

OUR EXPERIENCE IN THE TREATMENT OF OBSTRUCTIVE ICTERUS

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SUMMARY – The aim of the study was to estimate the prevalence and causes of obstructive icterus in patients operated on during the 2003-2004 period at University Department of Surgery, Split University Hospital in Split. In addition, data on the patient age and sex, type of surgical treatment, and existence and impact of risk factors on operative outcome were analyzed. Data on 114 patients with obstructive icterus treated at the Department during the 2-year period were retrospectively analyzed. Obstructive jaundice is a disease predominantly affecting female population (61.4% of patients), mostly those aged 60-74 (40% of patients). Cholelithiasis with choledocholithiasis is the most common cause of obstructive jaundice. Therefore, the most frequently used procedure for obstructive jaundice is cholecystectomy with or without choledochotomy and concrement extraction. The number of patients diagnosed with obstructive icterus shows a considerable increase. Although the same surgical methods have been applied for years, endoscopic surgery has gradually displaced classic methods of surgical treatment.

Key words: *Jaundice, obstructive – diagnosis; Jaundice, obstructive – therapy; Cholestasis – etiology; Cholestasis – complications; Common bile duct surgery – complications*

Introduction

Icterus of the obstructive genesis is a current problem in surgery. Modern epidemiological studies energize this issue pointing to an almost double increment in the number of patients with obstructive icterus as compared with the 1980s. The arguments are numerous but modern life and unhealthy dietary habits are certainly most relevant. Bilirubin is a compound responsible for the clinical manifestation of jaundice. It is one of the erythrocyte degradation products and is normally found in plasma at a concentration of up to 20 mmol/L. If the concentration is higher, it is referred to as hyperbilirubinemia, and if it exceeds 70 mmol/L, hyperbilirubinemia is clinically visible and manifested as jaundice. Upon erythrocyte degradation, bilirubin is unconjugat-

ed and insoluble but complexes with plasma albumin transporting it to the liver. In the liver, under the action of uridine diphosphate glucuronyl transferase, it is conjugated into the water-soluble form that enters bile ducts. The possible obstruction of bile drainage will cause obstructive icterus.

As mentioned above, obstructive icterus poses a surgical problem daily. Although dealing with detailed surgical issues, in our studies we tried to identify modifications and orientations having emerged over the past few years.

Patients and Methods

The study included data on 114 patients surgically treated for obstructive jaundice at University Department of Surgery, Split University Hospital from January 1, 2003 until December 31, 2004. Data on patient age and sex, cause of jaundice, type of surgical treatment, and presence and impact of risk factors on therapeutic outcome and complications were analyzed. Data analy-

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sis was performed on a PC using the Microsoft Excel for Windows Version 11.0 software (Microsoft Corporation, USA).

Results

During the two-year study period, 114 patients underwent surgery for obstructive jaundice: 52 patients in 2003 and 62 patients in 2004. There were 70 (61.4%) women and 44 (38.6%) men. Obstructive icterus was most common in the 60-74 age group, i.e. 45 (39.47%) patients. In the majority of study patients, the cause of obstructive icterus was a benign illness (85.96%), whereas malignant disease was found in the rest (14.04%). Benign causes included gallstones (88.78%), stenosis of papilla (6.12%), parasites in choledochus (3.06%) and stricture of extrahepatic ducts (2.04%). Gallbladder carcinoma was the leading malignant cause of obstructive icterus (37.5%), followed by hepaticocholedochal carcinoma (31.25%), pancreatic head carcinoma (25%) and papilla of Vater carcinoma (6.25%) (Table 2).

Table 1. Correlation between number of risk factors and postoperative mortality in treated patients with obstructive icterus

Number of riskfactors	Patient number	Mortality	%
0-2	39	1	2.6
3	35	1	2.8
4-5	15	3	20.0
6	3	2	66.0
7-8	1	1	100.0

On surgical treatment of obstructive jaundice, various surgical interventions were performed depending on the causes. For obstructive jaundice caused by benign changes, cholecystectomy and choledochotomy with extraction of biliary concretions were mostly performed. These methods were used in 78.58% of treated patients, whereas choledochoduodeno- and hepaticojejunostomy according to Rodney-Smith were performed in three (3.06%) patients. Unlike obstructive icterus caused by benign reasons, palliative interventions were used to treat the same problem caused by malignant reasons, i.e. stent in five (31.25%), Roux hepaticojejunostomy in three (18.75%), hepaticojejunostomy according to Brown in three (18.75%) patients, and transhepatic drainage according to Praderi in one (6.25%) patient. In four (25%) patients, cephalic duodenopancreatectomy was performed because of pancreas malignancy.

Postoperative survival in obstructive icterus is influenced by many risk factors. Table 1 shows mortality increase with multiple risks. The following risk factors were considered: patient age >60, presence of malignant disease, hematocrit level <30%, leukocyte count >10,000, creatinine >125 mg%, bilirubin >20 mg%, albumin <30 g/L and alkaline phosphatase >150 IU.

Postoperative complications included residual concretions and biliary peritonitis (28%), pancreatitis (12%), lung embolism (16%), external biliary fistula (4%), hepatorenal insufficiency (4%), cardiac decompensation (4%) and drainage complications (4%). These complication rates were consistent with respective literature reports.

Discussion

The obstructive jaundice syndrome is very common and frequently requires surgical treatment. Its prevalence has increased more than twice since the 1980s. The main reasons are inappropriate dietary habits and some other factors like 4F (female, fat, fertile, forty)¹. Women are more prone to biliary calculi, thus obstructive icterus shows a female preponderance. In our study population, there were 61.41% of women and 38.59% of men; however, there are literature reports on five women to one man out of ten suffering from biliary calculi². Our study patients were aged 60-74, median 65, which is consistent with literature data. Obstructive icterus caused by benign illness is the most common sequel of gallstones. The percentage of biliary calculi and other benign causes of obstructive icterus also corresponded to literature reports³. Some differences were observed in case of malignancy as the cause of obstructive icterus. In our patient group, obstructive icterus was caused by cancer of the gallbladder in 37.5%, of hepatocholedochus in 31.25%, of the head of pancreas in 25%, and of papilla of Vater in 6.25% of cases. In the literature, cancer of the gallbladder is reported as the cause of obstructive icterus in 50%, of the common hepatic duct in 10%, of the supraduodenal choledochus in 15%, and of the terminating choledochus in 10%-15% of cases. The most frequent procedures in treating benign causes of the obstruction are cholecystectomy and choledochotomy. However, endoscopic (laparoscopic) procedures have become ever more frequently used for these problems. At our Department, about 80% of cholecystectomies and 50% of choledochotomies were performed by laparoscopy. Their advantages have been proved in many stud-

ies^{4,5}. Fornaro⁶ has demonstrated that endoscopic sphincterectomy is preferable to classic choledochotomy. The two procedures are often combined, and their common factors are the quality of patient selection, qualified staff and high-quality operating equipment⁷. We applied both procedures in our studies. The method of Rodney-Smith has a special place in treating benign diseases caused by biliary obstruction. Although it is rarely used, good and long term results can be obtained, as shown in a number of studies^{8,9}. The use of algorithms in treating malignant causes of biliary obstruction depends on carcinoma localization, its dimensions and enlargement, and on the patient's general condition. It is obvious that proximally located lesions will have more palliative interventions than distal ones. Radical procedure is performed in 70% of patients operated on for malignancy of the middle and distal third of the choledochus, which is consistent with our results. By-pass operations are used very often in palliative management of malignant diseases caused by obstructive icterus because they effectively and for a long time appease the symptoms of jaundice obviating the need for intubation or external drainage¹⁰. In case of advanced cancer of the pancreas head, biliodigestive anastomosis is one of the therapeutic options for obstructive icterus as opposing stent implantation. Stent implantation achieves better short term results and is preferred where morbidity is less than 6 months against biliodigestive anastomosis where longer morbidity is expected¹¹. The surgeons' discordance is about preoperative biliary decompression. In spite of lower mortality, a relatively high rate of cholangitis (50%) is the reason why the existing surgical schools do not prefer preoperative biliary decompression¹². Surgeons that choose such methods suggest performing surgical intervention within 8-11 days after decompression. Patients

with obstructive icterus belong to a high risk operation group. They are mostly elderly patients with at least one other damage in the system; it is normal to affront jaundice and malignant diseases making the situation more complicated. Because of this, the operation risks are evaluated. Among many studies, most significant was the one performed at a university hospital in France¹¹, which undoubtedly proved the existing risk factors. These risk factors were used in our study, and the relations obtained between the risk factors and postoperative mortality are shown in Table 1.

Conclusion

Today, the number of patients operated on for obstructive icterus is twofold that operated on for the same reason in the 1980s. Female predominance is persisting, yet showing a decline. The symptoms of obstructive icterus most commonly occur in the 60-74 age group, and 85% of cases are caused by benign disease. Cholecystectomy, choledochotomy and calculus extraction are the most frequent methods of treatment, mostly performed by laparoscopy. The outcome of surgical treatment depends on the risk factors that correlate with postoperative morbidity and mortality.

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Table 2. Causes of obstructive icterus

Benign causes of obstructive icterus	%
Gallstones	88.78
Stenosis of papilla	6.12
Parasites in choledochus	3.06
Stricture of extrahepatic ducts	2.04
Malignant causes of obstructive icterus	
Gallbladder carcinoma	37.50
Hepaticholedochal carcinoma	21.25
Pancreatic head carcinoma	25.00
Papilla of Vater carcinoma	6.25

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Sažetak

NAŠA ISKUSTVA U LIJEČENJU OPSTRUKCIJSKOG IKTERUSA

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Cilj rada bio je ispitati učestalost i uzroke opstrukijskog ikterusa kod bolesnika koji su u razdoblju od 2003. do 2004. godine operirani u Klinici za kirurgiju Kliničke bolnice Split. Uz navedeno analizirali smo dob i spol bolesnika, vrstu primijenjenog kirurškog liječenja, te postojanje i utjecaj čimbenika rizika na ishod kirurškog liječenja. U dvogodišnjem razdoblju retrospektivno su analizirani podaci 114 bolesnika koji su zbog opstrukijskog ikterusa liječeni u Klinici za kirurgiju KB Split. Opstrukijska žutica je bolest koja pretežito zahvaća žensku populaciju (61,4% bolesnika) i to najčešće u dobi od 60 do 74 godine (40% bolesnika). Kolelitijaza s koledokolitijazom i dalje je najčešći uzrok opstrukijske žutice. Sukladno navedenom, najčešće izvođeni zahvat u liječenju opstrukijske žutice jeolecistektomija s koledokotomijom i ekstrakcijom konkrementa ili bez toga. Broj bolesnika kojima se dijagnosticira opstrukijski ikterus pokazuje značajan porast. Iako se već dugi niz godina u liječenju primjenjuju iste kirurške metode, endoskopska (laparoskopska) kirurgija postupno istiskuje klasične oblike kirurškog liječenja.

Ključne riječi: *Žutica, opstrukijska – dijagnostika; Žutica, opstrukijska, terapija; Kolestaza – etiologija; Kolestaza – komplikacije; Kirurgija glavnog žučovoda – komplikacije*