

Coronary artery bypass grafting in a patient with Gilbert syndrome

Gilbert sendromlu bir hastada koroner arter bypass greftlemesi

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ABSTRACT

Here in we present a case of a postoperative jaundice due to Gilbert's syndrome in a patient who was suffering from coronary artery disease and undergone coronary artery bypass grafting operation. Signs and symptoms of jaundice developed on the postoperative first day and resolved spontaneously after 7 days. The diagnosis and characteristics of Gilbert's syndrome and other related abnormalities and factors relevant to anesthesia and cardiopulmonary by-pass, which affect bilirubin metabolism, are discussed. *J Clin Exp Invest* 2012; 3(4): 555-557

Key words: Coronary artery disease, coronary artery bypass grafting, Gilbert's syndrome

INTRODUCTION

Gilbert's syndrome (GS) is generally considered to be an autosomal recessive disorder characterized by chronic, non-hemolytic unconjugated hyperbilirubinemia in the absence of liver disease. It is caused by defects in bilirubin UDP-glucuronosyltransferase (UDPGT) and activity is reduced.¹ The syndrome is usually diagnosed in young adults who present with mild, predominantly unconjugated hyperbilirubinemia. Electron microscopy of hepatic tissue obtained by percutaneous needle biopsy from patients with Gilbert's syndrome has revealed gross hypertrophy of hepatocyte agranular endoplasmic reticulum without any other important abnormality. In Gilbert's Disease bile pigment production increases and also there is evidence suggesting impaired hepatic uptake of bilirubin.²

We report here a case of a patient with Gilbert's Syndrome and discuss other related abnormalities and factors relevant to anesthesia and cardiopulmonary by-pass (CABG) which affect bilirubin metabolism.

ÖZET

Biz bu çalışmamızda; koroner arter bypass greftleme operasyonu yaptığımız koroner arter hastasında, Gilbert sendromuna bağlı postoperatif sarılığı sunduk. Sarılık belirtisi ve bulguları post-operatif birinci günde başlayıp, post-operatif yedinci günde kendiliğinden kayboldu. Gilbert sendromunun tanısı, özellikleri ve ilişkili diğer anormallikler ile birlikte anestezi ve kardiyopulmoner bypass'ın bilirubin metabolizmasına etkileri tartışıldı.

Anahtar kelimeler: Koroner arter hastalığı, koroner arter bypass greftleme, Gilbert sendromu

CASE

A 62 -year-old woman who was suffering from chest pain was attended to the clinic. After same Coronary angiogram revealed two vessel disease and CABG was decided. Her pre-operative laboratory examinations were as follows: Total bilirubin level: 9.51mg/dl, unconjugated bilirubin level: 8.87 mg/dl, conjugated bilirubin level: 0.64 mg/dl and other hematologic, biochemical and microbiologic parameters were normal. The patient's anti-HBs was 412 mIU/mL, HBsAg (-) and anti-HCV (-).

Abdominal ultrasonography showed normal liver parenchyma. Echocardiographic examination of the heart was also normal.

The patient underwent three vessel bypass grafting; anterior descending, first diagonal branch and Optus marginal branch of circumflex artery, respectively. Coronary revascularization was performed under general anesthesia, which was induced with 20-mcg/kg fentanyl citrate, 0.12 mg/kg pancuronium, 2-mg/kg propofol. After tracheal

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intubation, mechanical ventilation was instituted with 6-8 ml/kg tidal volume and 10-12 /min respiratory rates. Anesthesia was maintained with 10 mcg/kg of fentanyl and 1 mg/kg propofol as infusion. 2 mg of pancuronium were given every 45 minutes throughout the operation. Aortic and two stage venous cannula were used to institute the (cardio pulmonary by-pass) CPB using a roller pump, membrane oxygenation and identical priming solution. Systemic blood flow was maintained at 2,2-2,4 L/m², mean arterial blood pressure at 60-70 mm Hg during CPB. Moderate hypothermia (32°C) was applied. Distal anastomoses and proximal anastomoses were done during the cross clamp (CC) period. The left anterior descending artery was anastomosed with left internal mammarian artery flap. The other vessels were anastomosed with greater saphenous vein grafts. Aorta cross-clamp time was 54 minutes and cardio-pulmonary by-pass time was 76 minutes.

Table 1 and Table 2 shows the patients urea and creatinine were doubled and aspartat aminotransferase (AST), alanin aminotransferase, (ALT) levels were increase to ten-fold in the first day after operation. Abdominal ultrasonography examination of the kidneys was also normal.

Table 1. Pre-operative and post-operative biochemical parameters

Parameters	Pre-operative	Post-operative			
		1.day	2.day	3.day	10.day
Urea, mg/dL	23	83	158	119	36
Creatinine, mg/dL	0.73	1.64	1.87	0.79	0.77
AST, U/L	22	264	995	841	25
ALT, U/L	16	233	1041	766	25
ALP, U/L	88	70	98	96	98
LDH, U/L	215	774	2510	1583	168
Total Bilirubin, mg/dL	5.7	8.31	7.81	8.14	6.2
Unconjugated Bil, mg/dL	5.47	7.65	7.07	7.35	6.04
Glucose, mg/dL	108	153	123	125	118

Other biochemical and hematologic parameters were similar to pre-operative recorded values. In the third day after CABG, AST, ALT levels increased to twenty-fold than decreased gradually. At seventh day after the operation AST, ALT, urea and creatinine levels were decreased to normal limits.

Total bilirubin and unconjugated bilirubin levels also decreased to pre-operative values.

Table 2. Pre-operative and post-operative hematological parameters

	Pre-operative	Post-operative			
		1.day	2.day	3.day	10.day
WBC, K/uL	5.7	30.3	20.2	19.4	7.3
RBC, Mu/L	4.60	3.94	3.88	3.87	4.85
HB, g/dL	14.9	12.0	12.1	12.3	14.5
HCT, %	40.8	35.9	37.9	38.2	43.6
PLT, K/uL	226	60	71	68	235
PT, sc	12.9	17.3	14.1	13.0	13.1
aPTT, sc	23.6	24.9	23.1	22.3	22.6

DISCUSSION

Gilbert's syndrome is an inherited disorder present at birth and 15-45 years of age and is most often seen in men. The syndrome exists in 3-10% of the U.S. population.³ Hepatic tests and liver biopsy's usually normal. Unconjugated bilirubin can increase up to 10 mg/dl and a harmless type of jaundice exists with exacerbation and remissions during the disease course. Menstruation, dehydration, fatigue, hunger and stress may exacerbate the jaundice attacks. To our knowledge this is the first reported CABG in a patient with Gilbert's syndrome in the English literature. A significant reverse correlation between bilirubin concentration and the prevalence of CAD was reported.^{4,5}

On the other hand, both metabolic stress response to surgical trauma and/or the side effects of the anesthetic medications that are used in CABG can cause the relapse of the disease. We think that, the management of a patient, who is suffering a jaundice attack because of the relapse of Gilbert's syndrome, is the same whether the existing risk factors are evitable or inevitable.

Avoiding hepatotoxic anesthetic agents is mandatory in these patients. Post-operative care should be maintained carefully with multi-discipline evaluation such as gastroenterology. Dehydration should be avoided as well. The present case was hydrated with nephramine and hepatamine solutions.⁶ Spironolactone should be the drug of choice in need of diuresis since loop diuretics may be harmful for liver.

In conclusion, patients with Gilbert's syndrome require careful follow-up during peri- and post-operative period of CABG.

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