

LUNG CARCINOSARCOMA A REPORT OF 15 CASES

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Lung carcinosarcoma is a rare pulmonary mixed malignant tumor. From November 1979 to Sept. 1992, among 4,251 cases of pulmonary malignant tumor operated in our department 15 were lung carcinosarcoma (0.35%). Pneumonectomy was done in 6 patients, lobectomy in 8, thoracotomy in 1. Pathologically, squamous carcinoma with fibrosarcoma in 1, adenocarcinoma with fibrosarcoma in 7, adenocarcinoma with chondrosarcoma in 1, and small-cell carcinoma with chondrosarcoma in 1. There was no operation death. Upon follow up, the 1-, 3-, 5-, and 7- year survival rates were 66.7%, 53.3%, 42.9% and 2/7, respectively. The longest survival was 97 months. The histologica origin, the relationship between pathological findings and clinical features and the diagnosis, treatment and prognosis are discussed.

Key words: Lung neoplasms, Carcinosarcoma

Lung carcinosarcoma is a rare mixed malignant tumor. From Nov. 1979 to Sept. 1992, Fifteen carcinosarcoma of 4,251 malignant lung cancer cases were operated in our department (0.35%).

CLINICAL DATA

General Data

Sex

Male 10, female 5 cases with ratio; 2:1
Age 39 — 76 years with the mean 55 years,

among them >60 years 11 cases (73.3%).

Signs and Symptoms

cough, bloody sputum 7 cases, chest pain pyrexia dyspnea 4 cases, asymptomatic found by physical examination 4 cases.

With figures of malignant tumor such as arthropathy and clubbing fingers 2 cases.

Site of the Tumor

Left said 7 cases. (upper lobe 1, lower lobe 4, main bronchus 2 cases). Right side 8 cases. (upper lobe 1, middle lobe 2, lower lobe 3, and intermediated bronchus 2 cases).

Chest roentgenogram and CT

Site of tumor . Peripheral type 6 cases; mass in the lung with characters as follow oval, even density with sharp margin 3 cases; lobular margin. Horny and calcified with pitting pleura 2 cases; cavitation in the mass, with rough, saw-like inner wall 1 case. Central type 9 cases: large mass with high density occupied about 2/3 of the affected side lung with widen hilum and mediastinum 5 cases; Mass shadow in lung 2 cases, costophrenic angle disappeared with pleural effusion one cases; No mass only lung markings disturbed, with diaphragm elevated and mediastineum shift to the affected side one case.

Diameter of tumor; 3 — 5 cm 2 cases, 6 — 8 cm. 4 cases, 10 cm. 3 cases, obstructive inflammation and partial atelectasis 6 cases.

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Chest CT: Chest CT were done in 3 of 15 cases preoperatively, the mass shadow in lung field with enlarged mediastinal lymph nodes, were shown 2 had calcified lesion in the mass.

Cytological of Sputum and Fibrobronchoscopy Examination

Cytological examination of sputum

Squamous carcinoma cells in 2 cases negative finding in 13 cases.

Bronchoscopy examination

12 of 15 cases discovered abnormal: cauliflower-like neoplasm 4 cases, polypiform 2 cases, bronchial lumen narrowed as a funnel of flate-form 3 cases, bronchial mucosa thick and swelling 3 cases. Cancer cells founded by biopsy or brush smear; 9 cases; i.e. squamous 4, adenoid 5. and hyperplasia of squamous epithelium and necrotic tissue 3 cases.

Mode of operations and pathological classifications

Mode of operations: Left said 7 cases: pneumonectomy 3 (included 1 via pericardium) lobectomy: upper 1, lower 3 cases; Right side 8 cases; pneumonectomy 3, lobectomy: upper 1, middle 1, and lower 2; thoracotomy and biopsy one case.

TNM staging by the international standard; T₂N₀M₀I stage 3 cases T₂N₁M₀II 1 case, and T₂N₂M₀IIIa 11 cases.

Pathological classification: All specimens verified pathologically were carcinosarcoma, among them squamous carcinoma combined with fibrosarcoma 4 cases, with chondrosarcoma 1, pleomorphic sarcoma 1; adenocarcinoma mixed with fibrosarcoma 7, chondrosarcoma 1 and small cell carcinoma mix with chondrosarcoma 1 case.

Postoperative Complications and Follow up

Complications

Respiratory failure and persistent fever by cancer 1 case respectively, 2 cases were recovered by treatment, no surgical mortality.

Results from Follow-up

All of 15 cases were taken chemotherapies 6 — 12 times with MAP scheme (MMC 8 mg./m², ADM 80 mg./m², DDP 90 mg./m²), 3 of 15 added with radiation therapy.

Follow-up: 3 — 15 years; with the survival rate; 1 year was 66.7% (10/15 cases), 3 year was 53.3% (8/15), 5 year was 42.9% (6/14), 7 year was 28.6% (2/7). The maximum survive time was 8 years and 1 month. Prognosis: the central type is significantly better than peripheral type ($P < 0.05$)

DISCUSSION

Histogenesis of Carcinosarcoma

Carcinosarcoma is rarely seen in malignant lung tumors, but it usually be present in mixed lung malignant tumors. Since the first case reported by Kika, early this century, a series of case report and investigations on the pathogenesis including light-and electron microscopy, tissue culture, tissue roentgenogram etc. had been done and summarized into three theories about the pathogenesis:

Co-existence theory¹⁻³

Two histological components: carcinoma and sarcoma coexistent in the tumor at the same time. In tumor area, most epithelia are squamous or cubic-adenoeplithelioma with moderate mitosis presented in the cancer nest. It contacted and infiltrated with adjacent interstitial sarcoma each other. In 8 of our group, under light microscopy, the components epithelial and interstitials were contacted closely but only a few were penetrated.

Synthesis theory⁴⁻⁷

Cells in the interstitial were induced by carcinomasarcoma tissue to differentiate towards to sarcoma. In 4 of our group, these were observed under light microscopy, the mitosis of myogenous and fibroblast cells in the interstitial were increased, and nuclei enlarged with dark stain and formed sarcoma.

Compound theory

Carcinoma and sarcoma were derived from polyfunctional steam cells when the later dif-

ferentiated towards epithelium or interstitial cells and made these two kinds of cells intermingled each other.

All of 3 theories were acquiesced. But prive⁸ had pointed out carcinoma sarcoma may be derived from malignancy of hamartoma in lung, it can't be confirmed by literatures. 8 of this 15 cases belongs to co-existence of two tumors, 4 cases coincided with compound theory. Another 3 cases, under light microscopy, niter the arrangement of cells nor nuclei stain might be explained by above three theories mentioned.

Histological Changes of the Carcinosarcoma of the Lung

Usually the epithelia of carcinosarcoma were squamous or cubical. In the nest, the tumor cells enlarged with dark stain nuclei, nuclei mitosis increased and arranged in pieces or masses. In the stroma, tumor cells were spindly with dark stain nuclei, and the arrangement disturbed.

As they might be myogenous or fibroblastic tissue in origin, fibrosarcoma, chondrosarcoma, leiomyosarcoma or osteosarcoma were more common. The components of sarcoma, in our group, 11 of 15 cases were fibrotic, 3 cases chondrosarcoma, one cancer with pleomorphic, the last one case, small cell carcinoma mingled with chondrosarcoma, is very rarely.

The Relationship between Location of Carcinosarcoma Growth and the Clinical Appearance

Central type (intra-bronchial lumen type) 9 cases; The tumor grew in and obstructed the bronchial lumen and caused pneumo- or lobar atelectasis, obstructive pneumonitis and pleural effusion.

Peripheral type (or parenchymal type) 6 cases; Chest roentgenogram suggested that there were moderate dense, round or oval mass with diameter 3-10 cm. In the parenchyma. Within the mass, necrosis, fall out, cavitation might be seen besides, calcification in the parenchyma of tumor might be presented.

Fibrooptic bronchoscopy on 12 of 15 cases were positive findings in 9 cases of central type. X-ray showed pneumo- or loader atelectasis or obstructive inflammation; among 6 cases of peripheral type, polypoid neoplasma were seen in the subsegment bronchus in 3 cases. From the view of course of disease, the peripheral type of tumor might early

invaded to local pleura, pericardium, mediastinal pleura, diaphragm and ipsilateral lung metastasis, although the tumor grew slowly. In 6 cases of peripheral type, the tumor had metastasized to ipsilateral lung in 1 case, to chest wall and pericardium extensively with moderate effusion 2 cases, and cavitation in the tumor 1 case.

Diagnosis for Carcinosarcoma

Lung carcinosarcoma was observed in men more than women. The common symptoms and signs were cough, sputum, chest pain, hemoptysis etc. But these were hardly to be differentiated from that of primary lung cancer. Owing to the very low incidence, only 0.3% of the lung tumors on the same period reported by literatures and 0.35% in our department and the low positive rate of by cytoscopies. It is too difficult to make a definite diagnosis preoperatively. We suggest a transcutaneous lung biopsy or trans-bronchial lung biopsy may be helpful.

Treatment and prognosis

In our group, I stage 3 cases, one die of brain apoplexy on 4th month postoperatively, 2 cases alive 3 — 6 years without metastasis. II, IIIa stage 12 cases, of which 5 cases died of metastasis mainly to liver or brain in 1 year; 2 cases alive for 3 years, 5 cases alive more than 5 years, one of them alive for 8 years and one month. One with small cells and chondrosarcoma had alived more than 4 years. According to the literatures,⁹ the postoperative 2 years mortality of carcinosarcoma of lung is nearly above 50%, that is similar to our group (8/15). The survival rates of lung carcinosarcoma of 1, 2, 3, 5, and 7 years were not significant difference than that of lung cancer¹⁰ ($P>0.05$). Operation was the preferential method for treatment of carcinosarcoma, especially on the early stage, with a more satisfactory prognosis. For elevating the survival rate, a therapeutic combination is necessary, including to resect intrathoracic lymph nodes thoroughly and to take radio- and chemotherapy in time. In this series, 5 cases (about 33.3%) who survive more than 5 years postoperatively had received chemo- and radio-therapies. All of these demonstrated the fact, patients with II stage, especially IIIa must keep the radio- or chemotherapy, combined with biological or Chinese herb therapies to promote the immune function of the patients with

contraindicating or inoperable tumor, they may prefer to treated with radio-or intermediated therapies but the prognosis were poor. e.g. one case of our group, the operation was standstill because the huge tumor with diameter >10 cm. hilum frizzed, pulmonary artery invaded by tumor intrapericardium and with moderate pleural and pericardial cavities effusion. Medium and radiotherapies were introduced postoperatively, the patient survived for 13 months. Therefore, for patients unsuited to operation, the use of combine therapies may prolong the survival time, and promote the living qualities.

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