



Double filtration plasmapheresis in the treatment of pancreatitis due to severe hypertriglyceridemia

Isabel Galán Carrillo, MD*, Pablo Demelo-Rodríguez, MD, María Luisa Rodríguez Ferrero, MD, Fernando Anaya, MD, PhD

Nephrology Unit, Hospital General Universitario Gregorio Marañón, Madrid, Spain (Drs Galán Carrillo, Rodríguez Ferrero, Anaya); and Internal Medicine Department, Hospital General Universitario Gregorio Marañón, Madrid, Spain (Dr Demelo-Rodríguez)

KEYWORDS:

Hypertriglyceridemia;
Pancreatitis;
Apheresis;
Double filtration;
Hypercholesterolemia

BACKGROUND: Severe hypertriglyceridemia (HTG) leads to major complications such as acute pancreatitis. Lipoprotein apheresis has been proposed as a therapeutic tool for decreasing triglyceride levels, although experience is limited.

OBJECTIVE: To describe our experience with double filtration plasmapheresis (DFPP) in patients with severe HTG and pancreatitis in the plasmapheresis unit of a tertiary hospital in Spain.

METHODS: We recruited 4 patients with severe HTG (triglycerides [TGs] >1000 mg/dL) and acute pancreatitis. All the patients underwent DFPP as part of their treatment. Epidemiologic and laboratory data were collected before and after each plasmapheresis session.

RESULTS: The average TG level before plasmapheresis was 3136 mg/dL (35.44 mmol/L; range, 1306–6693 mg/dL, 14.76–75.63 mmol/L), and the average Acute Physiology And Chronic Health Evaluation (APACHE) II level before the first session was 6 (range, 3–8). All patients made a full recovery, with a significant improvement in TG levels after plasmapheresis. The mean number of sessions was 2.1 (range, 1–3), and mean TG level after plasmapheresis was 428 mg/dL (4.84 mmol/L; range, 169–515 mg/dL; 1.91–5.82 mmol/L). After the first session, the mean decrease in TG levels was 69.16% (2169 mg/dL, range, 945–5925 mg/dL; 24.51 mmol/L, range, 10.78–66.95 mmol/L), and after the last session, TG levels fell by 89.09% (2794 mg/dL, range, 945–6198 mg/dL; 31.57 mmol/L, range, 10.68–70.04 mmol/L). None of the patients developed complications related to plasmapheresis.

CONCLUSIONS: According to available evidence and our own experience, DFPP can be an effective and rapid treatment option in patients with severe HTG and complications. However, further research, including randomized controlled studies, is necessary.

© 2015 National Lipid Association. All rights reserved.

Introduction

Severe hypertriglyceridemia (HTG), defined as a triglyceride (TG) level >1000 mg/dL (>11.3 mmol/L), is an uncommon condition that affects 0.4% of adults.¹ It is associated with serious complications, including an elevated risk of acute pancreatitis, fatty liver disease, and cardiovascular

* Corresponding author. Department of Nephrology, Hospital General Universitario Gregorio Marañón, Madrid, Spain.

E-mail address: isabelgalancarrillo@gmail.com

Submitted January 22, 2015. Accepted for publication July 3, 2015.

disease. HTG has several causes. It can be either primary (Frederickson Classification I, IV, and V dyslipidemias) or secondary to lifestyle or other acquired conditions (obesity, metabolic syndrome, diabetes mellitus, chronic kidney disease, hypothyroidism, pregnancy, autoimmune diseases, and drugs). Treatment of mild and moderate HTG includes diet and drugs and has been shown to be effective and safe.² When TG levels are above 1000 mg/dL, complications are more frequent and severe, and management requires a faster and more efficient response to lower TG levels to a safe range. Treatment based on drugs and diet only is insufficient to obtain a rapid response.

Extracorporeal apheresis is a highly effective approach in patients with familial hypercholesterolemia and an inadequate response to diet and drug therapy alone.³ Six different options of extracorporeal lipoprotein apheresis are available worldwide, and they all seem to be similar in terms of effectiveness and safety.⁴ Double filtration plasmapheresis (DFPP) is a semiselective method based on a double filter system: the first filter is the standard plasmapheresis filter that separates plasma from blood cells; the second filter does not allow passage of proteins with a diameter >15 nm, including lipid-binding proteins. Thus, smaller proteins can be returned to the patient's bloodstream together with blood cells previously separated from plasma.

Plasmapheresis has also proven to be effective in decreasing TG levels in patients with severe HTG.⁵ However, experience in these patients is limited and mainly based on small case series and case reports. The American Society for Apheresis classes this indication for treatment as category III.⁶

In the present article, we describe our experience with DFPP in the plasmapheresis unit of a tertiary hospital in Spain. We administered DFPP for treatment of severe HTG in patients with HTG complicated with pancreatitis in which it was necessary to fast-decrease TG level.

Methods

We recruited 4 patients between 2011 and 2014. All 4 were diagnosed with severe HTG and acute pancreatitis. Patients were included if they had a TG level >1000 mg/dL. Data were collected before and after each DFPP session and included the following: age (years), APACHE II score (according to the medical history), hemoglobin, fibrinogen, platelets, leucocytes, total cholesterol, high-density lipoprotein cholesterol, and lipase levels. We also collected computed tomography (CT) findings. DFPP was performed using a Plasauto monitor with Cascade Flo EC-50 W filter, without albumin replacement and without anticoagulant effusion. Plasma volume to treat in each case was calculated with the Kaplan formula: plasma volume estimate = $(0.065 \times \text{weight [kg]} \times (1 - \text{hematocrit}))$,⁷ with a mean of 2 L per session. Patients with acute pancreatitis also received standard treatment (insulin or heparin infusion, diet, antibiotics, and lipid-lowering agents). The number of plasmapheresis sessions and TG target levels were determined by the treating physician in each case.

Results

The sample comprised 3 men and 1 woman. The mean age was 45.5 years. They were all admitted for abdominal pain with nausea and vomiting and diagnosed with acute pancreatitis according to the clinical history and CT findings. Plasmapheresis was initiated during the first 12 to 48 hours, together with "nothing per mouth" (NPO) diet and drug therapy. The mean TG level before plasmapheresis was 3136 mg/dL (35.44 mmol/L; range, 1306–6693 mg/dL, 14.76–75.63 mmol/L), and the mean APACHE II level before the first session was 6 (range, 3–8). All patients made a full recovery, with a significant improvement in TG levels after plasmapheresis. The mean number of sessions was 2.1 (range, 1–3), and mean TG level after plasmapheresis was 428 mg/dL (4.84 mmol/L; range, 169–515 mg/dL; 1.91–5.82 mmol/L). After the first session, the mean decrease in TG levels was 69.16% (2169 mg/dL, range, 945–5925 mg/dL; 24.51 mmol/L, range, 10.78–66.95 mmol/L), and after the last session, TG levels fell by 89.09% (2794 mg/dL, range, 945–6198 mg/dL; 31.57 mmol/L, range, 10.68–70.04 mmol/L). Comparing laboratory data before and after plasmapheresis, we found no statistical differences in hemoglobin ($P = .076$), fibrinogen ($P = .564$), and high-density lipoprotein cholesterol ($P = .767$). We found statistical differences in levels of TG ($P = .043$) and total cholesterol ($P = .021$). None of the patients developed complications related to apheresis treatment, and coagulation of circuit was not reported. The mean APACHE II level after the plasmapheresis treatment was 0.5 (range, 0–3), statistically different from APACHE at admission ($P = .028$). The baseline characteristics and laboratory findings are summarized in [Tables 1 and 2](#). The progress of TG levels is shown in [Figure 1](#).

Patient 1 was a 39-year-old Latin American man who was admitted for acute abdominal pain with nausea and vomiting. He had a 2-month history of polyuria, polydipsia, polyphagia, and weight loss. He had no personal history of dyslipidemia, diabetes, or regular alcohol or drug consumption. His initial APACHE II score was 8, and his initial TG level was 1907 mg/dL (21.55 mmol/L). The glucose level was 594 mg/dL (32.97 mmol/L), and pH on admission was 7.21, with the presence of ketone bodies in urine. An abdominal CT scan showed peripancreatic inflammation with fluid collection in the right anterior pararenal space. No signs of glandular necrosis were visible. The patient was diagnosed with onset diabetes mellitus with ketoacidosis, severe HTG, and acute pancreatitis. Therapy was started with NPO diet, intravenous insulin of 6 IU/hour, and 0.9% sodium chloride solution. He received 3 DFPP sessions 48, 72, and 96 hours after admission. After the DFPP sessions, his TG level had fallen to 472, 379, and 169 mg/dL (5.38, 4.32, and 1.93 mmol/L), respectively. The TG level remained below 500 mg/dL (5.7 mmol/L), and the patient did not require further apheresis. Glycated hemoglobin was 15.3%. The patient's condition improved, and he was discharged after 13 days of

Download English Version:

<https://daneshyari.com/en/article/2965878>

Download Persian Version:

<https://daneshyari.com/article/2965878>

[Daneshyari.com](https://daneshyari.com)