17.50.The tricuspid regurgitation before operation was mild in 17 patients (85%) and moderate in three patients (15%) and after operation it become normal in 40% and mild in 60% with improvement in 55% and no improvement in 45% of the patients. There was improvement in dyspnea scale after the operation with one grade change in 35%, two grade change in 55% and three grade change in 10% of patients.

Abbreviations: HPS, hepatopulmonary syndrome; PPHTN, portopulmonary hypertension; COPD, chronic obstructive pulmonary disease; ILD, interstitial lung disease; WHO, World Health Organization; PVR, pulmonary vascular resistance; PAP, pulmonary artery pressure; PFT, pulmonary function test

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Conclusion: Liver transplantation was effective in the reduction of pulmonary artery pressure. The degree of pulmonary hypertension affected the functional state according to WHO Classification of pulmonary hypertension patients.

Introduction

Patients with chronic liver disease may show two pulmonary vascular disorders that are considered mutually exclusive: on the one hand, hepatopulmonary syndrome (HPS), which is characterized by pulmonary vascular dilatations and abnormal gas exchange [1], and on the other, portopulmonary hypertension (PPHTN), a process defined by pulmonary hypertension associated with portal hypertension [2].

If severe, both conditions are associated with a high mortality rate. The role of liver transplantation in reversing these vascular disorders is controversial, although complete resolution of HPS and, less frequently, PPHTN, following liver transplantation has been reported [3].

The reported frequency of hepatopulmonary syndrome in patients with liver disease is between 4% and 29%. The differing incidence is primarily due to heterogeneity of the applied diagnostic criteria. This syndrome is a well defined cause of hypoxemia in patients who have liver disease due to abnormal intrapulmonary vascular dilatation, which results in an excess perfusion for a given state of ventilation. This complication is characterized by anatomical shunting and a diffusion–perfusion abnormality [4].

Thus, abnormal pulmonary vascular dilatation plays a central part in the hepatopulmonary syndrome, whereas abnormal vasoconstriction and obliterative vascular remodeling are the key features of portopulmonary hypertension [5].

Aim of the work

Assessment of pulmonary hypertension in liver disease patients pre and post liver transplantation. Studying the impact of pulmonary hypertension on hemodynamic of the patients in hospital after liver transplantation.

Patients and methods

The present study was conducted on 20 patients with chronic liver diseases and pulmonary hypertension who underwent liver transplantation in the Ain Shams University Specialized Hospital and Wadi Elnil Hospital.

All patients were subjected to the following:

(1) Full medical history.
(2) Thorough clinical examination.
(3) Chest X-ray postroanterior view.
(4) ECG before operation.
(5) Echo cardiographic examination pre and post liver transplantation after at least three months to estimate mean PAP and degree of tricuspid regurgitation.
(6) Pulmonary function test pre liver transplantation.
(7) Pelvic-abdominal ultrasound pre liver transplantation to assess portal hypertension.
(8) Recording of those patients who needed hemodynamic support post operative.

We used the American Thoracic Society shortness of breath Scale and World Health Organization functional assessment classification in our study [6].

Inclusion criteria

(1) Chronic liver disease with or without portal hypertension.
(2) Estimated mean pulmonary artery pressure >25 mmHg.
(3) Survived patients after liver transplantation.

Exclusion criteria

- Chronic chest disease e.g. COPD and ILD.
- Cardiac disease e.g. valvular heart disease or congenital heart disease.
- History of pulmonary embolism.
- Connective tissue disease.

The collected data were revised, coded, tabulated and statistically analyzed using SPSS 15 version.

Results

The present study was conducted on 20 patients consisting of 18 males (90%) and two females (10%) with mean age 47.8 ± 8.9 having chronic liver disease and pulmonary hypertension who underwent liver transplantation in the Ain Shams University Specialized Hospital and Wadi Elnil Hospital.

Table 1 shows that mean pulmonary arterial pressure improved after liver transplantation (Fig. 1).

Table 2 shows that tricuspid regurgitation before operation was mild in 17 patients (85%) and moderate in three patients (15%) and after operation it become normal in 40% and mild in 60% with improvement in 55% and no improvement in 45% of the patients (Fig. 2).

Table 3 shows that there was improvement in post operative functional state as regards the WHO Classification with one class change in 35% of cases, two class change in 35%, three class change in 25% and no change in 5% of patients.

Table 4 shows that there was improvement in dyspnea scale after the operation with one grade change in 35%, two grade change in 55% and three grade change in 10% of patients (Fig. 3).

Table 5 shows a highly significant statistical difference between mean pulmonary arterial pressure, tricuspid regurgita-