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Hepatic Resection in the Elderly

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Abstract. From 1986 to 1995 a total of 97 patients >65 years of age underwent hepatic resections at the Department of General Surgery, Hospital Lainz, Vienna, Austria. The population consisted of 39 men and 58 women with a mean age of 74.0 ± 5.5 years. Primary neoplasia of the liver was the cause of resection in 35 patients, gallbladder cancer in 16 patients, and metastatic disease to the liver (due to colorectal cancer in 70%) in 40 patients. The rate of major resections (≥ 3 liver segments) was 96% for primary neoplasia of the liver, 70% for metastatic disease to the liver, and 50% for gallbladder cancer; the associated mortality rates were 23%, 2.5%, and 25%, respectively. The magnitude of the resection had a significant influence on survival for gallbladder cancer ($p = 0.02$) and for primary neoplasia of the liver ($p = 0.002$) but not for metastatic disease to the liver. This reflects the high rate of cirrhosis in hepatocellular and cholangiocellular carcinoma (88%) and gallbladder cancer (37.5%). Both pre- and postoperative severe liver dysfunction had a significantly higher risk for postoperative mortality and morbidity, which showed an incremental risk with age. Another organ system able to predict outcome at the beginning of treatment by its moderate severe dysfunction were the lungs. Overall, only right and extended right lobectomies carried a significantly higher risk for postoperative mortality and morbidity. Postoperative complications were recorded in 43% of our patients, with infection the most frequent problem in nearly all of these patients (95%). Pneumonia was the leading complication associated patient survival. All patients who developed pneumonia as a late complication during a complicated postoperative course died postoperatively. The postoperative Goris score of the patients who died was 6.9 ± 2.9 (range 3–11), whereas the surviving patients' score averaged 2.2 ± 1.9 (range 0–9), which was significantly different ($p = 0.0003$). None of the 54 patients with a GORIS score ≤ 2 died postoperatively, whereas 5 of 6 patients with a score ≥ 9 died ($p = 0.0001$). Severe liver dysfunction rather than the extent of resection influences clinical mortality. Patients > 80 years of age with a preoperative severe liver dysfunction showed a postoperative mortality of 57%, and all of these patients developed postoperative complications. Therefore resection cannot be recommended for those patients. Cirrhosis led to an unacceptable mortality of 44% after hepatic resection of ≥ 5 liver segments for primary neoplasia of the liver. Major resections cannot be recommended in the aged with gallbladder cancer because 50% of the patients died after such operations. Overall, only resection of ≥ 5 liver segments with segments I to III or less remaining were found to pose a major risk for clinical mortality and morbidity, but the cause of death was preexisting liver dysfunction and cirrhosis in all of these patients. Major resections of large neoplasia of the liver can be recommended even in the aged, but a preoperative preselection of patients with respect to liver function and pulmonary function preoperatively may help lower the postoperative morbidity and mortality, especially in patients who will undergo resection of ≥ 5 liver segments. Major hepatic resection for metastatic disease to the liver in the elderly carries no additional survival risk. Patients > 65 years of age and especially those > 80 years of age are more liable to succumb to postoperative organ failure and complications, especially infections.

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Primary neoplasia of the liver can effectively be treated by surgical resection only, but the prognosis is still poor and survival averages only a few months [1–3]. In selected cases liver transplantation has been of value [3, 4]. Aggressive surgical treatment of gallbladder cancer may not only improve long-term survival but produce a number of cures [5–7]. Metastatic disease of the liver is usually part of overt generalized disease. Colorectal liver metastases are the only major metastatic disease for which specific treatment to the liver is applied with acceptable results [8, 9]. This treatment should include resection of all demonstrable metastases. An increase in patients requiring major abdominal surgery can be expected in the future because of the growing number of elderly patients in Western countries [10, 11].

Previous studies revealed similar outcomes for older and younger patients requiring major hepatic resections under elective conditions, and treatment policies should therefore be identical for the aged [10, 12, 13]. Major resections were carried out less often in the elderly than in younger patients. In studies without preselection of patients major hepatic resection was performed in fewer than 50% [12–16]. In the elderly the surgeon tends to use a less aggressive procedure in respect of the higher co-morbidity rate. Contrary to this general approach, our patients underwent aggressive surgery regardless of age.

The question arises whether major hepatic resections in the elderly lead to an increase in clinical mortality and complication rates. The aim of our study was to analyze the results of our aggressive surgical treatment policy in aged patients in whom neoplasia of the liver necessitated major resection.

Patients and Methods

From 1986 through to 1995 a total of 97 patients > 65 years of age underwent hepatic resection at the Department of General Surgery, Hospital Lainz, Vienna. The patient population consisted of 39 men and 58 women with a mean age of 74.0 ± 5.5 years (range 66–87 years). Most patients were between 71 and 80 years of age ($n = 48$), 33 patients were ≤ 70 years, and 16 patients were > 80 years of age.

Table 1. Reasons for hepatic resection in 97 patients older than 65 years of age.

Histology	No. of patients[a]
Cancers	
Hepatocellular carcinoma	13 (3)
Cholangiocellular carcinoma	11 (2)
Hepatocellular and cholangiocellular carcinoma	1 (1)
Adenocarcinoma of hepatic ducts	9 (2)
Leiomyosarcoma	1
Gallbladder cancer	16 (4)
Metastases	
Colorectal cancer	28
Gastric cancer	8 (1)
Carcinoid	2
Pancreatic cancer	1
Renal cell carcinoma	1
Other findings	
Nonparasitic hepatic cysts	2
Hemangioma	2
Caroli syndrome	1
Primary sclerosing cholangitis	1

[a]Numbers in parentheses are the deceased patients.

Table 2. Type of hepatic resection according to the nomenclature of Coinaud in 97 patients older than 65 years of age.

Type of hepatic resection	No. of patients[a]
Major resections	
Right hepatectomy (V, VI, VII, VIII)	12
Extended right hepatectomy[b]	6 (1)
Right lobectomy (IV, V, VI, VII, VIII)	21 (6)
Extended right lobectomy[b]	4 (1)
Left hepatectomy (II, III, IV)	14 (2)
Extended left hepatectomy[b]	8 (1)
Multiple resections ≥ three segments	6
Minor resections	
Left lobectomy (II, III)	5
Segmentectomy IV and V	10 (1)
Other segmentectomies and atypical resections	11 (1)

[a]Numbers in parentheses are the deceased patients.
[b]Extension of resection was defined as additional resection of one or more segments of the remaining liver; mainly segment I has been resected additionally (50%).

The reason for resection was neoplasia in 91 patients (94%) (Table 1). Seventy-one major resections (≥ 3 liver segments) were performed (73%). The anatomic nomenclature of Coinaud was used to define the various types of resection [17] (Table 2). The medical history, results of clinical examination, history of previous illness, and risk factors were retrospectively recorded for each patient.

Co-morbidity was defined as follows for the various organ systems. For co-morbidity of the *liver*, cirrhosis was confirmed by biopsy, there was proved portal hypertension and deficit of hepatic function in terms of Child-Pugh B or icterus (bilirubin levels > 2 mg/dl), and the AST level was 50 U/L or more ($n = 7$). Severe disturbance of hepatic function was assumed in the presence of Child-Pugh grade C or a serum bilirubin level of 6 mg/dl or more and an AST level > 100 U/L ($n = 19$).

Co-morbidity of the *lungs* was defined as follows: chronic, severe limitation of mobility (obstructive, restrictive, vascular) and the inability to perform household chores. An additional prerequisite was the presence of chronic hypoxia or hypercapnia or pulmonary hypertension ($n = 33$). No patient required mechanical respiratory support preoperatively.

Co-morbidity of the *cardiovascular system* was defined as follows: Symptomatic coronary heart disease with clinical limitation in terms of NYHA stage II and III or a cardiac infarction within the last 6 months ($n = 61$). Severe disturbance of the cardiovascular system was assumed in case of NYHA stage IV ($n = 2$).

Severe *renal* co-morbidity was defined in terms of chronic renal insufficiency requiring dialysis. However, four patients showed less chronic derangement of renal function (defined in terms of serum creatinine levels > 2 mg/dl) despite having received extensive medical treatment.

Immunosuppression (caused by chemotherapy, radiation, steroids, or diseases that suppress defense against infection) was not recorded for any of our patients. *Insulin dependence* was the criterion for diabetes being a co-morbid factor ($n = 13$).

Moderately severe preoperative organ failure of the *blood*, seen in two patients, was defined as a leukocyte count of 3×10^9 to 6×10^9/L or a platelet count $< 50 \times 10^9$/L.

Preoperative severe derangement of the *central nervous system* (CNS) was defined as a score of less than 11 on the Glasgow Coma Scale (GCS) ($n = 0$), and moderate derangement was defined as a score of 11 to 13 on the GCS ($n = 22$). Obesity as an additional risk factor was defined as a body mass index (BMI) of 30 or more.

The principal target criterion was clinical lethality in connection with the chosen operative procedure. Clinical lethality included every death that correlated with primary disease or therapy that occurred during the period of treatment in hospital regardless of the time after the initial operation. The evaluation of multiple organ failure was based on a slightly modified Goris score [18, 19]. With this scoring system, the following organ systems were evaluated on a scale from 0 to 2 (0 = no organ failure; 1 = moderately severe organ failure; 2 = severe organ failure): lungs, heart, kidneys, liver, blood, gastrointestinal tract, CNS. A total of seven organ systems were evaluated, so the scoring system comprised a maximum of 14 points.

Complications were defined in terms of wound infection, pneumonia, bile leak, abscess, intractable ascites, urinary tract infection, pancreatitis, and myocardial infarction. Pleural effusions were interpreted as complications only if therapeutic measures were necessary.

Univariate analysis for statistical evaluation was carried out using the chi-square test for qualitative variables and the Mann-Whitney U-test for continuous variables. The level of significance was set at $p < 0.05$.

Results

The most frequent cause of hepatic resection in the elderly was neoplasia of the liver either primarily or due to metastatic disease (Table 1). The histologic diagnosis of primary neoplasia of the liver resulted in the highest rate of major resections, with three or more segments being resected (96%). Gallbladder cancer led to a high proportion of minor resections, with segments IV and V

being resected (50%). These resections caused no clinical mortality, whereas major resections due to gallbladder cancer were associated with a mortality rate of 50%, which showed a significant correlation ($p = 0.02$). All of the deceased patients had documented cirrhosis. A mean of 4.5 ± 0.9 segments (range 3–6 segments) were resected in patients who underwent major resection with no difference in the magnitude of the resections for primary neoplasia of the liver and metastatic disease. Metastatic disease to the liver made major resection necessary in 70% of the patients. Only one of these patients died during hospitalization. The most common cause of resection was colorectal cancer in 70% ($n = 28$); other underlying diseases were gastric cancer ($n = 8$), carcinoid tumors ($n = 2$), renal cancer ($n = 1$), and pancreatic cancer ($n = 1$). Major resection resulted from multiple nonanatomic liver resections in only five patients. All of the other patients underwent anatomic resections.

Primary neoplasia of the liver was associated with a postoperative mortality rate of 23% and gallbladder cancer 25%, which was significantly higher when compared with the 2.5% mortality rate in patients with metastatic disease to the liver ($p = 0.005$). With primary neoplasia of the liver resection of ≥ 5 liver segments was associated with a postoperative mortality of 44% (8/18) compared with no mortality in 16 patients with metastatic disease to the liver ($p = 0.002$). The high rate of postoperative mortality in these patients reflects the 88% rate of cirrhosis in patients with hepatocellular and cholangiocellular carcinoma. The overall in-hospital mortality was 13.4%, and in patients undergoing major resection a clinical mortality of 15.5% was observed.

Right lobectomy and extended right lobectomy were carried out in 25 patients and were associated with a significant increase in postoperative mortality due to preexisting liver dysfunction or cardiac failure (28%) ($p = 0.013$) (Table 2). The overall complication rate was found to be significantly higher after those major hepatic resections (60% vs. 43%) ($p = 0.004$).

Thoracoabdominal exposure of the liver was used in large right-sided resections with an associated higher mortality rate only in patients in whom ≥ 5 segments had been resected with segments I to III or fewer remaining.

Multivisceral resections were carried out in 20 patients with an associated mortality rate of 20%, which was also not significantly different from the mortality rate in other patients. The organs resected were the stomach ($n = 7$), colon ($n = 7$), duodenum ($n = 1$), jejunum ($n = 3$), kidney ($n = 2$), suprarenal gland ($n = 1$), and pancreas ($n = 2$). Vascular reconstructions had to be carried out in three patients, with reconstruction of the inferior caval vein in one and of the portal vein in two. One patient died postoperatively because of a thrombosis of the portal vein, which led to necrosis of the liver.

The postoperative mortality was only 6% in patients in whom the operation lasted not more than 120 minutes. However, the length of operation carried no significant risk for postoperative mortality. Transfusion of 4 units of blood or more during the operation led to an increase in clinical mortality (30.8%) ($p = 0.002$). The operative risk was markedly higher in patients with greater co-morbidity, especially for those > 80 years of age, in whom an overall mortality of 25% was recorded.

A significant correlation to mortality was observed in patients with established co-morbidity of the following organs: Preoperative liver dysfunction was observed in 26 patients; severe liver dysfunction was present in 19 patients and led to early postoperative death in 6 (31.6%) ($p = 0.01$). In patients > 80 years of age, severe dysfunction of the liver preoperatively carried a 57% risk of clinical mortality, which also showed a significant correlation ($p = 0.0004$). All patients who were > 80 years of age and who suffered from preoperative severe liver dysfunction developed postoperative complications ($p = 0.002$). Preoperative severe liver dysfunction and severe postoperative liver failure were associated with a significant increase in postoperative morbidity (74% and 55%) ($p = 0.003$ and 0.02).

The presence of diabetes in the younger and the oldest patients had no significantly higher risk for clinical mortality. Moderately severe co-morbidity of the lungs was associated with a significant postoperative mortality risk in all patients ($p = 0.004$) but not in the patients > 80 years of age.

Overall, 65 postoperative complications were observed in 42 patients (Table 3). If pneumonia developed as a later complication in patients with bile leaks or intractable ascites, those patients had a postoperative mortality rate of 100%. This was a significant correlation when compared with the 19% mortality rate of all patients with postoperative complications ($p = 0.0001$). Infectious complications were not only the leading postoperative problem but also associated with nearly every complication recorded. Obese patients had a higher but not significantly increased rate of wound infections when compared with other patients (19%). Postoperative pancreatitis did not clearly correlate with the extent of resection or length of operation in two of our patients who developed pancreatitis after hepatectomy; nor did these patients have impaired liver function preoperatively. Pleural effusions were observed postoperatively in 45 patients and were managed conservatively in 82%; 8 patients needed pleural punctures for decompression. No patient with a minor hepatic resection suffered from a significant pleural effusion that required therapeutic measures.

The rate of severe postoperative organ failure, measured by the Goris score, was associated with a significantly higher mortality rate for the most organ systems (Table 4). The postoperative Goris score of the patients who died was 6.9 ± 2.9 (range 3–11), whereas the surviving patients' score averaged 2.2 ± 1.9 (range 0–9), which was significantly different ($p = 0.0003$). None of the 54 patients with a Goris score ≤ 2 died postoperatively, whereas 5 of 6 patients with a score ≥ 9 died ($p = 0.0001$).

The mean stay in hospital was 20.6 ± 11.4 days (range 1–90

Table 3. Major complications after hepatic resection in 97 patients older than 65 years of age and significance for clinical mortality.

Complication	No. of patients[a]	Significance* (p)
Pneumonia	12 (6)	0.0001
Wound infection	12 (1)	NS
Bile leak	14 (4)	0.07
Pleural effusion	8 (2)	NS
Abscess	6	NS
Urinary infection	6 (1)	NS
Refractory ascites	4 (2)	0.03
Pancreatitis	2	NS
Myocardial infarction	1	NS

[a]Numbers in parentheses are the patients who died after the complications.

*The level of significance was set at $p < 0.05$.

Table 4. Postoperative organ failure according to the Goris score and significance for clinical mortality.

Organ system	No. of severe failures	Mortality rate (%)	Significance* (p)
Lungs	10	70	0.0001
Heart	19	63	0.0001
Kidneys	5	80	0.0001
Liver	47	21	0.03
CNS	7	86	0.0001
Blood	1	0	NA

CNS: central nervous system; NA: not available.

*The level of significance was set at $p < 0.05$. Significant difference was set between patients suffering from severe organ failure and all other patients.

days). Eighty-seven patients required intensive care, and the mean duration of intensive care was 4.7 ± 3.1 days (range 1–15 days).

Primary neoplasia of the liver was found to be ≥ 5 cm in diameter in 27 patients (77%). Multiple metastases were found in metastatic tumors to the liver in 14 patients (35%). Surgical margins of ≤ 1 cm were found in most patients (65.9%). A tumor wedge of > 1 cm for primary liver cancer with a diameter of > 4 cm could be achieved in 13 patients (45%). Using the classification of Edmondson-Steiner most of the tumors were graded 1 or 2 (53%). Colorectal cancer led to well differentiated metastases in 79% of the patients. Colorectal cancer was the most frequently diagnosed primary tumor in patients with metastatic disease to the liver (70%). Additional lymphatic node metastases were found in nine patients with metastatic tumors to the liver (23%).

Discussion

Clinical mortality ranged from 2% to 19% and was found to be higher in the elderly and in patients who undergo major resection [2, 4, 8, 10, 12, 14, 20–33]. The clinical mortality rate and long-term survival may be affected by intraoperative blood loss requiring blood transfusions [15, 28–30, 34, 35]. In our patients right lobectomy, extended right lobectomy, and transfusion of ≥ 4 units of blood were associated with a significantly higher postoperative mortality. In these patients the postoperative mortality reached approximately 30%, which was well above the 13% mortality rate in all of our patients who were > 65 years of age.

Finding small asymptomatic tumors due to better screening in patients at high risk for developing a hepatocellular carcinoma (HCC) permits liver resections with less loss of functional parenchyma but in an appropriate manner with regard to surgical oncology. Thus Bismuth et al. and Takenaka et al. performed major resections (≥ 3 segments) in only 17% of patients with HCC in a cirrhotic liver [20, 29]. Nevertheless the operative mortality was 14% and 19%, respectively; and Bismuth et al. reported a major complication rate of 50% [20].

In other reports on liver resections for neoplasia, major resections were performed in 14% to 81% [2, 4, 12–16, 22, 25, 27, 28, 30, 32–36] and were carried out less frequently in elderly patients. In our patients major resections alone were not associated with a significantly higher clinical mortality rate (18.3% vs. 8.3%). For gallbladder cancer and primary neoplasia of the liver the extent of resection related to a significantly higher risk of postoperative death due to a higher rate of preexisting liver dysfunction and cirrhosis.

Thoracoabdominal exposure of the liver is associated with a significantly higher mortality rate than abdominal exposure [27]. In our patients this was true only for those who underwent resections of ≥ 5 segments. Multivisceral resections are carried out in 6% to 51% [2, 8, 12]; the organs additionally resected were the stomach, colon, pancreas, and spleen. Vascular reconstructions were done after partial resection of the portal vein. In our patients multivisceral resections were carried out in 21% with no significantly increased postoperative mortality rate.

Co-morbid diseases have no significant influence on clinical mortality in elderly patients who undergo major hepatic resection [10, 13, 16, 28]. Only one study showed a significant influence of age on survival [33]. However, elderly patients show a statistically significant decline in preoperative cardiac and pulmonary function, and they evidence the presence of cerebrovascular disease [11, 13, 14]. Bilobar or extended resections reportedly should be avoided in medically compromised patients with metastatic disease to the liver, and should therefore be undertaken only in selected cases [8, 31]. In contrast, we found no higher mortality risk in old and compromised patients with metastatic disease to the liver regardless of the type of resection necessary. Our better results may have been due to the fact that as few as 13.5% of elderly patients underwent major resection [13] or because major resections were carried out only in selected cases [11, 23]. In that way the rate of major resections in the elderly is always below 50% in unselected patient populations [12–16]. In contrast, we carried out major resections for primary neoplasia of the liver in 96%.

Age and ASA scores measuring major co-morbid diseases easily and with minimal expense are able to predict outcome after surgical procedures [37]. Under elective conditions the increased co-morbidity in older patients carried no significantly increased perioperative mortality risk, except moderate severe dysfunction of the lungs regardless of age, which gave a predisposition for postoperative complications and organ failure in the lungs. Preoperative severe liver dysfunction carried a high risk for postoperative hepatic failure and death especially in patients > 80 years of age. Others have found clinical mortality linked to preoperative liver function rather than age, which is due to preselection of patients [11, 12, 26].

Cirrhosis, less common in the elderly, is associated with an increase in mortality [12, 13, 20, 29]. Reviewing our aggressive therapeutic regimens we found cirrhosis to be the cause of pre- and postoperative liver dysfunction significantly associated with postoperative mortality, especially after hepatic resections ≥ 5 liver segments. If the amount of resected nontumorous liver parenchyma is reduced, resection of primary neoplasia of the liver is still justified despite narrow surgical margins in selected patients [20, 29, 32]. A significant reduction in postoperative mortality as well as morbidity can be achieved by this approach. Balsells et al. proposed liver transplantation as the best treatment for patients with cirrhosis and Child grades B and C and a resectable tumor because those patients do not tolerate liver resection [4].

Postoperative complications occur in 16% to 50% of the patients after liver resection and do not correlate with the amount of liver resected but with preoperative liver function and intraoperative hemorrhage [2, 10–14, 20, 22, 25–30, 32]. We found severe preoperative liver dysfunction but not intraoperative hemorrhage significantly linked to postoperative morbidity. All of the pa-

tients > 80 years who suffered from severe liver dysfunction preoperatively developed postoperative complications.

Using univariate or multivariate analysis it was demonstrated that the magnitude of the resection and the duration of surgery are associated with a significantly higher morbidity rate [14, 28, 30, 35]. The amount of liver resected and the length of surgery did not correlate to postoperative morbidity.

Postoperative liver insufficiency is observed in 20% to 30% of patients [13, 20, 26]. Severe postoperative liver dysfunction may also be present in fewer than 10% of elderly patients who have undergone major liver resection for malignancy [10, 13, 14, 16, 27, 30]. Postoperative liver failure due to large resection or sepsis is the most frequent cause of death [2, 4, 20, 23, 29, 35]. We observed severe postoperative liver failure in 48% of our patients, with a significant influence on postoperative morbidity and mortality.

Pneumonia as a postoperative complication, as well as every major organ dysfunction, especially in the lungs, heart, kidneys, and CNS, were associated with a higher postoperative mortality risk. Postoperative liver dysfunction, which was commonly observed after hepatic resection, had a less significant association with clinical mortality because the spontaneous recovery of liver function was often possible with adjunctive measures only. All patients who developed pneumonia as a late complication during a complicated postoperative course died during our study. In general our results show that elderly patients are more susceptible to lethal outcome of major complications or severe postoperative organ dysfunction.

It has been reported that 23% to 33% of patients who undergo hepatic resection develop intraabdominal infectious complications [16, 27, 28, 36]. Most culture-positive intraabdominal collections can be managed by percutaneous drainage. Intraabdominal infectious complications occurred in 25% of our patients and were due to biliary leakage in 58%. Overall, infectious complications were the leading problem in all patients who developed complications postoperatively. Only two of these patients had no infection documented.

Pleural effusions are frequently observed in patients who undergo major hepatic resection [16, 27, 35]. In our patients significant pleural effusions were found only in those who underwent major hepatic resection, and pleural puncture was necessary in only eight patients.

Miyagawa et al. found that prolonged portal congestion carries a potential risk of pancreatitis after hepatectomy in patients with underlying liver disease [38]. Prolongation of portal congestion was not clearly correlated with postoperative pancreatitis in the two patients who developed such a complication.

Primary liver tumors are > 5 cm in 28% to 50% of patients [4, 20], which was considerably lower than the proportion of large tumors (77%) in our patients. A 10-mm tumor wedge has shown to be inadequate in patients with HCC when the tumor is > 4 cm, whereas the extent of the tumor wedge is not linked to an early recurrence in patients with a tumor < 4 cm [39]. Among our patients, 55% did not have the required tumor wedge for such larger tumors. Surgical resection of a primary neoplasia of the liver is the only chance of cure, and it should be noted that 83% of our patients had tumors > 4 cm, and the major resection rate was 96% among those with primary neoplasia of the liver.

Because the prognosis of HCC is poor, systematic screening for HCC should be carried out in cirrhotic patients by the α-fetoprotein assay and ultrasonography [2, 20]. This protocol permits detection of small tumors, which are more amenable to resection. We have reported one patient who underwent curative resection of a primary leiomyosarcoma of the liver. Various reports of primary sarcoma of the liver in adults demonstrated that aggressive surgical approaches pose the only chance of cure for those patients [40, 41].

Résumé

Entre 1986 et 1995, 97 patients âgés 65 ans ou plus ont eu une résection hépatique dans le département de chirurgie générale de l'Hôpital Lainz, à Vienne, Autriche. Il y avait 39 hommes et 58 femmes d'un âge moyen de 74 +/− 5.5 ans. Les indications de la résection ont été un cancer primitif du foie chez 35 patients, un cancer de la vésicule biliaire chez 16 patients et des métastases hépatiques, en rapport avec un cancer colorectal dans 70% des cas, chez 40 patients. Le taux de résection majeure (≥ 3 segments hépatiques) a été de 96% pour les cancers primitifs du foie, de 70% pour les métastases et de 50% pour le cancer de la vésicule biliaire. La mortalité a été respectivement de 23%, de 2.5% et de 25%. L'étendu de la résection influençait de façon significative la survie des patients atteints de cancer de la vésicule biliaire ($p = 0.02$) ainsi que celle des patients ayant un cancer primitif du foie ($p = 0.002$) mais pas celle des métastases hépatiques. Ceci reflète la proportion élevée de cancers hépatocellulaires et de carcinome cholangiocellulaire (88%) ainsi que celle de cancer de la vésicule biliaire (37.5%) chez le cirrhotique. La mortalité et la morbidité postopératoires étaient élevées en cas de fonction hépatique pré- et postopératoire perturbée et d'âge avancé. De même, l'évolution était influencée par la fonction pulmonaire en début de traitement. Globalement, le risque de mortalité et de morbidité postopératoires étaient élevé en cas de lobectomie droite classique et étendue. 43% de nos patients ont eu des complications postopératoires, dont 95% étaient en rapport avec l'infection. Les infections pulmonaires ont été la complication principale influençant la survie. Tous les patients qui ont développé une pathologie pulmonaire comme complication tardive postopératoire sont décédés. Le score de GORIS postopératoire des patients décédés étaient de 6.9 +/− 2.9 (extrêmes: 31 1), alors que le score moyen des patients survivants était de 2.2 +/− 1.9 (extrêmes: 0-9); cette différence étant significative ($p = .0003$). Aucun des 54 patients ayant un score de GORIS ≤ 2 sont décédés en postopératoire alors lors que 5 des 6 patients ayant un score ≥ 9 sont décédés ($p = .0001$). La mortalité a été plus influencée par la fonction hépatique que par l'étendu de la résection. Les patients de 80 ans ou plus ayant une fonction hépatique préopératoire sévèrement perturbée avaient une mortalité postopératoire de 57% et tous ces patients ont développé des complications postopératoires. La résection ne peut donc être recommandée chez ces patients. En cas de résection pour cancer primitif de cinq segments ou plus chez le cirrhotique, la mortalité est inacceptable: 44%. De même, on ne peut recommander la résection majeure pour cancer de la vésicule biliaire chez le sujet âgé, car la mortalité dépasse 50%. Globalement, seules les résections de cinq segments ou plus laissant les segments I à III posent un risque majeur de mortalité ou de morbidité clinique, mais la cause de décès chez ces patients est toujours la maladie hépatique (cirrhose) préexistante. On peut procéder à des résections majeures pour néoplasmes du foie chez le sujet âgé, mais une sélection préopératoire en rapport avec la

fonction hépatique et pulmonaire est nécessaire afin d'abaisser les taux de morbidité et de mortalité. Si théoriquement, la résection majeure pour métastases hépatiques chez le sujet âgé ne comporte pas de risque supplémentaire, les patients de 65 ans ou plus et surtout ceux de 80 ans ou plus ont plus de risques de mourir de défaillance hépatique postopératoire et de complications, surtout infectieuses.

Resumen

Noventa y siete pacientes mayores de 65 años fueron sometidos a resección hepática en el Departamento de Cirugía del Hospital Lainz, Viena, Austria, en el período entre 1986 a 1995; 39 eran hombres y 58 mujeres, con edad promedio de 74 ± 5.5 años. El neoplasma primario del hígado constituyó la causa de la resección en 35 pacientes, el cáncer de la vesícula biliar en 16, y la enfermedad metastásica hepática (de origen en cáncer colo-rectal en 70% de los casos) en 40. La tasa de resecciones mayores (> 3 segmentos hepáticos) fue de 96% en la neoplasia primaria del hígado, de 70% para enfermedad metastásica y de 30% en cáncer de la vesícula biliar. Las tasas de mortalidad operatoria fueron 23%, 2.5% y 25%, respectivamente. La magnitud de la resección demostró tener influencia significativa en la supervivencia del cáncer de la vesícula biliar (p = .02) y de la neoplasia primaria del hígado (p = .002) pero no de la enfermedad metastásica. Esto refleja la alta incidencia de cirrosis en el carcinoma hepatocelular y en el colangiocarcinoma (88%) y en el cáncer de la vesícula biliar (37.5%). La disfunción hepática severa, tanto pre como postoperatoria, significó un mayor riesgo en cuanto a mortalidad y morbilidad postperatorias, las cuales demostraron incrementarse con la edad. Otro sistema orgánico que demostró ser predictor de pronóstico al comienzo del tratamiento, por la presencia de moderadamente severa disfunción, fue el pulmonar. Globalmente, sólo la lobectomía derecha y la lobectomía derecha ampliada conllevaron un riesgo significativamente aumentado de mortalidad y morbilidad postoperatorias. Se registraron complicaciones postoperatorias en el 43% de nuestros pacientes, siendo la infección el problema más frecuente en casi la totalidad de los casos (95%). La neumonía fue la principal complicación que afectó la supervivencia. Todos los pacientes que desarrollaron neumonía como complicación tardía en la evolución postoperatoria, sufrieron desenlace fatal. El score GORIS postoperatorio de los pacientes que murieron fue 6.9 ± 2.9 (rango: 3-11) en tanto que el de los sobrevivientes fue e 2.2 ± 1.9 (rango 0-9), lo cual constituye una diferencia significativa (p = .0003). Ninguno de los pacientes con score GORIS < 2 murió en el postoperatorio, en tanto que 5 de 6 con score > 9 murieron (p = .0001). La disfunción hepática severa, más que la magnitud de la resección, tiene influencia sobre la mortalidad clínica. Los pacientes mayores de 80 años y con disfunción hepática severa exhibieron una tasa de mortalidad postoperatoria de 57%, y todos ellos desarrollaron complicaciones postoperatorias. En consecuencia, no se debe aconsejar resección en tales pacientes. La cirrosis resultó en una inaceptable mortalidad de 44% luego de la resección de más de > 5 segmentos hepáticos en pacientes con neoplasia primaria del hígado. Tampoco se deben aconsejar resecciones mayores en pacientes ancianos con cáncer de la vesícula biliar, por cuanto 50% mueren como consecuencia de la operación. En forma global, sólo las resecciones de > 5 segmentos con preservaciones de los segmentos I a III o menos, significan un mayor riesgo de mortalidad y morbilidad, siendo la disfunción hepática preexistentes y la cirrosis, la causa de muerte en la totalidad de estos pacientes. Se pueden recomendar resecciones hepáticas mayores de grandes neoplasias hepáticas aún en pacientes de edad avanzada, pero la debida preselección en lo relacionado con función hepática y pulmonar preoperatoria puede lograr una disminución de las tasas de morbilidad y mortalidad, especialmente en aquellos pacientes que requieran la resección de > 5 segmentos. Las resecciones hepáticas mayores por enfermedad metastásica en el anciano no conllevan riesgo adicional en cuanto a supervivencia. Los pacientes mayores de 65 años, y en especial los mayores de 80 años, tienen mayor probabilidad de mortalidad por falla orgánica y complicaciones postoperatorias, especialmente las de carácter infeccioso.

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