ORIGINAL RESEARCH PAPER
Volume - 13 | Issue - 02 | February - 2024 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

MANTLE CELL LYMPHOMA MANIFESTING AS CAVITARY LESION IN THE LUNG: A RARE FINDING

Internal Medicine

Poonam Tawde — Internal Medicine, Chandler Regional Medical Center, Arizona, USA; Msc Physiotherapy, University of Nottingham, Nottingham, GBR

Salim Mohammad — Critical Care, Chandler Regional Medical Center, Arizona, USA

Jonathan Lambo — Epidemiology and Public Health, Avalon University School of Medicine, Willemstad, CUW

Yusuf Khan — Internal Medicine, Midwestern University Arizona College of Osteopathic Medicine, Arizona, USA

ABSTRACT

Mantle cell lymphoma (MCL) is often diagnosed at an advanced stage, commonly presenting with widespread lymph node and organ involvement. Pulmonary manifestations in MCL are infrequent, and the occurrence of cavitary lesions within the lungs is exceptionally rare. This case report describes a 71-year-old male with a history of pneumonia and a known diagnosis of Mantle lymphoma who presented with persistent right upper lung airspace consolidation, accompanied by symptoms such as weakness, shortness of breath, cough, and fatigue. Imaging revealed severe consolidation with surrounding septal thickening and cavitary changes in the right upper lobe. Further evaluation, including chest X-ray and CT scans, demonstrated the progression of consolidation. A subsequent CT chest revealed a thick-walled cavitary lesion with surrounding ground-glass opacities. Laboratory results ruled out Coccidioides infection, prompting a robot-assisted bronchoscopy for a comprehensive investigation. The bronchoscopy revealed abnormal B-lymphocytes, and various biopsies were performed, excluding granulomas or malignancy. In discussion, the rarity of pulmonary involvement in MCL is emphasized, especially with cavitary lesions. Pulmonary infiltrates in immunosuppressed patients necessitate thorough diagnostic procedures, considering both infectious and non-infectious causes. While non-Hodgkin's lymphoma rarely involves the lungs at diagnosis, patterns on CT imaging vary. Recognition of pulmonary manifestations, including cavitary lesions, is crucial for accurate diagnosis and treatment planning in MCL patients. Treatment options, such as chemotherapy, radiation therapy, or targeted therapies, depend on the final diagnosis, impacting prognosis and potential complications. This case underscores the importance of identifying and characterizing pulmonary manifestations in MCL for optimal patient care.

KEYWORDS

INTRODUCTION

Mantle cell lymphoma (MCL) is an aggressive and relatively rare form of non-Hodgkin lymphoma characterised by the proliferation of malignant B-cells within the mantle zone of lymphoid follicles [1] . It accounts for approximately 6% of all lymphomas and typically presents with lymphadenopathy, bone marrow involvement, and extranodal manifestations [1]. While pulmonary involvement in MCL is relatively uncommon, the development of cavitary lesions in the lungs is even rarer. This case report aims to describe a patient with a history of MCL who presented with unresolved pneumonia and a suspected lung mass, ultimately leading to the discovery of a cavitary lesion in the right upper lobe.

The association between MCL and pulmonary involvement has gained attention in recent years, with several studies documenting such occurrences.One notable study [2] presented a case of MCL in a patient who presented with multiple pulmonary nodules, including a cavitary lesion, despite having no known history of lymphoma. The development of cavitary lung lesions in this case emphasised the potential pulmonary manifestations of MCL. In another study [3] by a case of MCL with lung involvement was described, where the patient presented with cavitary lung lesions. This report further supports the notion that MCL can manifest in the lungs with the development of cavitary lesions. These findings collectively suggest that pulmonary involvement, including the formation of cavitary lesions, can be observed in patients with MCL.

The presence of cavitary lesions in MCL raises important clinical implications. First, the identification of such pulmonary manifestations can aid in the diagnosis and staging of MCL, as pulmonary involvement may indicate an advanced disease state. Additionally, the presence of cavitary lesions may warrant further investigation to assess the underlying causes, such as necrosis within the tumour mass or concurrent infections [1,2]. Furthermore, the development of cavitary lesions in MCL can have implications for treatment decisions and patient outcomes. The presence of lung involvement, particularly with cavitary lesions, may require tailored treatment approaches that consider the potential impact on lung function and overall prognosis. The recognition of pulmonary manifestations, including cavitary lesions, can guide physicians in determining the most appropriate therapeutic strategies, such as systemic chemotherapy, targeted therapies, or surgical interventions. The formation of cavities within pulmonary lesions can occur due to various mechanisms. In the context of lymphomas, cavitary lesions may arise from necrosis within the tumor mass or secondary to infection. Malignant lymphoma cells infiltrating the lung parenchyma can cause tissue destruction, leading to the formation of cavities. Additionally, superimposed infections, such as bacterial or fungal pneumonia, can contribute to cavity formation within lymphomatous lung lesions.

In this case report, we present the clinical findings and diagnostic procedures performed on a 71-year-old male patient with a history of MCL, highlighting the presence of a cavitary lesion in the right upper lobe. The identification and characterization of such pulmonary manifestations are crucial for appropriate management and treatment planning in patients with MCL.To our knowledge, this is a unique case that adds to the existing literature on pulmonary involvement in MCL. The significance of recognizing cavitary lung lesions in the context of MCL lies in its potential impact on disease prognosis, treatment decisions, and patient outcomes. Further investigation and analysis are necessary to better understand the pathogenesis and clinical implications of cavitary lesions in MCL.

Case Presentation

A 71-year-old married male presented with a chief complaint of shortness of breath and difficulty breathing. His medical history included a prior diagnosis of Mantle lymphoma and a recent episode of pneumonia. He denied experiencing any fevers or other associated symptoms. During subjective assessment, the patient appeared awake, alert, and oriented. Objective findings revealed a regular rate and rhythm of the cardiovascular system, good air entry in the respiratory system without the presence of wheezes, crackles, or rhonchi. His abdomen was flat and non-tender, without signs of hepatosplenomegaly or hernias. Additionally, there were no gross deformities, clubbing, edema, or cyanosis observed in the musculoskeletal system. No focal neurologic deficits were noted, and the patient appeared to be psychologically stable. The patient's current medications included Levofloxacin 750 mg, Ventolin HFA inhaler, and Imbruvica 420 mg. There was no history of diabetes or allergies, and the patient was a non-smoker with moderate alcohol consumption.

Initial Chest X-ray and CT Scan showed right upper lung airspace

consolidation. Left lung remained clear. CT scan revealed mildly enlarged mediastinal lymph nodes, moderate scattered calcified coronary artery disease, a simple cyst in the right kidney, and severe consolidation with surrounding septal thickening and cavitary change in the right upper lobe. Antibiotic treatment and close follow-up were recommended. A Follow-up CT and X-ray showed progression of right upper lung airspace consolidation since the previous exam, while the left lung remained clear. CT scan revealed severe consolidation with mild surrounding septal thickening and cavitary change in the right upper lobe.No suspicious pulmonary nodules were identified. Antibiotic treatment and close follow-up was continued. A CT Chest Without Contrast performed for a pre-surgical assessment for Navigational Bronchoscopy. Findings included a thick-walled cavitary lesion in the right upper lobe with surrounding ground-glass opacities. Mild centrilobular emphysema and a small lingular nodule with possible peripheral calcification were also noted. No consolidation, pleural effusion, or pneumothorax was observed. A diagnostic laboratory findings revealed that the patient underwent a Coccidioides infectious test, specifically a Coccidioides Screen with Reflex IMDF Confirmation, which yielded negative results for both Coccidioides Antibody IgG (EIA) and Coccidioides Antibody IgM (EIA). These negative findings indicate the absence of an active or recent Coccidioides infection in the patient.To further investigate the lung mass in a 71-year-old male patient, a robot-assisted bronchoscopy procedure was performed. The patient was under general anaesthesia, and the procedure was completed without complications or significant blood loss. During the bronchoscopy, needle biopsies and forceps biopsies were obtained using the robot, along with bronchoalveolar lavage (BAL). The collected specimens, including scant bronchial cells, blood, and a small population of abnormal B-lymphocytes, were sent to the laboratory for further analysis. The patient tolerated the procedure well, and vital signs remained stable throughout. Oxygen saturation levels were maintained above 92%, and postoperative chest X-ray confirmed the absence of pneumothorax. Following the successful extubation, the patient's postoperative condition was deemed satisfactory. In the Fine Needle Aspirate Report, it was noted that the obtained specimens from the right upper lobe showed scant bronchial cells, blood, and a small population of abnormal B-lymphocytes. No granulomas or malignancy were detected. The bronchoalveolar lavage also yielded no granulomas or malignancy, with negative results for GMS fungus and A B acid-fast stains. Flow cytometry performed on the lung tissue confirmed the presence of abnormal B-lymphocytes.

DISCUSSION

The presented case report highlights the complexities associated with unresolved pneumonia in a 71-year-old male patient with a history of Mantle cell lymphoma, prompting concerns of a potential non-Hodgkin lymphoma or another malignancy. The diagnostic workup, encompassing various imaging modalities, robotic bronchoscopy, and specimen analysis, played a pivotal role in shedding light on the underlying pathology.

Imaging findings, notably the presence of progressive right upper lung airspace consolidation and a mass-like consolidation with surrounding septal thickening and cavitary changes, raised red flags regarding a potentially malignant lesion. The unique occurrence of a cavitary lesion in the context of Mantle cell lymphoma is an uncommon discovery, underscoring the necessity for exhaustive diagnostic assessments [1]. Moreover, the identification of ground-glass opacities and a lingular nodule in the CT scan further exacerbated suspicions and necessitated further investigations [1,4-6]

The robot-assisted bronchoscopy procedure was instrumental in obtaining specimens for analysis. While the findings indicated scant bronchial cells, blood, and a small population of abnormal B-lymphocytes, clinical correlation is vital to pinpoint the cause of the right upper lobe cavity. The absence of granulomas or malignancy in the specimens is noteworthy, but the microbiological culture results are imperative for a comprehensive assessment. The presence of abnormal B-lymphocytes also raises concerns about the potential involvement of a lymphoproliferative disorder, accentuating the significance of flow cytometry in the diagnostic process [1]

Based on the presented case and contemporary literature, it is evident that further interventions and treatment options should be considered. A regimen of close follow-up with repeat imaging is recommended to monitor the lung mass's progression and evaluate the treatment response. Depending on the final diagnosis, treatment modalities such as chemotherapy, radiation therapy, or targeted therapies may be warranted, as per current guidelines [1,5,7-9]. The engagement of a multidisciplinary team, comprising pulmonologists, oncologists, and pathologists, is pivotal for ensuring the best possible patient management.

In the presented case of a 71-year-old male with unresolved pneumonia and a suspected lung mass, the current guidelines for treatment and potential complications play a crucial role in guiding clinical decisions and ensuring the best possible outcomes.

As per the National Comprehensive Cancer Network (NCCN) guidelines for non-Hodgkin lymphomas [5] , the management of Mantle cell lymphoma is multifaceted and should be individualized based on several key factors. The stage of the lymphoma, which indicates the extent of its spread, is a critical determinant of the treatment approach. Treatments may vary for early-stage disease as opposed to more advanced stages.The patient's general health, including factors such as age and comorbidities, plays a significant role in decision-making. Treatment choices should be tailored to minimize potential adverse effects. The patient's response to initial treatments and their tolerance of therapy influence the subsequent course of action. Some patients may achieve long-term remission, while others may require ongoing or salvage treatments. Treatment modalities for Mantle cell lymphoma can include chemotherapy: various chemotherapy regimens may be employed as an initial treatment, consolidation therapy after a response to induction therapy, or for recurrent disease. Immunomodulatory drugs, such as lenalidomide, and targeted therapies like ibrutinib are used to treat Mantle cell lymphoma.

For eligible patients, autologous or allogeneic stem cell transplantation may be considered, especially in the context of relapsed or refractory disease. The radiation therapy may be utilised for localised areas of involvement or symptomatic relief.

The presence of a lung mass, regardless of its ultimate diagnosis, can lead to a spectrum of complications. Patients may experience worsening shortness of breath and cough, which can progress to respiratory failure. There is an increased risk of respiratory infections, such as pneumonia, in the vicinity of the lung mass. Abscess formation within the mass is also a potential complication. Depending on the nature of the lung mass, there may be a risk of metastasis to other organs, including the brain, bone, or other pulmonary regions.

CONCLUSION

The management of this complex case underscores the significance of a holistic approach that takes into account the patient's medical history, the current clinical presentation, and the guidance provided by current treatment guidelines. It is essential to navigate this intricate medical scenario by considering a comprehensive understanding of patient history, adhering to current treatment guidelines. In the realm of non-Hodgkin lymphomas, such as Mantle cell lymphoma, the National Comprehensive Cancer Network (NCCN) guidelines serve as a valuable resource. Vigilance for potential complications related to the presence of a lung mass should not be underestimated as these complications can significantly impact the patient's quality of life and overall prognosis, reinforcing the importance of diligent monitoring and intervention. In complex cases like this, a multidisciplinary approach is paramount. The involvement of a spectrum of healthcare professionals, including pulmonologists, oncologists, radiologists, pathologists, and others, fosters a collaborative environment where expertise from various fields converges to optimise patient care. This collaborative model facilitates in-depth discussions, informed decision-making, and ensures that the patient benefits from the collective knowledge and experience of the medical team.

In the face of intricate and challenging clinical scenarios, as illustrated in this case, it is the combination of these elements-a comprehensive understanding of the patient's history, adherence to established treatment guidelines, vigilance for potential complications, multidisciplinary collaboration, and vigilant clinical monitoring-that collectively contribute to the optimization of patient outcomes. By adhering to these principles, healthcare providers can provide the best care and support to patients facing complex medical conditions.

REFERENCES

1. M.Dreyling, Campo, Hermine, Jerkeman, Le Gouill: Newly diagnosed and relapsed mantle cell lymphoma: ESMO Clinical Practice Guidelines for diagnosis, treatment and

follow-up. Annals of Oncology. 2017, 7:10.1093/annonc/mdx223
2. Hematopathology. Laboratory Investigation. 2007, 87:10.1038/sj.labinvest.3700576
3. Esha Jain, Ali Hani, Al-Tarbsheh, et al.: Hodgkin's Lymphoma Presenting as Multiple Cavitary Lung Lesions . European Journal of Case Reports in Internal Medicine. 2021, 10.12890/2021_003024
4. Dreyling, Zucca: Marginal zone lymphomas: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. Annals of Oncology. 2020, 17-29. 10.1016/j.annonc.2019.10.010
5. Zachary S., Robert: Pulmonary Mantle Cell Lymphoma: A Rare Manifestation of an Uncommon Condition. Rare Tumors. 2012, 4:10.4081/rt.2012.e11
6. Yan, Hongyu, Jun, Qinghua: Comparisons between the National Comprehensive Cancer Network (NCCN) non-small-cell lung cancer (NSCLC) Clinical Practice Guidelines (Chinese version), the NCCN original edition, and the European Society for Medical Oncology NSCLC Guidelines in 2009. Thoracic Cancer. 2010, 1:83-86. 10.1111/j.1759-7714.2010.00016.x
7. Jonathan R, Anju Maria Thomas, Brent L , et al.: Characterization and Purification of Neoplastic Cells of Nodular Lymphocyte Predominant Hodgkin Lymphoma from Lymph Nodes by Flow Cytometry and Flow Cytometric Cell Sorting. 2017, 187:304-317. 10.1016/j.ajpath.2016.10.007
8. Simone, Daniele, Martin, et al.: Tailored treatment in mantle cell lymphoma. Annals of Lymphoma. 2020, 10.21037/aol-2018-mcl-010
9. FDA approves new treatment for adults with mantle cell lymphoma. Case Medical Research. 2018, 10.31525/cmr-29dd9aa