SURVIVAL IN PATIENTS OPERATED ON DUE TO PULMONARY METASTASES FROM COLORECTAL CARCINOMA

A. Uchikov¹, N. Ali¹*, S. Genova², P. Uchikov³, F. Selimi⁴, D. Chakarov⁵

¹Department of Special Surgery and Second Surgical Clinic, University Hospital "St. George", MU–Plovdiv, Bulgaria
²Department of General and Clinical Pathology, MU–Plovdiv, Bulgaria
³MU–Plovdiv, Bulgaria
⁴Department of Visceral Surgery, Clinical Hospital–Tetovo, Republic of Macedonia,
⁵Department of Propedeutics of Surgical Diseases, MU–Plovdiv, Bulgaria

ABSTRACT

Introduction: Colorectal cancer (CRC) is one of the most common cancers worldwide, with greater than 1 million cases identified in the world yearly. It has got a high metastatic potential and lungs are the second most common site. Although it is referred to as a systemic disease complete surgical resection of pulmonary metastases can enhance survival in selected patients.

Patients and methods: The study focuses on a sample of 13 patients surgically treated on the occasion of lung metastases from CRC. Results: We found that the mean survival in patients operated on due to pulmonary metastases from CRC was 57.1 months (95% CI, 35.400–78.907).

Conclusion: Pulmonary resection of metastatic colorectal carcinoma is safe and results in long-term survival. Low morbidity and mortality rates, contrasting with lack of any other effective therapy, justify aggressive surgical management.

Key words: colorectal carcinoma, pulmonary metastases, surgery, survival

INTRODUCTION

Colorectal cancer is the third most common cancer in men (746,000 cases, 10.0% of the total) and the second in women (614,000 cases, 9.2% of the total) worldwide (1). In the Republic of Bulgaria the total registered cases of colorectal carcinoma for 2014 were 31,284, with 1,289 cases more than those registered in 2012. In 2014 the total registered patients with CRC in Sofia were 5,832, in Plovdiv-3,215 and 1,597 cases in Stara Zagora (2, 3).

Colon cancer is a systemic disease in 19% of patients and can metastasize to the liver, lung, ovary, peritoneum and other organs systemically. Approximately 20% of patients with CRC have distant metastasis at the time of presentation (4, 5). About half of the patients who undergo resection of CRC will develop metastatic disease and 5–15% of those eventually develop lung metastases (6–8).

For many years, the diagnosis of lung metastasis was considered the end stage of the disease course. Surgical treatment of lung metastases has been given a boost in the last 15 years, as has been shown in the literature, and some of the major prognostic factors for this condition have been identified (9, 10).

Pulmonary metastasectomy is associated with prolonged survival in selected patients. Reported median survival ranges from 35-50 months (11-16). 5-year survival rates after surgical resection range from 36-67.8%. (11, 17, 18)

PURPOSE

The aim of our study was to analyze survival in patients operated on due to lung metastases from colorectal cancer.

PATIENTS AND METHODS

This was a retrospective study based on surgical records of the Clinic of Thoracic and Abdominal Surgery at the University Hospital „St. George”–Plovdiv, Bulgaria. We reviewed all records of complete resection of metastatic lung lesions performed in patients with a previous diagnosis of primary CRC between January 1, 2004 and November 20, 2013. Ten
of the patients were male and 3 were female. The average age was 62.5 year. The youngest and oldest patients were respectively 39 and 71 years old and were men. The shortest survival period after surgery was 29 days and the longest - 81 months. The mean DFI was 26.6 months. The prevailing CT characteristics of the pulmonary metastases were rounded lesions with sharp outlines. Patients with one metastatic lesion were 9, those with two metastases were 2 and those with three or more than three lung lesions were also 2. Patients with lesions smaller than 20 mm were 4 and those with metastases bigger than 20 mm were 10. Thirteen thoracotomies and a single VATS were performed. One of the patients was operated on twice due to recurrent pulmonary metastasis. Five lobectomies and 9 atypical resections of lung parenchyma were performed.

STATISTICS
We analyzed our data using SPSS®-IBM SPSS Statistics for Windows 19.0.0.and Microsoft® Office Excel. Descriptive methods and methods of assessment were used. The method of Kaplan-Meier was used for survival analysis.

RESULTS AND DISCUSSION
We found that the mean survival of patients operated on due to pulmonary metastases from CRC was 57.1 months (95% CI; 35,400–78,907). (Figure 1) The shortest survival period after surgery was 29 days and the longest - 81 months. Although CRC is referred to as a systemic disease and despite doubts about the effect of locoregional therapy in its management, many surgeons perform surgical resection of lung metastases in properly selected patients (19-24). In general, the presence of metastases portends a poor prognosis; however, according to some studies 5-year survival rate reaches 50% (25). Inoue M. conducted a retrospective study on 128 patients who had been operated on due to lung metastases from CRC and reported rates of 3- and 5-year survival of respectively 44,6% and 45,3% (13). According to other studies 5-year survival reaches up to 55.4% with median survival of 70.1 months (26). Some even report 5-year survival rate of 67.2% (27). Currently, although there are studies calling into question the positive effects of surgery in patients with pulmonary metastases from CRC (22), it remains a significant component of the treatment of lung metastatic disease, and its practice is widely accepted worldwide, resulting in low mortality rates and increased five-year survival rates (28-30).

![Cumulative Survival](image)

**Figure 1.** Survival in patients surgically treated on the occasion of pulmonary metastases from colorectal carcinoma
CONCLUSION
We conclude that pulmonary resection of metastatic colorectal carcinoma is safe and results in long-term survival. Low morbidity and mortality rates, contrasting with lack of any other effective therapy, justify aggressive surgical management.

REFERENCES
20. Internullo E, Cassivi S. D., Van Raemdonck D, Friedel G, Treasure T. Pulmonary metastasectomy: a survey of current practice amongst members of the


