An aggressive progression of a lung mass: a rare case of sarcomatoid carcinoma

Manjari Rani Regmi[1*], Ruby Maini[1], Priyanka Parajuli[1], Odalys Estefania Lara Garcia[1], Nitin Tandan[1], Taylor Stone[2], Saad Ullah[2], Mingchen Song[2]

European Journal of Medical Case Reports
Volume 4(5):177–179

https://doi.org/10.24911/ejmcr/173-1587181663

ABSTRACT

Background: Sarcomatoid carcinoma (SC) is a rare, aggressive, and heterogeneous subtype of non-small cell lung cancers. Once the cancer is diagnosed, surgical resection followed by chemotherapy or radiation is the general line of treatment based on the staging.

Case Presentation: We report a case of a young female who presented with 1-week history of shortness of breath and found to have a mass in the lung. She was diagnosed with SC, but resection was not possible because of the cancer size. The patient's clinical status deteriorated as the mass increased in size so rapidly that she died within 18 days of the first evaluation.

Conclusion: Unlike other lung cancers, SC can show aggressive deterioration within a matter of days. When suspected, early evaluation and diagnosis are warranted for the timely treatment of SC.

Keywords: Lung cancer, non-small cell lung cancer, sarcomatoid carcinoma.

Received: 19 April 2020 **Accepted:** 06 May 2020

Type of Article: CASE REPORT **Specialty:** Internal Medicine

Funding: None.

Declaration of conflicting interests: The authors declare that there is no conflict of interests regarding the publication of this case report.

Correspondence to: Manjari Rani Regmi
*Department of Internal Medicine, Southern Illinois University School of Medicine, Springfield, IL.
Email: manjariregmi08.mr@gmail.com
Full list of author information is available at the end of the article.

Background

Sarcomatoid carcinoma (SC) represents about 1.3% of all lung cancers and 0.4% of non-small cell lung cancers (NSCLC). It is a rare heterogeneous subtype of NSCLC that is more common in smokers and males [1,2]. The male-to-female ratio is estimated to be 4.4:1 [3]. It is usually seen in the 5th–7th decade of life [4,5]. Although common symptoms are thoracic pain, cough, hemoptysis, weight loss, dyspnea, fatigue, and fever, many patients can be asymptomatic as well. We report a case of a female who presented with subtle symptoms and deteriorated quickly because of SC. To the best of the authors' knowledge, this is the first case of SC, in which clinical status deteriorated so quickly that the patient expired within 18 days of the first evaluation.

Case Presentation

A 50-year-old female with a medical history of depression, hypertension, Chronic obstructive lung disease (COPD), and chronic vaping (for 4 years) presented with 1-week symptoms of shortness of breath and pleuritic chest pain. Until a week earlier, she did not show any symptoms. On examination, we recorded bilateral wheezing and edema in her ankles. All vitals except oxygen saturation (requiring 4 l/minutes) were normal. The laboratory results were significant for leukocytosis and microcytic anemia. A mass in the right lung was observed in the chest X-ray (Figure 1, top left) that was later confirmed in computed tomography (CT head) with contrast as a right upper lobe mass measuring 11.2 × 10.5 × 11.2 cm (Figure 1, top right). Computed tomography (CT) also showed ground-glass opacities within the posterior right lung and hilar lymphadenopathy. It is interesting to note that a CT chest performed 1 year earlier showed no abnormalities. We decided to proceed with a CT-guided biopsy of the mass, and preliminary pathology yielded positive for malignant cells. While waiting for final pathology results, the patient was treated with diuretics, steroids, and antibiotics for fluid overload, COPD exacerbation, and obstructive pneumonia. The final pathology resulted in SC which was positive for Ki-67+ and P63. It was negative for other markers such as AE1/AE3, CD 31, CD45RB, CD68, CK5/6, CK7, CK20, Desmin, Melan A, Napsin A, Osteoclast associated Ig-like receptos (OSACR), S 100 protein, Smooth muscle actin (SMA), and Thyroid transcription factor-1 (TTF1) with pending next-generation sequencing results.

She was not considered as a surgical candidate for resection because of the mass size. To downsize the mass, we planned on treating her with 2,000 cGy in five fractions. However, we could only treat her with 800 cGy in two fractions as her respiratory and hemodynamic status deteriorated quickly. Repeat chest CT scan showed an increase in mass diameter from 11.2 to 15 cm (within 12 days) with mass effect and superior vena cava (SVC) compression (Figure 1, bottom left and right).

CT head and CT abdomen–pelvis performed for staging did not show any metastatic focus. Brain Magnetic resonance imaging (MRI), bone scan, and Position emission tomography (PET) CT, however, could not be performed due to her clinical decompensation. Therefore, she was upgraded to Intensive Care Unit (ICU) for intubation and vasopressors. After intubation and stabilization, she was transferred to a different center for better expertise on SVC stent and second oncology opinion. She received the SVC stent on the same day and continued requiring high FiO2 and vasopressors. After a second surgical opinion, she was still considered as a non-surgical candidate. Given a grim prognosis of the rapidly aggressive cancer, her family opted for comfort measures. She was extubated, and comfort measures were initiated. She subsequently expired on the same day, 18th day since her first hospital stay (Figure 2).

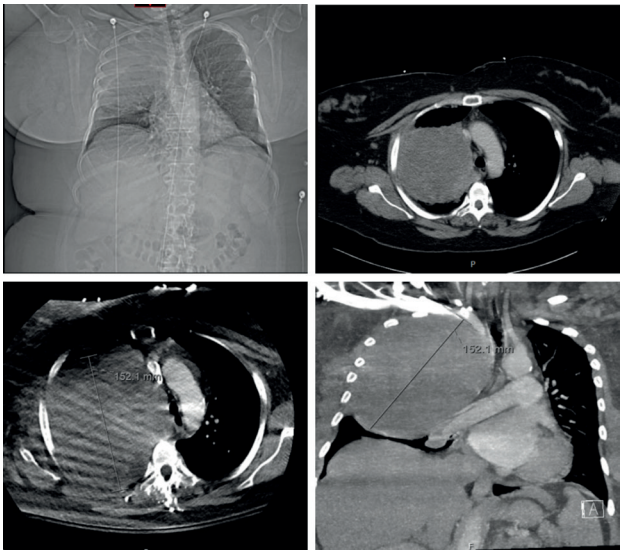

Figure 1. *Chest X-ray showing right lung mass [top left]; CT with contrast: mass 11.2 × 10.5 × 11.2 cm [top right]; Repeat chest CT w/co showing 15-cm right lung mass axial view [bottom left]; and coronal view [bottom right].*

Discussion

SCs are typically known to have a poor prognosis and usually present as high-grade cancers with a median survival time of 10 months [6]. Larger tumor size (>5 cm), clinical stage >1, and lymph nodes involvement are associated with lesser survival time [7]. The patient met only one of these three criteria until decompensation. She presented with a large tumor that grew rapidly during the hospital stay, resulting in her quick decompensation (Figure 2). This case is unique given the patient's gender, vaping history, and rapid deterioration, which has not been reported in the literature previously [8–10].

The patient was not able to undergo surgery, and the literature on such patients was not available. Therefore, we investigated patients who underwent surgery and compared their post-surgery survival time. In a case series by Hountis et al. [9], they discuss three patients who presented with SC, underwent successful surgery, and received post-operative chemotherapy. Of those three patients, two died after 7 and 12 months, and the third patient was alive until the time of case writing (21 months' post-surgery). Another study by Nakajima et al. [10] analyzed 37 patients who suffered from SC. About 20 deaths were reported with a time of deaths ranging

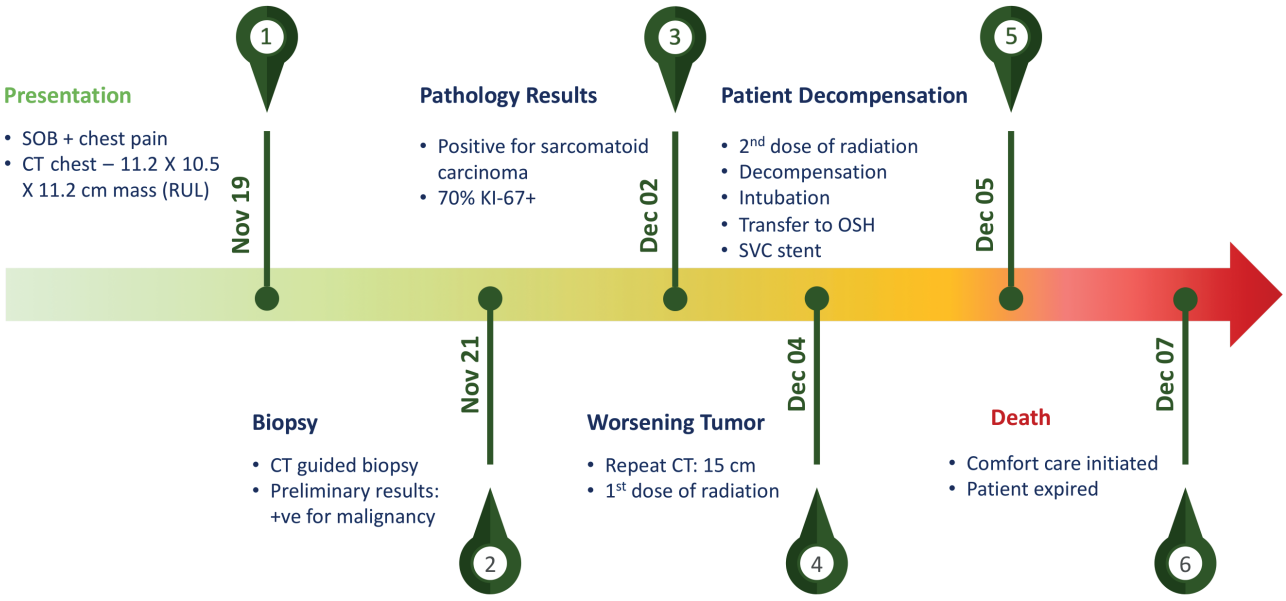

Figure 2. *Timeline showing patient's hospital stay.*

from 7 days to 64 months after surgical resection with a mean of 15.4 months.

In the case of this patient, we observed a rapid increase of the mass diameter from 11.2 to 15 cm in a short span of 12 days (Figure 1), suggesting that the tumor might have started not a long time ago. This hypothesis is further bolstered by the evidence that the CT scan performed 1 year ago was normal. It is uncertain whether the patient would have been an eligible surgical candidate and whether she presented a few weeks earlier. However, what we know for certain is that SCs can show aggressive deterioration within a matter of days. When suspected, early evaluation and diagnosis are warranted for the timely treatment of SCs.

What is new?

A SC is a rare form of non-small cell lung cancer. Currently, SC represents about 1.3% of all lung cancers and 0.4% of NSCLC. It is a rare heterogeneous subtype of NSCLC that is more common in smokers and males. This is a case of a young female who presented with a large mass in the lung that increased in size quickly, and her condition deteriorated rapidly. This case serves as a data point for this rare form of cancer and illustrates its grave course. This case is unique because the patient's clinical status deteriorated as the mass increased in size so rapidly that she expired within 18 days of the first evaluation.

Acknowledgments

Thanks to the co-authors.

Consent for publication

Written informed consent was taken from the family of the patient.

Ethical approval

Ethical approval is not required at our institution for publishing an anonymous case report.

Author details

Manjari Rani Regmi[1], Ruby Maini[1], Priyanka Parajuli[1], Odalys Estefania Lara Garcia[1], Nitin Tandan[1], Taylor Stone[2], Saad Ullah[2], Mingchen Song[2]

[1]Department of Internal Medicine, Southern Illinois University School of Medicine, Springfield, IL

[2]Department of Pulmonary and Critical Care Medicine, Southern Illinois University School of Medicine, Springfield, IL

References

1. Vieira T, Girard N, Ung M, Monnet I, Cazes A, Bonnette P, et al. Efficacy of first-line chemotherapy in patients with advanced lung sarcomatoid carcinoma. J Thorac Oncol. 2013;8(12):1574–7. https://doi.org/10.1097/01.JTO.0000437008.00554.90
2. Martin LW, Correa AM, Ordonez NG, Roth JA, Swisher SG, Vaporciyan AA, et al. Sarcomatoid carcinoma of the lung: a predictor of poor prognosis. Ann Thorac Surg. 2007;84(3):973–80. https://doi.org/10.1016/j.athoracsur.2007.03.099
3. Shen XY, Lin ZF, Lin Q, Ruan Z, Huang HL, Ju CQ, et al. Pulmonary sarcomatoid carcinoma: a case report. Contemp Oncol (Pozn). 2013;17(2):210–3. https://doi.org/10.5114/wo.2013.34375
4. Oliveira MF de, Watanabe SC, Andrade MPG de, Rotta JM, Pinto FCG. Sarcomatoid carcinoma of the lung with brain metastases. J Bras Pneumol. 2013;39(6):753–6. https://doi.org/10.1590/S1806-37132013000600016
5. Sanyal K, Sabanathan K. Lung carcinosarcoma as a rare biphasic sarcomatoid carcinoma: a case report. Cases J. 2009;2(1):7968. https://doi.org/10.4076/1757-1626-2-7968
6. Sharma A, Contreras E, Sandoval K, Nicholson L, Waalen J, Bhangoo M. 223P Sarcomatoid lung carcinoma: an uncommon and deadly entity. J Thorac Oncol. 2018;13(4):S134. https://doi.org/10.1016/S1556-0864(18)30495-7
7. Fishback NF, Travis WD, Moran CA, Guinee Jr DG, McCarthy WF, Koss MN. Pleomorphic (spindle/giant cell) carcinoma of the lung. A clinicopathologic correlation of 78 cases. Cancer. 1994;73(12):2936–45. https://doi.org/10.1002/1097-0142(19940615)73:12%3C2936::AID-CNCR2820731210%3E3.0.CO;2-U
8. Venissac N, Pop D, Lassalle S, Berthier F, Hofman P, Mouroux J. Sarcomatoid lung cancer (spindle/giant cells): an aggressive disease? J Thorac Cardiovasc Surg. 2007;134(3):619–23. https://doi.org/10.1016/j.jtcvs.2007.05.031
9. Hountis P, Moraitis S, Dedeilias P, Ikonomidis P, Douzinas M. Sarcomatoid lung carcinomas: a case series. Cases J. 2009;2(1):7900. https://doi.org/10.4076/1757-1626-2-7900
10. Nakajima M, Kasai T, Hashimoto H, Iwata Y, Manabe H. Sarcomatoid carcinoma of the lung: a clinicopathologic study of 37 cases. Cancer. 1999;86(4):60816. https://doi.org/10.1002/(SICI)10970142(19990815)86:4%3C608::AID-CNCR9%3E3.0.CO;2-1

Summary of the case

1	**Patient (gender, age)**	Female, 50
2	**Final diagnosis**	SC
3	**Symptoms**	Shortness of breath
4	**Medications**	Steroid, broad spectrum antibiotics, and furosemide
5	**Clinical procedure**	CT guided biopsy, intubation, and radiation treatment
6	**Specialty**	Internal medicine, pulmonology and critical care, and hematology and oncology