

Lung Metastasis from Colorectal Cancer Treated by Laparoscope Combined with Thoracoscope

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1. Abstract

Colorectal cancer is the fourth most common cancer in the world. The lung is the second most common site of metastasis. It is suggested that surgical resection is an effective treatment for hepatic metastasis from colorectal cancer, however, the efficiency of surgical treatment for pulmonary metastasis from colorectal cancer is still in dispute. Here we present a case of pulmonary metastasis from colon cancer, that treated by thoracoscopic resection combined with laparoscopic surgery synchronously after four periods of neoadjuvant chemotherapy. The patient is uneventful presently.

2. Introduction

Colorectal Cancer (CRC) is the fourth most common cancer in the world, with 0.0369% incidence rate and 0.0137% mortality rate [1]. About half of the patients with colorectal cancer have metastases when diagnosed or would develop metastases after surgery [2]. Distant metastasis is the main cause of death from CRC. The lung is the second most common site of metastasis for CRC after the liver [3]. It is reported that approximately 5-15% of CRC patients will develop pulmonary metastasis finally [4]. If left untreated, patients with lung metastasis from CRC have a median survival of less than 10 months and 5-year survival rate of less than 5% [5].

3. Case Report

3.1. Condition

Right lung nodes were found 2 months ago occasionally during health examination and a sigmoid mass was detected by the inferior abdominal Computed Tomography (CT). The histopathologic

examination indicated a middle-differentiated adenocarcinoma finally. Physical examination, including digital rectal examination, indicated no abnormalities.

The abdomen and pelvis CT detected a 1cm sigmoid colon nodular neoplasm with no signs of distant metastases. The chest CT indicated two 3cm lesions in the superior lobe of the right lung. The PET-CT was performed to excluded other distant metastases. The bronchoscope-guided biopsy of the pulmonary lesions was performed, conforming them were metastasis from sigmoid lesion.

After four cycles of neoadjuvant chemotherapy using Irinotecan and Capecitabine, the level of carcinoembryonic antigen (CEA) dropped from 8.29 to 5.27. The pelvis CT showed that the size of tumor was a little smaller than its initial size. The patient's general status was good, and there were no contraindications to surgery.

3.2. Operative Procedure

Inspection of the abdominal cavity showed no liver or peritoneal metastases and ascites. The inferior mesenteric vessels were ligated of 1.5cm distal to its roots, the proximal rectum was transected of 5cm distal to the tumor's margin. The specimen (Figure 1) was removed through a midline incision in the inferior abdomen, and end-to-end anastomosis between descending colon and rectum was performed. Four abdominal drainage tubes were left and the abdominal cavity was closed after a negative air leakage test. As the laparoscopic sigmoidectomy was uneventful, it was decided to continue with the pulmonary metastasectomy. The patient was turned into the left lateral decubitus position. Access to the pleural cavity was obtained by placing a small incision in the seventh in-

tercostal space in the right middle-axillary line. Another incision was placed in the third intercostal space in the right anterior-axillary line. The metastasis (Figure 2) was identified in the upper lobe of the right lung. Pulmonary lobectomy was performed using endoscopic linear staplers and the specimen was removed using a retrieval bag. A chest tube was left behind, and the thoracic cavity was closed after a negative air leakage test. The operation took 1 hour and resulted in 80ml of bleeding.



Figure 1: the primary cancer



Figure 2: lung metastases

3.3. Postoperative Course

In consideration of the patient's age, long operation time and large surgical trauma, the patient had stayed in the surgical intensive care unit for two days before came back to the general ward. On the ninth day after operation, the drainage tubes of chest and abdomen were removed and the patient was discharged. Histopathological examination showed a colonic ulcerative type middle-differentiated adenocarcinoma, staging T2N0M1. The patient received adjuvant chemotherapy postoperatively using Irinotecan and Capecitabine. The lasted chest and abdominal CT scan, performed

postoperative 4 months, showed no signs of recurrence and metastases. Additionally, the level of CEA was normal.

4. Comment

As the fourth most common cancer, the CRC threatens the human health heavily. However, the efficiency of surgery for pulmonary from CRC is still in dispute. Convincing evidence supporting surgery is lacking and no Randomized Controlled Trials (RCT) has published results to inform and guide clinical practice [6]. Because the patients who undergo surgical treatment are carefully selected, it is possible for us to attribute the encouraging outcomes of pulmonary metastasis to the fact that selected candidates already have beneficial prognostic factors, rather than surgical resection [7]. As for why there are little RCTs about the efficiency of surgical resection for pulmonary metastasis from CRC. Firstly, compared to hepatic metastasis, pulmonary metastasis is not the most common. Secondly, only 2-4% patients with lung metastases are amenable to surgical resection [8].

Compared to thoracotomy surgery, some study showed that thoracoscope in pulmonary metastasectomy offers benefits of minimal invasiveness and a decrease in postoperative morbidity, pain and duration of hospital stays. Similarly, compared to the open group, the laparoscopic group has lower morbidity, shorter hospital stays, better quality of life and lower charge.

However, the endoscopic surgery is not perfect without any drawbacks. It is because of the lack of manual palpation that many surgeons prefer open approach. Furthermore, many people expressed their concern about the risk of missing small metastatic lesions during thoracic surgery and the feasibility of adequately obtaining a safe resection margin through thoracoscope.

Although there is still controversy about the efficiency of surgery for lung metastasis from CRC, the perioperative course of this patient suggested that the simultaneous resection of primary colon cancer and pulmonary metastasis by minimal invasive surgery is feasible and safe. In the future, the efficiency of surgical resection for lung metastasis still needs the convincing evidence, and clinical trials are needed to investigate the prognostic factors.

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