

Prognostic factors of breast cancer liver metastasis surgery

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Submitted: 10 August 2013

Accepted: 10 August 2013

Arch Med Sci 2015; 11, 3: 683–685

DOI: 10.5114/aoms.2015.52376

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The current survival of patients with breast cancer liver metastases (BCLM) after systemic oncological treatment is between 22 to 27 months [1, 2]. The proper indication for surgical treatment of BCLM is still a matter of discussion [3, 4]. We evaluated the risk factors of surgical treatment of BCLM in 21 women with an average age of 50.9 ± 8.9 years. The interval between the breast and the liver surgery was 4.0 ± 2.8 years. Local recurrence was observed in 6 (28.6%) patients. The primary tumour was a ductal carcinoma in 12 (57.1%) cases, a lobular carcinoma in 6 (28.6%) cases and another type in 3 (14.3%) cases. The primary tumour was oestrogen receptor positive in 14 (66.7%) cases, and progesterone receptor positive in 10 (47.6%) cases. Both receptor types were positive in 15 (71.4%) and both were negative in 2 (9.5%) patients. Fourteen patients had a solitary BCLM, and 7 patients had more metastases. The average sum of BCLM diameters was 5.2 ± 3.8 cm. Extra-hepatic metastases were present in 6 (28.6%) patients. We performed 11 (52.4%) liver resections and 10 (47.6%) radiofrequency ablations (RFA). In 3 patients, a lymphadenectomy of the hepato-duodenal ligament, because of the presence of positive lymph nodes, was performed. We studied the effects of patients' age, time interval between the breast cancer and BCLM surgery, the type of surgical procedure, histopathological findings of the primary tumour, the number and overall diameter of BCLM, the presence of resectable extra-hepatic metastases, and local tumour recurrence after primary breast cancer surgery on patients' overall (OS) and progression-free survival (PFS).

The 1-, 3- and 5-year OS for patients treated with resection or RFA was 89.6, 85.7 and 14.3%; and 79.6, 45.5 and 11.4%, respectively (NS). Younger patients (< 50) were at greater risk in terms of both OS (HR = 4.163, 95% CI: 1.146–15.118, and $p < 0.02$) and PFS (HR = 4.303, 95% CI: 1.056–17.531, and $p < 0.01$). An interval ≥ 4 years between the primary procedure and BCLM surgery had a protective effect in terms of OS (HR = 4.738, 95% CI: 1.287–17.441, and $p < 0.01$) and PFS (HR = 5.088, 95% CI: 1.496–17.303, and $p < 0.005$). Negative status of ER and PR in the primary tumour was a negative factor for PFS (HR = 21.475, 95% CI: 1.907–241.843, and $p < 0.0003$). The presence of extra-hepatic surgically resectable metastases had a negative impact on OS (HR = 5.078, 95% CI: 1.437–17.949, and $p < 0.005$). If the overall diameter of the BCLM was ≥ 3.5 cm, then PFS was significantly worse (HR = 9.999, 95% CI: 1.257–79.513, and $p < 0.009$). The other studied factors did not have any impact on OS or PFS (Table I).

Table I. Patients characteristic and prognostic factors

Variable	N = 21	Percent	OS Value of <i>p</i>	PFS Value of <i>p</i>
Age (50.9 ±8.9):			0.02	0.01
< 50 years	9	42.9		
≥ 50 years	12	57.1		
Time interval between the breast cancer and BCLM surgery – 4.0 ±2.9 years:			0.01	0.005
< 4 years	10	47.6		
≥ 4 years	11	52.4		
Types of surgery:			0.45	0.67
Liver resection	11	52.4		
RFA	10	47.6		
Surgery for EH metastases	5	23.8		
Primary tumour histology:			0.81	0.42
Ductal carcinoma	12	57.1		
Lobular carcinoma	6	28.6		
Other	3	14.3		
Hormone receptor status (primary tumour):				
Oestrogen positive	14	66.7	0.30	0.77
Oestrogen negative	3	14.3		
Progesterone positive	10	47.6	0.39	0.17
Progesterone negative	6	28.6		
ER and PR positive	15	71.4		
ER and PR negative	2	9.5	0.24	0.0003
Number of metastases:			0.76	0.06
One	14	66.7		
Two	5	23.7		
Five	1	4.8		
Seven	1	4.8		
Extrahepatic metastases:	6	28.6	0.005	0.06
Bone	2	9.2		
HD ligamentum	3	14.3		
Bone + HD ligamentum	1	4.8		
Average cumulative diameter – 5.2 ±3.8 cm:			0.06	0.009
< 3.5 cm	7	33.3		
≥ 3.5 cm	14	66.7		
Local tumour recurrence after breast cancer surgery:			0.66	0.77
Yes	6	28.6		
No	15	71.4		

The surgical treatment of BCLM remains the method of choice in a selected group of patients. The short time interval between the breast and BCLM surgery, presence of extra-hepatic metastases, an overall large BCLM diameter, especially in younger patients, and negative status for both hormone receptors represent significant risk factors, and in such cases the decision to proceed with surgical treatment of BCLM should be weighed on an individual basis by a multi-disciplinary team.

Acknowledgments

This project was supported by research grant P 36 of Charles University, Prague.

Conflict of interest

The authors declare no conflict of interest.

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