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Malignant Fibrous Histiocytoma in Lungs: A Case Report

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Abstract Malignant Fibrous Histiocytoma (MFH) is a mesenchymal tumor from fibroblast differentiation and histiocyte like cells. This tumor found in 1964 and representing the biggest type of sarcoma. The Incidence of Malignant Fibrous Histiocytoma in lung about 20-24%, with the men and women ratio 2: 1. Diagnosis of Malignant Fibrous Histiocytoma's hard because found in a patient without symptoms. In this case, a 62 years old patient, professional history as a gold miner for 36 years complained chest pain particularly in the left chest. Investigated by posteroanterior chest radiograph and thoracic CT scan obtained a picture of the left lung tumor, then performed thoracotomy surgery and excision of tumors. Histopathological examination showed a Malignant Fibrous Histiocytoma. Patient is repatriated from the hospital 5 days after surgery in good condition and undergoes routine follow up every six months. Follow up 3 years after Surgery patient is in good health and no sign of residif of the tumor.

Keywords: *malignant fibrous histiocytoma, lungs, fibroblast*

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1. Introduction

Malignant Fibrous Histiocytoma (MFH) is a mesenchymal tumor with differentiation towards fibroblast and hot histiocyte cells. The malignant origin of malignant cells thought to be primitive multipotent mesenchymal cells, 20% -24% of soft tissue sarcomas are more common in white patients than in Africa or Asia. The male and female ratio is approximately 2: 1. Malignant Fibrous Histiocytoma is most prevalent in the extremities (70% - 75%, with the lower extremity of 59% of cases), followed by retroperitoneum [1].

2. Case Report

A man, aged 62 years, was admitted to hospital with a chief complaint of chest pain left who felt since two years ago, pain is intermittent, pain is radiating to the neck and left backs, patients also complain of a cough intermittent in 2 months latest. History undeniable coughing up blood, no history of shoulder pain, no history of hoarseness, difficulty swallowing no history, no history of fever, weight loss history of more than 10 kg in the last six months denied. History of blurred eyes, headaches and seizures is denied. Patients have a history of working in the field, contact with dust exposure since 36 years ago. History of smoking for ten years with a pack of cigarettes per day. The same family history of disease does not exist.

Table 1. Laboratory examination of patients obtained the following results

Examination	2 June 2014	18 June 2014
HGB	14,8 g/dL	14,9 g/dL
WBC	10,4 x 10^3/mm^3	6,3 x 10^3/mm^3
HCT	43,9 %	43,3 %
PLT	251 x 10^3/mm^3	286 x 10^3/mm^3
LED	-	18/25
CT	10''	8''
BT	1''	3,30''
Neutrofil	65,0 %	47,0 %
Lymphosit	22,3 %	34,7 %
Monosit	6,6%	8,6 %
Eosinofil	5,7 %	9,3 %
Basofil	0,4 %	0,4 %
PT	13,9 second	-
APTT	38,5 second	-
Glucose	99 mg/dL	113 mg/dL
Ureum	21 mg/dL	18 mg/dL
Creatinin	0,9 mg/dL	0,8 mg/dL
Albumin	-	4,2 g/dL
SGOT	26 U/L	22 U/L
SGPT	20U/L	21 U/L
Sodium	-	148 mmol/L
Potassium	-	4,3 mmol/L
Chloride	-	103 mmol/L
HBsAg	Negative	Negative

Physical examination obtained generalize status: Moderate, moderate nutrition, good conscious. The patient weighs 68 kg, Height 159 cm. Vitalis status obtained Blood Pressure: 120/90 mmHg. Pulse: 80 x / min, Respiration: 20 x/min, Axillary temperature: 36.6°C. Status localise thoracic obtained Inspections: Hemithorax right and left symmetrical, color is equal, palpation: Vocal Fremitus hemithorax the right and left alike, no tenderness, no palpable tumor mass, Percussion: Hemithorax right-resonant, hemithorax left deaf as high as ICS IV - VI and Auscultation: Right and left hemithorax breathing sounds are equal, no Ronchi, no wheezing, pure I / II heartbeat.

In the results of chest X-ray examination (April 29th, 2014), the results obtained as follows: The second broncho vascular lung appears healthy, does not seem to be active specific processes in both lungs. Appearance opacity, firm limit, slippery outline, without calcification or water bronchogram sign on laterobasal left hemithorax; Cor is not enlarged. Aortic elongation; Both tapered sinuses, normal diaphragms; Intact bones; A Costo-Frenicus angle appears in the right hemithorax, whereas it does not appear in the left hemithorax. Impression: lung tumor sinister.

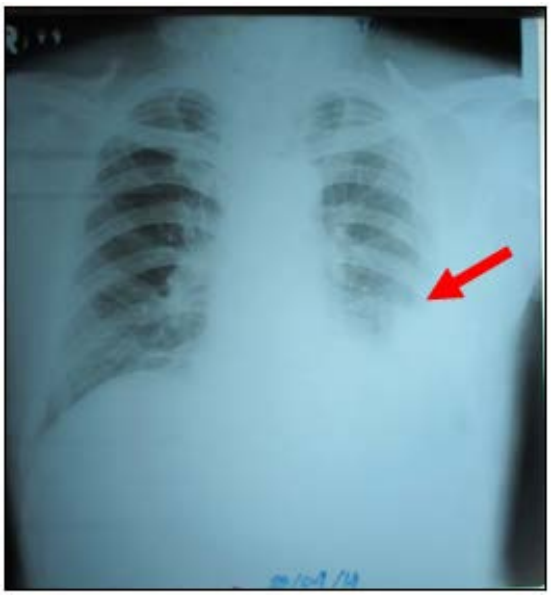

Figure 1. Thorax X Ray examination

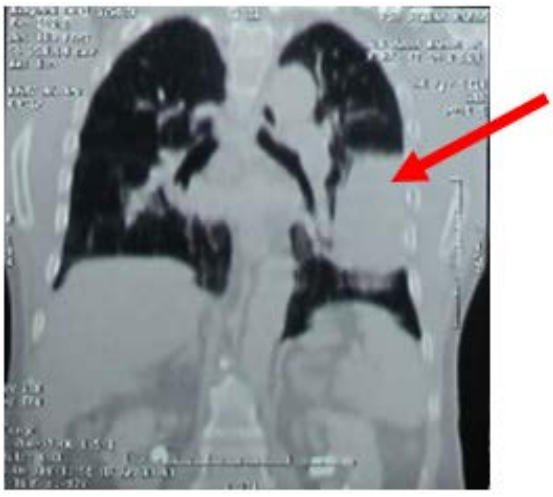

Figure 2. CT Scan Thorax examination,coronal view

Then examined CT Scan Thorax (April 30th, 2014) obtained results as follows: Looks solid mass measuring ± 8.8 x 7.43 cm density 48.45 HU, the visible border of the slippery edge. This mass is located in the left inferior lobe and very stinging density contrast to 72.29 HU. The mass is not urgent to the organ, and there is no visible destruction of the surrounding bones; Bronchovascular abnormal left lung lesions within normal limits, no specific features of the left lung; Trachea and carina are good; No visible enlarged lymph nodes; Cor is not enlarged. Hepar: no tumor metastases appear on the liver. No visible enlargement of the suprarenal gland. The bones are intact; Impression: T2N0M0 (IB stage) lung tumor.

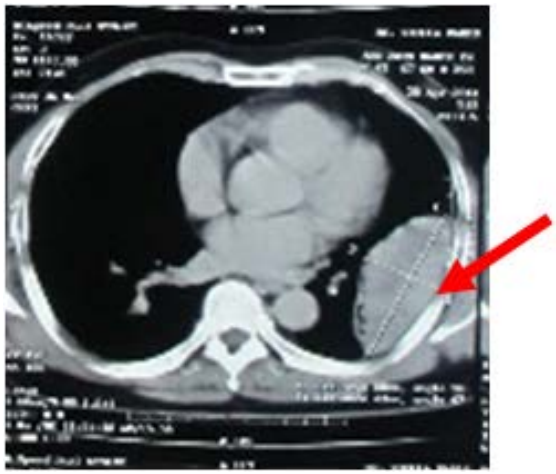

Figure 3. CT Scan Thorax examination, axial view

By CT thoracic scan results, additional investigations were performed on CT Scan Vertebra Thoracolumbar, CT scan of the Head, abdominal ultrasound, and bronchoscopy to determine whether or not the tumor metastases were present. In these patients, other investigations are above normal.

Based on history of the disease, physical examination, and CT scan result, the patient was diagnosed with inferior lobe lung tumor in suspicion malignancy and anterolateral heterogeneous thoracic and lobectomy surgery on 18 June 2014 at Academic Hospital of Jaury Makassar but intraoperative obtained tumor stemmed at inferior lobe of the left and free of surrounding tissue (resectable), so it was decided to do heterogeneous anterolateral thoracotomy surgery and tumor excision.

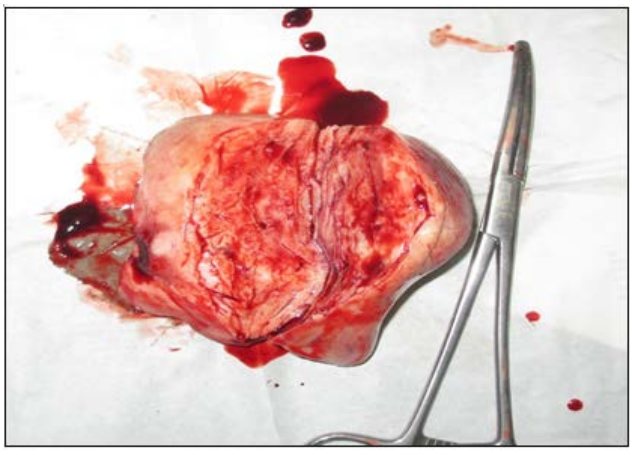

Figure 4. Mass tissue results from the operations

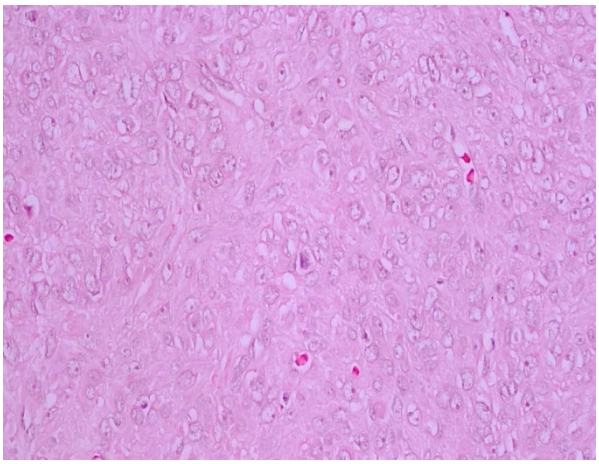

Figure 5. Microscopic anatomical pathology examination

The results of anatomical pathology examination are as follows: Macroscopic: a solid tissue of a square shape of 9 cm x 7 cm x 3 cm, reddish-white cross, chewy, 1 coupe. Microscopic: tissue preparation coated with connective tissue capsule, below it appears proliferation of atypical core fibro histiocytic cells, pleomorphic, prominent nucleolisitik, mitosis activity <9/10 small field of view, tumor cells composed in the form of storiform and fascism, no visible necrosis area. Grading differentiation: tumor differentiated = 2, mitosis = 1, necrosis = 0, total score = 3. Conclusion: Malignant Fibrous Histiocytoma, low-grade malignancy.

After surgery, the patient is repatriated from the hospital in good condition and undergoes routine control every six months. The current state of the patient is good and there is no residual tumor.

3. Discussion

The lung tumor is a neoplasm in the lung tissue that is an abnormal new tissue growth in the lung. Benign or Lung Tumors usually do not cause symptoms or signs, usually found by chance on chest X-ray examination or CT thoracic scan, but may also cause some symptoms such as chest pain, cough, coughing, breathing, and fever when experiencing infection. In these patients are found symptoms of left chest pain experienced since 2 years ago that felt lost arise and spread to the neck and back left [2].

Determination of a Tumor or an early-stage cancer is essential because it affects the prognosis or recovery of the sufferer. The association of risk factors with Lung Tumors or Lung Cancer has been known from many studies, namely 1. Tobacco smoke, the longer a person exposed to tobacco smoke the greater the risk for lung cancer; 2. Radon is an active radio gas formed in rocks and certain soils. People working in mining are more exposed to this gas; 3. Asbestos and chemicals such as arsenic, chromium, nickel, soot, tar. Individuals who work in construction projects or associated with these chemicals have a high-risk of developing lung cancer; 4. Air pollution from various gas components; 5. Hereditary factors; 6. A person who has had Lung Cancer has a high risk of suffering a second time; 7. Individuals with age more than 50 years, associated with decreased immune system. In this patient the history of his work as a field worker in a mining company for 36 years that every day is always in contact with nickel dust. The smoking history lasts for 10 years by spending 1 pack of cigarettes a day [3].

Some types of benign lung tumors (benign) include Hamartoma (most commonly found), Bronchial adenoma, Chondroma, fibroma, or lipoma. While the kind of lung cancer known as bronchogenic carcinoma is divided into two types (based on microscopic), namely small cell lung cancer, small cell lung cancers (SCLC) and non-small cell lung cancers (NSCLC) Is a common type of lung cancer and accounts for about 80% of lung cancer. There are five subtypes, namely Adenocarcinomas, Squamous cell carcinomas, Large cell carcinomas, Bronchial carcinoids and Sarcoma [4].

Sarcoma is a tumor of mesenchymal origin and is a rare case found as a primary tumor in the lungs. Despite the fact that pulmonary sarcomas are rare, the presence of different sarcomas of origin must be removed before being diagnosed with a primary tumor of the lung. These tumors arise from the stroma of bronchial wall elements, blood vessels, or pulmonary interstitium. Primary lung sarcoma forms heterogeneous groups that contain different histologic varieties. The majority are soft tissue sarcomas [5].

Prevalence Primary pulmonary sarcoma is estimated to be less than 0.5% of all types of malignant tumors in the lung. This type of tumor is rare and difficult to determine the histological type. The emergence of sarcomas in other organs should be removed before diagnosing the tumor as a primary tumor of the lung. Malignant Fibrous Histiocytoma is one of the largest types of sarcoma [6].

Rodriquez et al. [7] conducted a study of 7 primary sarcoma cases in the lung and found men more affected than women (6 men and 1 women), and in general, these tumors can appear at any age, Average reported around 50-60 years. In another literature, it is explained that Malignant Fibrous Histiocytoma is 20% -24% of soft tissue sarcoma with male and female Ratio of approximately 2: 1. The tumor peak incidence occurred in the fifth and sixth decades. In this case, the patient was a 62-year-old man [7].

Primary lung sarcoma present in chest X-ray or CT thoracic scan is depicted as tumor mass. This mass can sometimes reach an enormous size and attack the surrounding structures, and can also experience necrosis. Primary sarcoma of the lung grows through the parenchyma and in this way can reach a large size, once reported in research Rodriquez [7] attained the size of 20 cm. The nature of this tumor tends to be invasive and can spread into the chest wall, mediastinum, or heart. In this patient, a chest X-ray examination was done and the CT scan of thorax, the impression of a left lung tumor. Intraoperative obtained tumor mass size 8 cm x 8 cm x 5 cm consistency solid chewy in hamus pulmonic inferior lobe sinus, stem shape, and free from surrounding tissue (resectable) [8].

Malignant Fibrous Histiocytoma rarely metastasizes via the lymphatic system, Reynard et al. have reported tumor metastases through the lymph nodes of about 25%, metastases are more common through the blood, and the most commonly affected organ is the brain, liver, and spine. Therefore, in this patient performed investigations in the form of CT scan of the thoracolumbar vertebra, head CT scan, abdominal ultrasound to find the presence or absence of metastasis from the lung tumor. In this patient, there is no metastatic description of the spine, head or abdominal organs [9].

Table 2. AJCC GTNM Classification and Stage Grouping of Soft Tissue Sarcomas quoted from AJCC Cancer Staging Manual 6th edition

Stage Grouping	Tumor Grade	Primary Tumor	Regional Lymph Node Involvement	Distant Metastasis
Stage I A	G1	T1	N0	M0
Stage I B	G1	T2	N0	M0
Stage II A	G2	T1	N0	M0
Stage II B	G2	T2	N0	M0
Stage III A	G3	T1	N0	M0
Stage III B	G3	T2	N0	M0
Stage IV A	Any G	Any T	N1	M0
Stage IV B	Any G	Any T	Any N	M1

Some literature reports that surgery with resection methods is the best therapy. Adjuvant treatment with radiotherapy and chemotherapy is indicated in patients who can not complete resection, in patients who have metastasized to lymph nodes or malignant tumor types but the results do not lead to a significant increase in life expectancy compared to surgical therapy alone[10].

Jeon [11] reported the use of doxorubicin chemotherapy drugs administered to patients with Malignant Fibrous Histiocytoma in the recurrent postoperative lung, the patient's results were cured without frequent lung and other organs for 36 months after surgery. Fletcher et al. [5] reported the use of a combination of anthracycline (epirubicin) chemotherapeutic drugs plus ifosfamide in the Italian States was administered to patients with Malignant Fibrous Histiocytoma in Lung who could not have a complete resection. Mauri et al. [11] also reported patients with Malignant Fibrous Histiocytoma in the Lung who received chemotherapy in the form of therapeutic tyrosine kinase inhibitor (sunitinib peroral), showed healing [11].

Based on the reporting of his research, Rodriquez [12], all patients in his study who had Malignant Fibrous Histiocytoma tumor type and were classified as T2 N0 M0, and had a tumor diameter less than 12 cm, showed a long life expectancy after only surgery. In this patient was found Malignant Fibrous Histiocytoma T2N0M0 tumor type (stage IB) and surgical therapy only [12].

Histological grading is an important prognostic factor in the sarcoma. Therefore the classification of Tumor Node Metastases (TNM) is modified into a staging system of Grade Tumor Node Metastases (GTNM) for soft tissue tumors. This system, which is clinically very useful, stratifies patients into groups with a marked prognosis pattern. The GTNM staging system is defined as follows [13]:

- G - Tumor grade
  - G1- *Well differentiated.*
  - G2-*Moderately Differentiated.*
  - G3-*Poorly differentiated.*
- T - Tumor primer
  - T1-The largest diameter of the tumor is less than 5 cm.
  - T2-The largest diameter of the tumor is more than 5 cm.
- N - Metastases to regional lymph nodes .
  - N0-No metastases to lymph nodes.
  - N1-with metastases to lymph nodes.
- M – Length metastases
  - M0 - There are no distant metastases
  - M1 - There are distant metastases [14].

The prognostic factors depend on tumor size, tumor type, age, histologic malignancy rate, metastases, and comorbidities. Of all the sarcomas, the best prognosis is shown by Malignant Fibrous Histiocytoma [15].

4. Conclusion

Malignant Fibrous Histiocytoma in the lungs is very rare as a primary tumor. Preoperative diagnosis is difficult to enforce because the tumor is rarely seen by endoscopy and fine needle aspiration [16]. Surgical therapy is the best and must be done radical resection to prevent recurrence. Also, there is some literature that justifies the treatment of adjuvant (chemotherapy or radiotherapy) after surgery [17].

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