Upsala J Med Sci 85: 165–171, 1980

Biliary Tract Carcinoma

Valdemar Skoog and Lars Thorén

Department of Surgery, University Hospital, Uppsala, Sweden

ABSTRACT

A series of 127 patients treated for cancer of the biliary tract during the period 1965-1974 was studied with a follow-up period of at least five years. The mean age was 66 years and the female:male ratio was 3:1. An early diagnosis of biliary tract carcinoma is difficult and the prognosis unfavourable although not hopeless. The surgical treatment given in the present series included a radical approach whenever possible. In the total series 56 patients died within a month, 24 lived for more than one year, 9 longer than three years and 5 longer than five years and 3 are still alive. A mean survival time of 25.6 months was reached when a radical operation was attempted while a palliative procedure gave a mean survival time of 5.5 months. These figures indicate that a careful selection of patients for an attempt of radical surgery should be done since removal of the tumour gives a more effective palliation, often a longer survival time, an improvement of quality of live and in a few patients cure.

INTRODUCTION

Cancer of the extrahepatic bile duct is a relatively infrequent malignancy. Of all carcinomas less than 1% is represented by carcinoma of the extrahepatic bile ducts, which represents about 3% of gastrointestinal malignancies.

Malignant tumours of the extrahepatic biliary duct has often been the Cinderella of biliary tract surgery where the diagnosis is late and radical curative surgery often is an exception and the prognosis highly unfavourable. The results from the turn of the century were reported by Pallin (7). He collected a series of 60 patients with biliary tract carcinoma from Sweden 1880-1918. Seven of these were treated with an external drainage procedure (5 died postoperatively and 2 after 4 and 5½ months respectively). A biliodigestive anastomosis was made in 9 (6 died postoperatively, 2 after 6 and 12 months, 1 was lost for follow-up), and a radical procedure was used in 4 (3 died postoperatively and 1 after 12 months). 40 patients were inoperable.

Braasch, Warren & Kune (2) reviewed the experience of the Lahey Clinic in treating neoplastic disease of the bile ducts from 1920-1965 and reported 173 cases. Only 25 patients survived 1 year or more and 7 survived more than 3 years. The Lahey Clinic series from 1965-1969 was reported by Warren, Mountain & Lloyd-Jones (10). Among 77 patients with neoplasms of the extrahepatic bile ducts 68 were explored. One third of these (24 cases) had a radical procedure and 17 survived for more than 1 year and 5 were alive after more than 3 years. A disappointingly low survival rate has been reported in several series (1,9). Recently Neugebauer, Durst & Mayer reported a series of 193 patients treated for carcinoma of the biliary tract (6). For carcinoma of the gallbladder the survival rate was 20% after 1 year and 7% after 5 years and for carcinoma of the extrahepatic bile ducts 11% after 1 year and 2% after 5 years. Another recent series of carcinoma of the gallbladder gives a 1-year survival rate of 5.7% (3).

In modern textbooks of surgery (5,8) figures such as 20% one year survival, 4% three-year survival and 2% five-year survival are mentioned. A survival time of 4 months after operation and 6 months after the onset of symptoms are average figures given for carcinoma of the extrahepatic bile ducts (8).

We have been interested in treatment of this kind of tumours in spite of the bad prognosis to evaluate a radical approach. This report concerns the results over a 10-year period with a follow-up period of at least five years.

PATIENT SERIES

The series comprises 127 patients treated at the University Hospital, Uppsala, during the 10-year period 1965-1974. It includes patients with carcinoma of the gallbladder but intrahepatic cholangiocarcinomas are excluded. The tumours of the distal part of the common duct are included except those originating in the pancreas or the duodenal mucosa according to the microscopic analysis.

Sex and age. There were 72 women and 55 men in the series thus with a ratio 1.3:1. The average age was 66.1 years (range 24-90) and 94 patients (73%) over the age of 60 and 17 (14%) over the age of 80 (Table 1).

Table 1. Age and sex distribution

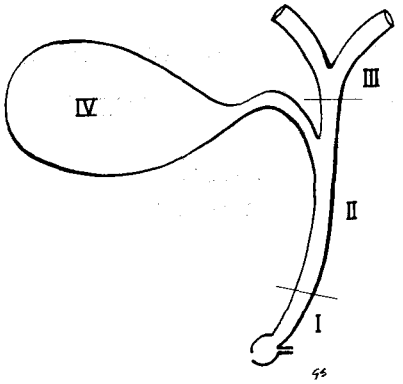
	Number	Age (mean)
Female	72	66.5
Male	55	65.5
	127	66.1

Diagnosis. The diagnosis was mainly made by

1. Percutaneous transhepatic cholangiography
2. Exploratory laparotomy and peroperative cholangiography

In some cases the suspicion of carcinoma was raised by other diagnostic procedures. Endoscopic retrograde cholangiography (ERC) was not yet in use during the actual period, but is routinely used since 1975.

Pathology. The distribution of the gross lesion can schematically be divided into 4 groups (Fig. 1).



Tumor localization	
I	21
II	31
III	17
IV	58
Total number	127

Fig. 1. Tumour localization in 127 patients with biliary tract carcinoma.

Group I: carcinoma of the distal common biliary duct 21 cases - 13 radical procedures.

Group II: carcinoma of the common hepatic duct and the upper part of the common biliary duct 31 cases - 4 radical procedures.

Group III: carcinoma of the junction of the hepatic ducts 17 cases - 18 radical procedures.

Group IV: carcinoma of the gallbladder 58 cases - 12 radical procedures.

It has usually been possible to divide the series in the four groups. We did not encounter any case of diffuse papillary carcinoma in this series, but later we have had two such cases with a diffuse spread of papillary carcinoma in the common hepatic duct in the right and left hepatic ducts extending in the intrahepatic biliary ducts.

Histology. Report from the microscopic investigation at operation is available in 117 of the 127 cases. In the remaining 10 cases the diagnosis of carcinoma

was obvious and the patient died with carcinoma within a short while. Among the 117 cases adenocarcinoma was found in 115 and in the remaining squamous epithelial cell malignancy was encountered in one patient and precancerous growth in one (Table 2). From these reports the adenocarcinoma could be classified into three groups according to the degree of differentiation.

Table 2. Histopathological diagnosis

Adenocarcinoma	115
Squamous cell ca	1
Precancerous lesion	1
	117

Surgical procedures. 116 patients were operated upon and 11 were in such a precarious state to preclude surgery (Table 3). In 34 cases exploratory laparotomy only was performed. In 37 cases a radical procedure was utilized. In

Table 3. Surgical procedures used on 127 patients with biliary tract tumours

	I	II	III	IV	Total
Radical procedure	13	4	8	12	37
Bilio-digestive shunt	8	15	1	3	27
Intubation	-	5	6	7	18
Exploration	-	6	1	27	34
Non op	-	1	1	9	11
	21	31	17	58	127

group I - carcinoma of the distal common duct - a duodenopancreatectomy (Whipple's procedure) was carried out. In group II - carcinoma of the common hepatic duct and upper part of the common bile duct - a resection of the tumour and a bilio-digestive reconstruction with a jejunal loop acc. Roux was performed. In group III - carcinoma of the junction of the hepatic ducts - either a resection of the tumour was done with anastomosis of the left and right hepatic duct to a jejunal loop or a left hemihepatectomy with removal of the tumour in the liver hilus and a Roux loop to the right hepatic duct. In group IV - carcinoma of the gallbladder - the gallbladder was removed including the adjacent segments of the right hepatic lobe. In some cases with small tumours the treatment was a cholecystectomy only. In 45 cases removal of the tumour was impossible and a by-pass procedure with a bilio-digestive anastomosis was performed and an intubation technique was used in 18 patients.

In the highest age groups a palliative procedure was sometimes preferred before a radical. The average age of the radically treated was 59.9 years (range 43-77) and of the patients with palliation 67.6 years (range 38-88).

RESULTS

Total series. Of the 127 patients 56 died within a month, 24 lived longer than one year, 9 longer than three years and 5 longer than five years, with a mean survival time of 9.6 months and median survival time three months - 3 patients are still alive - 1 more than ten years, 1 more than five years and 1 more than six years (Fig. 2).

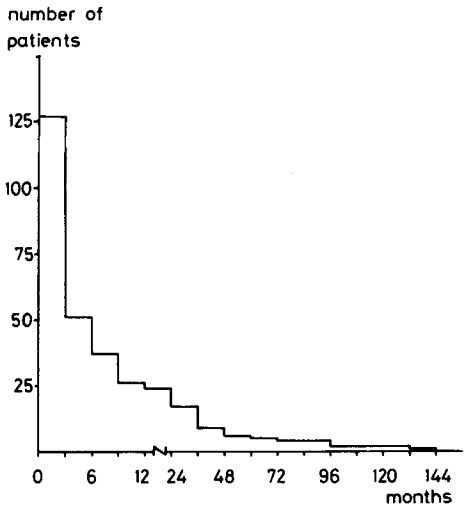


Fig. 2. Survival time of 127 patients treated for biliary tract carcinoma.

If the series is split up according to the degree of differentiation the mean survival time in grade I the highly differentiated tumours was 14.0 months and in grade II 6.7 and in grade III the undifferentiated tumours 5.4 months (Table 4).

Table 4. Histopathological type of biliary tract adenocarcinoma and survival time

Degree of differentiation	Number	Mean survival time (months)
Highly (grade I)	21	14.0
Intermediate (grade II)	37	6.7
Undifferentiated (grade III)	57	5.4

Radical procedure. Among the 37 patients where radical operation was attempted 8 died within 1 month, 18 lived longer than 1 year, 8 more than 3 years and 5 more than 5 years. Mean survival time 25.6 months (3 still alive). If cancer of the gallbladder is excluded (12 cases) 25 cases with radical removal of a neoplasm of the extrahepatic ducts remain. 6 died within a month, 13 lived for more than 1 year, 4 for more than 3 years and 2 for more than 5 years. Mean survival time 21.1 months (one patient still alive).

Palliative procedure. Among the 45 patients treated with bilio-digestive shunt or intubation 15 died within one month, 6 patients survived for more than one year and 1 for more than 3 years. Mean survival time was 5.5 months. All patients not operated upon died within one month. Among the patients explored only the mean survival time was 0.8 month and none survived more than 7 months.

DISCUSSION

The prognosis in biliary tract carcinoma is unfavourable due to

1. Infiltration of periductal structures. The thin wall of the bile ducts and the rich supply of nerve fibers and lymphatics facilitate tumour spread to periductal structures. Anatomical relations of the biliary ducts make wide excision of the tumour often impossible. In our series removal of the tumour was possible in 37/137 = 21% (in 25/69 = 36% if the patients with carcinoma of the gallbladder are excluded).

The advantage of a radical procedure is difficult to evaluate as the more advanced cases are treated with palliative procedures. The clinical problem is to select the patients for the radical procedures. In our series there is a large difference in mean survival time after radical and palliative procedure - 25.6 and 5.5 months respectively (median survival time 12 and 2 months respectively). Hospital mortality was 21% after radical surgery and 33% after palliative procedure. In our series preoperative decompression of the dilated bile ducts was not used routinely before 1974.

The figures above indicate that if a resection seems possible it should be done as a more effective palliation is obtained and occasionally cure results. Palliative procedures in non-resectable cases should be attempted to relieve obstruction and improve the quality of life. A similar conclusion seems to be reached in a study by Evander et al. (4) where a median survival time of 20 months is reported after radical resection of extrahepatic bile duct carcinoma as compared with 7.5 months after palliative treatment. These figures are noteworthy in view of previous reports but are based on groups of 12 and 15 patients respectively operated upon during the years 1969-1977.

2. Early spread to lymph vessels and glands but also perineural propagation. Some of the malignant tumours are growing slowly and recurrence can be seen

after several years - in one of our patients more than 11 years after removal of a carcinoma of the junction of the hepatic ducts. A suspicion of spread to the lymph glands thus do not prevent a removal of the tumour.

3. Advanced age of the patients. The mean age of all series of cancer of the biliary tree is high. Most patients are in their sixties to eighties. In the highest age groups a palliative procedure is more often preferred than in younger ages which can also be seen in our series.

REFERENCES

1. Andersson, A., Bergdahl. L. & van der Linden, W.: Malignant tumours of the extrahepatic bile ducts. Surgery 81:198-202, 1977.
2. Braasch, J.W., Warren, K.W. & Kune, G.A.: Malignant neoplasms of the bile ducts. Surg Clin North Am 47:627-638, 1967.
3. Brodén, G. & Bengtsson, L.: Carcinoma of the gallbladder, its relation to cholelithiasis and to the concept of prophylactic cholecystectomy. Acta Chir Scand, Suppl. 500:15-18, 1980.
4. Evander, A., Fredlund, B., Howvels, J., Ihse, I. & Bengmark, S.: Evaluation of aggressive surgery in carcinoma of the extrahepatic bile ducts. Ann Surg - to be published.
5. Meyers, R.T.: Carcinoma of the gallbladder and bile ducts. In: Textbook of Surgery, Davis-Christopher (ed. Sabiston, Jr., D.C.) p. 1281. W.B. Saunders Co. Phil., USA, 1977.
6. Neugebauer, W., Durst, J. & Mayer, H.R.: Das primäre Carcinom der extrahepatischen Gallenwege. Langenbecks Arch Chir 350:33-42, 1979. (Ger.)
7. Pallin, G: Cancer in ductus hepaticus-choledochus och dess kirurgiska behandling. Thesis. University of Lund, Lund, Sweden, 1919. (Ger.)
8. Schwartz, S.I.: Gallbladder and extrahepatic biliary system. In: Principles of Surgery (ed. S.I. Schwartz), p. 1227. McGraw-Hill, Inc. New York, 1974.
9. Shani, M., Hart, J. & Modan, B.: Cancer of the biliary system: a study of 445 cases. Br J Surg 61:98-100, 1974.
10. Warren, D.W., Mountain, J.C. & Lloyd-Jones, W.: Malignant tumors of the bile ducts. Br J Surg 59:501-505, 1972.

Received April 22, 1980

Address for reprints:

Lars Thorén, Professor
Department of Surgery
University Hospital
S-750 14 Uppsala
Sweden