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ORIGINAL ARTICLE

Observation of renal function in patients with surgical jaundice

Ansul Kumar [a,c], Arpita Rai [b,*], N.K. Jha [c]

[a] RML Hospital, New Delhi, India
[b] Faculty of Dentistry, Jamia Millia Islamia, New Delhi, India
[c] Department of Surgery, RIMS, Ranchi, Jharkhand, India

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KEYWORDS
Acute renal failure;
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Summary *Introduction:* The association between surgical jaundice and postoperative acute renal failure (ARF) has been recognized since long. Obstructive (surgical) jaundice is a common entity, and patients undergoing surgery have a constant risk of developing ARF, and this may raise the mortality figures to an alarming level.
Materials and methods: The present study included 50 patients of obstructive jaundice aged between 10 and 70 years. The patients were evaluated in detail, and data collection was performed using a structured questionnaire. Patients were investigated using routine laboratory investigations of blood, urine, and stool, liver function tests, renal function tests, and radiological investigations. All important tests related to liver function and renal functions were done on the 1st day of admission, 3rd day of admission, 2nd postoperative day, 7th postoperative day, and 14th postoperative day—if renal function derangements were found.
Results: According to the diagnostic criteria of the present series 74% of patients showed renal failure on the 2nd postoperative day. In the present series, out of seven, four renal parameters, namely serum creatinine, specific gravity, inulin clearance, and blood urea were found to show statistically significant difference in values preoperatively and postoperatively. It was observed that there was a statistically significant difference in the serum bilirubin values among patients of renal failure.
Conclusion: Each case of surgical jaundice should be considered as a potential case likely to pass in acute renal failure, and hence, a close monitoring of renal functions should be started at the very beginning and should be continued until the final outcome of the treatment.
背景：臨床上早已察覺到，外科性黃疸與術後急性腎衰竭 (ARF) 之間存在若干的關聯。事實上，外科性(阻塞性)黃疸頗為常見，然而患者卻可能在手術矯治後發生 ARF，明顯增加其死亡風險。
方法：本研究以 50 位年齡 10—70 歲的阻塞性黃疸患者為對象，並透過問卷對其臨床背景作出調查；常規檢查項目則包括血液、糞尿、肝腎功能、及影像學檢查。所有與肝腎功能有關的檢查，分別於住院首天與第 3 天、及手術後第 2、7、與 14 天進行。

* Corresponding author. Jamia Millia Islamia, Friends Colony, Jamia Nagar, Gafoor Nagar, Okhla, New Delhi, Delhi 110025, India.
E-mail address: arpitadoc@gmail.com (A. Rai).

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結果: 根據本研究的診斷標準，74 人於手術後第 2 天出現腎衰竭。在合計 7 項腎功能項目中，4 項在手術前後發生明顯的變化，它們包括血清肌酸酐、比重、inulin 清除率、及血液中尿素。在腎衰竭患者間，血清膽紅素亦呈現明顯差別。
結論: 每位外科性黃疸患者均應被視為可能發生急性腎衰竭的危險個案，因此必須從治療初期開始，接受密切的臨床追蹤包括腎功能檢查，直到療程的完成。

Introduction

Jaundice (derived from the French word "jaune" for yellow) or *icterus* (the Latin word for jaundice) involves yellowish staining of the skin, sclera, and mucous membranes by the deposition of bilirubin (a yellow-orange bile pigment) in these tissues.[1] For the surgeon, the most important question is whether the patient has "medical jaundice" or "surgical jaundice." Surgical jaundice is the name given to jaundice that develops in absence of all other signs and symptoms in a patient in whom there is no reason to suspect infectious hepatitis and in whom, it is observed that the bulk of jaundice is caused by conjugated bilirubin, and suggests the presence of extrahepatic obstruction. Surgical jaundice can be caused by the obstruction of the bile duct as with gallstones, strictures, malignancy, such as cholangiocarcinoma (in which the jaundice is persistent and progressive), periampullary carcinoma, carcinoma gallbladder, and carcinoma head of pancreas. The term surgical jaundice is applied to these situations because often surgical interference is required to relive this type of jaundice.

The association between surgical jaundice and postoperative acute renal failure has been recognized since 1910 when Clairmont[2] reported the development of acute renal failure, with subsequent death in five patients following surgery for surgical jaundice, and is now a well-established clinical phenomenon. Acute renal failure (ARF) occurs in 8—10% of patients requiring surgery for relief of obstructive jaundice and contributes to eventual mortality in 70—80% of those who develop it.[3]

Obstructive (surgical) jaundice is a common entity, and patients undergoing surgery have a constant risk of developing ARF, and this may raise the mortality figures to an alarming level. The present study has been undertaken to evaluate the renal and liver functions in patients of surgical jaundice pre- and postoperatively and to analyze the correlation between the two so that further remedial measures may be undertaken to prevent ARF in this disease.

Table 1 Incidence of etiological factors for obstructive jaundice.

Etiological factors	Age groups (y)			Total
	0—20	21—40	>40	
CBD stone	2	21	5	28
CBD stricture	2	2	2	6
Cholangiocarcinoma	—	—	3	3
GB carcinoma	—	—	10	10
Periampullary CA	—	—	3	3
Total	4	23	23	50

CA = carcinoma; CBD = common bile duct; GB = gallbladder.

Materials and methods

The present study included 50 patients with obstructive jaundice aged between 10 and 70 years admitted to the General Surgery ward of Rajendra Institute of Medical Sciences, Ranchi. The male:female ratio for the study population was 1:3.5. The period of data collection was between August 1, 2010 and July 31, 2011. The cases were selected randomly amongst the admitted patients who had symptoms suggestive of surgical jaundice with serum bilirubin levels above 2 mg/dL. Patients with biliary obstruction documented by either ultrasonography, magnetic resonance cholangiopancreatography (MRCP), or T-tube cholangiopathy were included for analysis. Patients with preexisting renal pathology due to other causes were excluded from the study. Patients with evidence of severe biliary sepsis were excluded from the analysis. Written informed consent was obtained from each patient or their family members.

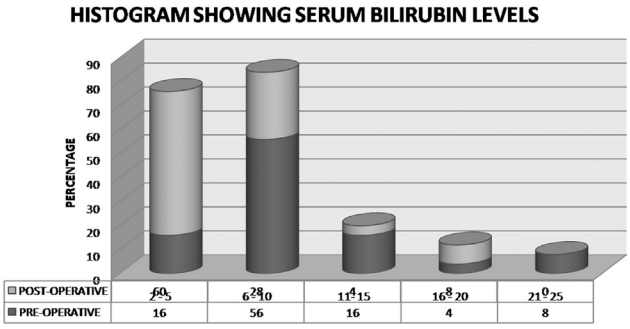

Figure 1 Serum bilirubin levels.

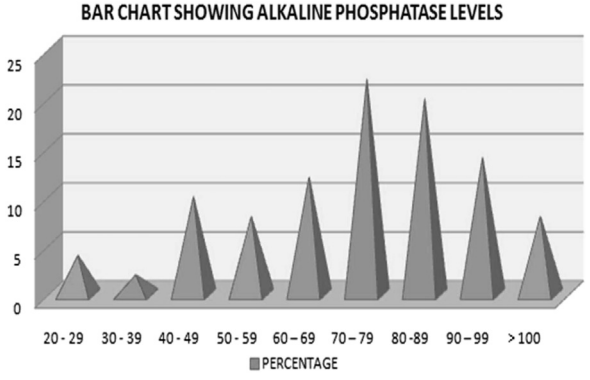

Figure 2 Alkaline phosphatase levels.