Intraabdominal Hemorrage Due to Hepatic Cyst Rupture During CPR: Case Report

Kardiyopulmoner Canlandırma Sırasında Hepatik Kist Rüptürüne Bağlı İntraabdominal Hemoraji: Olgu Sunumu

Kardiyopulmoner Canlandırma Sırasında İntraabdominal Hemoraji / Intraabdominal Hemorrage During CPR

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Özet

Kardiyopulmoner canlandırma, seçilmiş hasta populasyonlarında sağ kalımı arttırmaktan sorumludur. Ancak bu hayatta kalan grup içinde external göğüs kompresyonuna bağlı postresuscitative beklenmedik olaylar olabilir. Visseral organ yaralanmaları bunların bir kısmını oluşturur. Karaciğer kistleri genellikle otozomal dominant polikistik börek hastalığına eşlik eder. Kronik renal yetmezliği olan bu hastalarda, üremiye bağlı kanamaya yatkınlık veya diyaliz sırasında. kullanılan antikoogulan tedavinin etkisi olarak visseral organ yaralanması sonucu kanama daha kolay olabilir. Böyle hastalarda CPR sonucu devam eden ısrarlı hemodinamik instabillite multidisipliner olarak değerlendirilmelidir. Bu yazımızda, kadiyopulmoner canlandırma sonrası karaciğer kist rüptürüne bağlı masif intraabdominal hemoraji gelişen periton diyaliz hastası sunuldu.

Anahtar Kelimeler

Kardiyopulmoner Canlandırma (CPR); Karaciğer Yaralanması; Polikistik Karaciğer Hastalığı; Polikistik Böbrek Hastalığı

Abstract

Cardiopulmonary Resuscitation (CPR) improves survival in selected patient populations. However, in the surviving group, postresuscitative unexpected complications can occur due to external chest compression. Visceral organ injuries are a part of their. Liver cysts are usually accompanied by an autosomal dominant polycystic kidney disease. In patients with chronic renal failure, bleeding tendency in uremia is due. As the effect of anticoogulant drugs used during dialysis Also, visceral organ bleeding due to injury may be easier. In such patients, ongoing hemodynamic instabillite after CPR, should be regarded as multidisciplinary. In this article, massive intra-abdominal hemorrhage due to rupture of hepatic cyst after CPR, patient with peritoneal dialysis treatment is presented.

Keywords

Cardiopulmonary Resuscitation (CPR); Liver Injury; Polycystic Hepatic Disease; Polycystic Kidney Disease

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Introduction

Polycystic hepatic disease(PHD) is a rare clinical disorder. Its prevalence is 0.05-0.13% in autopsies. [1]. It is usually together with autosomal dominant polycystic kidney disease (ADPKD) and it is the most common extra renal symptom of polycystic hepatic disease [2,3]. Liver cyst incidence rises with age and has an incidence of 60-75% in the end stage renal failure patients. Hepatic cysts are usually asymptomatic and severe complications like hemorrhage and infection which are rarely seen [4].

External chest compressions performed during cardiopulmonary Resuscitation (CPR) could cause different complications. Sternum and costal traumas takes the first place [5]. But the trauma in intraabdominal visceral organs associated with CPR is a rare complication with limited literature [6;7].

In our case we report a succesfull CPR in a patient with polycystic kidney disease causing intraabdominal hemorrhage due to hepatic cyst rupture.

Case Report

The 40 year old patient has had peritoneal dialysis for five years. After the peritoneal dialysis he had a pain in epigastric at left sternal region. He fainted and referred to a goverment hospital emergency department. He was accepted to intensive care unit (ICU) as he was thought to have a heart attact. In ICU as he had an arrest, he required CPR and his trachea was intubated. After 24 hours he was referred to our hospital for hemodialysis and for clinical follow up with a helicopter ambulance. He was admitted to Intensive Care Unit and was connected to mechanical ventilation using CPAP (continues pressure assisted ventilation) mode. Central venous catheter and arterial line was induced to the patient. His blood pressure was 130/70 mmHg, his heart rate was 109beats/ min, and his temperature was 36.7ºC, with a breathing rate of 16/min and 5 cm H20 of central venous pressure (CVP). Relevant laboratory investigation included as it is below indicated : hemoglogin level 16.7g/dl, platelet count 209X109/l, white cell count 18.3X109/l with normal differential count. Serum urea amounted to 142 mg/dl, creatinine 13.48 mg/dl, sodium 134 mmol/l and potassium 5.6 mmol/l. Liver biochemistry tests were abnormal: ALT 285 U/l, AST 169 U/l. Blood gas analysis revealed; pH 7:30, pCO2 46 mmHg, base excess -5.3 mmol/l, bicarbarbonate 21.6 mmol/l, pO2 135 mmHg, O2 saturation 99%. International normalised ratio (INR) was so high that it could not be measured. Troponin I was 50ng/dl (0.02-0.06). He was replaced with 4 units of fresh frozen plasma. His control INR was 1.5. His peritoneal fluid was discharged with peritoneal dialysis catheter and the peritoneal fluid seemed clear. He was scheculed to daily hemodialysis programme.

Low moleculer weight heparin 5000 iu was given to the patient twice a day. After stable vital signs for 24 hours and satisfactory breathing, he was extubated. After 40 hours of admission to the ICU his blood pressure dropped and tachycardia began. Blood pressure was 95/50 mmHg and heart rate was 123/min. The CVP was 2 cmH2O. His hemoglobin level was 11.6gr/dl and hemotocrite was 31.8% , INR was 1.35. He did not have abdominal pain and did not have abdominal rebound, defence or tenderness. Nasogastric irrigation was performed to rule out gastric bleeding. hemorrhage was not detected. His rectal digital examination was also normal. As his hemoglobin level dropped to 7.5 gr/dl, he had an abdominal computerized tomography (CT). In his abdominal CT a 19 mm perihepatic and 15 mm perisplenic, 15 mm right paracolic and 10 mm left paracolic fluid was detected. In abdominal CT liver cysts 45X23 mm in left lobe and 30X14 mm in right lobe were detected. [Fig1] Both of his kidneys were also in polycystic shape. Again peritoneal dialysis catheter was irrigated and hemoragic fluid was detected referring to the intraabdominal hemorrhage. The patient was operated under general anesthesia with the presumptive diagnosis of intraabdominal hemoorage. There was a 1500cc of hemorragic fluid between splenic and subhepatic space. During abdominal exploration we saw that the liver was multicystic. The cyst at the segment 3 in the inferior part of the liver was ruptered and actively bleeding. We used primary sutures to stop the bleeding but the liver was so fragile because of cysctic structure thus to control bleeding omentopexia was performed. [Fig 2] Four units of erytrocyte suspension was infused to the patient during the operation. After the operation the patient was followed up in ICU. He did not have any bleeding postoperatively and his hemoglobin levels was stable. We extubated the patient at his first ICU day. Postoperatively hemodialysis programme continued. Three days later after the operation, we added colpodogrel 75 mg to his medical order. Postooperative 5th day coronary angiogram was performed and 100% occlu-



Figure 1. The axial CT scan shows free fluid and polycystic liver and kidney disease.

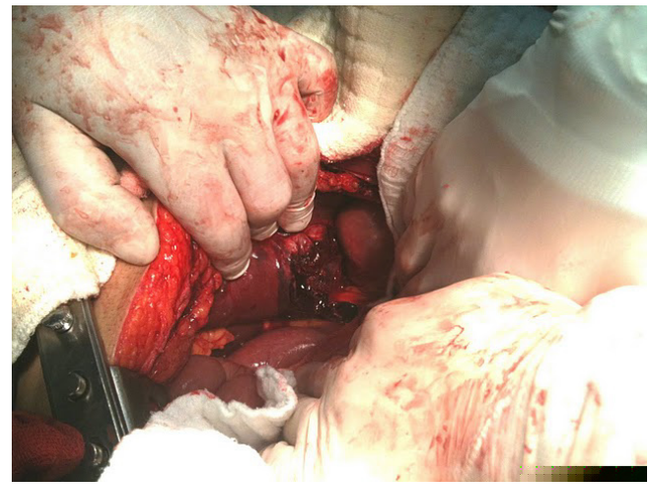


Figure 2. View of ruptured cyst in left liver lobe, that was sutured in order to establish hemostasis.

sion was found at his right coronary artery and was stented. He was discharged from ICU on the eight day of operation. He was discharged from hospital at 11th day postoperatively with a 3 day/week dialysis programme.

Discussion

Hepatic cysts are the most common extrarenal manifastation of ADPKD. In ADPKD hepatic cysts prevalence rises with age. It has 10% prevalence in 20-29 age interval, but it has a prevalence of 75% in patients who are older than 60 years [6]. Because of this, hepatic cysts can be detected in dialysis patients more commonly [7]. Rarely cyst infection [8], hemorage and intraabdominal hemorage due to hepatic cyst rupture [9], torsion of the cyst [5], portal hypertension [10], hepatitis due to biliary tract compression [11] are the complications.

Skelatal complications due to CPR usually don't cause any mortality but rarely visceral trauma could threaten life of the patient [12]. Intraabdominal complications about Resuscitation can be due to trauma of hepatic, splenic or other gastrointestinal organs. The most common visceral trauma in literature is hepatic trauma [12]. A study by Kriccher et al about extrahospital CPR complications determined in 705 of 2187 autopsies had a hepatic rupture incidence of 2.1% (n=15). [5] Another single centered study showed 0.6% hepatic rupture in patients resuscitated for cardiac arrest. Among 15 hepatic ruptures, 6 were detected in autopsies. In both of the studies there is no information about the hepatic pathologies of the patients. In the current literature there is no peritoneal dialysis patient developing intraabdominal hemorage because of hepatic cyst rupture after CPR.

Hepatic ruptures developing after CPR could be seen in left lobe because of the neigbourhood of the heart to the left lobe of the liver. Right lobe ruptures are also seen in the literature [13] There are some case reports about coagulabity or trombolitic treatments causing hemoragic complications [14]. Risk factor for bleeding in chronic hemodialysis patients is ureemic bleeding tendency, repeated systemic anticoagulation during dialysis procedures [14]. There may be some difficulties in diagnosis with hepatic trauma in sedatized patients. Hypovolemia secondary to bleeding caused by trauma could rise slowly and can be similar to volume depletion caused by ischemia reperfusion due to CPR. Hemodynamic instability after Resuscitation could cause misdiagnosis. Hemothocrite level is a quantitative measurement.

Contrasted computerised tomography (CT) is a useful diagnostic method in intraperitoneal hemorrhage [13]. In our case uncontrasted CT was taken in emergent conditions because of patient's uremia and we could only see intraabdominal fluid. Intraabdominal fluid could be normally seen in patients with peritoneal dialysis. Our diagnosis was made by aspiration of hemoragic fluid from his peritoneal dialysis catheter.

The goal of the treatment of hepatic parenchymal traumas is to control the bleeding, debridment of devitalized hepatic tissue and the drainage of perihepatic area. Omentoplasty is a functional method to achive hemostasis when primary suturation is not enough for controling bleeding [15].

In conclusion Emergent and persistant chest compressions are vital during CPR but they can cause hepatic trauma. Multiple liver cysts are tend to cause bleeding due to hepatic rupture. Patients with ADPKD with uremic coagulabity could potantiate this problem. We should be alert to patients during ICU follow up with hemodynamic instability and hematocrit impairment after CPR and radiological imaging techniques should be administered to the patient. Timing of diagnosis and appropriate treatment are life saving factors in hepatic traumas.

Competing interests

The authors declare that they have no competing interests.

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