

A Case Report on the Occurrence of Bilateral Nerve Palsy and Hypercalcemia in Sarcoidosis

Sherin Mariam Varghese¹, Shalet Sara Shaji², Dr. Mohan Varghese³

¹Pharm D Intern, Nazareth College of Pharmacy, Othara, Thiruvalla

²Pharm D Intern, Nazareth College of Pharmacy, Othara, Thiruvalla

³Consultant Physician and Professor, Department of General Medicine, Believers Church Medical College Hospital, Thiruvalla, Kerala

Abstract: *Sarcoidosis is an inflammatory disease that affects multiple body organs, predominantly the lungs and lymph glands. In patients with sarcoidosis, there is the formation of granulomas which contain inflamed tissues. These granulomas may alter the normal structural and functional properties of the organs. Neurological involvement in sarcoidosis is rare. Various parts of the nervous system are affected in sarcoidosis while Cranial nerves II, VII, and VIII are commonly involved. Disturbances of calcium homeostasis are relatively uncommon in sarcoidosis, this is due to the overproduction of calcitriol by activated macrophages. In this study we are going to discuss the occurrence of facial nerve palsy and hyperkalemia in patients with sarcoidosis.*

Keywords: Neurosarcoidosis, Hypercalcemia, Facial Nerve Palsy, Sarcoidosis

1. Introduction

Sarcoidosis is a steroid responsive, systemic heterogenous granulomatous disease of unknown etiology that results in inflammation of pulmonary and extra pulmonary sites. In a minority of patients it can result in fibrosis and permanent organ damage. It affects more than one organ in 30% of patients and is recurrent or progressive in 1/3rd although neurologic and cardiac disease is present in only about 12% of patients [1]. It mostly affects middle - aged patients and there is a slight female predominance [3]. Since sarcoidosis was first described more than a century ago, the etiologic determinants causing this disease remain uncertain. Studies suggest that genetic, host immunologic, and environmental factors interact together to cause sarcoidosis. [5]

Neurological involvement in sarcoidosis is relatively uncommon, with a reported prevalence of 3 - 10%. Any part of the nervous system can be affected, with the cranial nerves, meninges, and brain parenchyma being the most commonly involved [2]. Cranial nerves II, VII, and VIII are the most commonly affected. In over 90% of cases of neurosarcoidosis (NS), systemic manifestations are also observed [2]. However, in almost 50% of patients with suspected NS, the neurologic symptoms represent the first defining manifestation of sarcoidosis. [3]

Facial neuropathy occurred less commonly than historically reported, and it often acts as a forerunner to systemic sarcoidosis and more widespread neurologic disease. Recurrent attacks of neurosarcoidosis occur early at high frequency following facial palsy. [3]

Facial neuropathy occurs less commonly than historically reported, and it often acts as a forerunner to systemic sarcoidosis and more widespread neurologic disease. Recurrent attacks of neurosarcoidosis occur early at high frequency following facial palsy. [6]

Dysregulated calcium metabolism is a well-recognized

complication of sarcoidosis, resulting in hypercalcaemia (prevalence 5–10%), Extra renal synthesis of calcitriol [1, 25 (OH) 2D3] is central to the pathogenesis of abnormal calcium homeostasis, but alterations in parathyroid hormone (PTH) activity and the expression of PTH-related peptide have also been demonstrated. [7]

2. Case

A 65 yr old lady with complaints of Loss of weight and appetite for 4 months and chronic cough for 4 months. Patient also has complaints of occasional difficulty in swallowing food with a history of secondary hypertension and hypothyroidism. Patient was found to have increased levels of calcium (14.2), elevated creatinine (2.3), and suppressed PTH. She was started on Inj. ZOLENDRONIC ACID 4 Mg in 100ml normal saline, gastro protective and other supportive measures while being in hospital. In order to rule out malignancy CECT THORAX AND ABDOMEN was in consideration after nephrology consultation in view of increased creatinine levels. On the next day the patient was found to have facial nerve palsy and a nerve conduction study was done which showed B/L Lower motor neuron facial nerve palsy. Neuroconsultation was done, MRI brain with contrast was done according to their advice. Gastro Medicine consultation was done in - view of dysphagia, loss of weight and loss of appetite and advised to do USG ABDOMEN AND PELVIS and CECT THORAX AND NECK, which were done respectively and which showed Mild to moderate fatty liver. CT Neck thorax and Abdomen with contrast was done after nephrology clearance. The results of CT abdomen showed Mild thickening of gastric antero - pyloric region, tiny right renal cortical cyst and Enlarged upper pre - aortic lymph nodes. CT thorax showed a Clustered foci of perilymphatic nodules, nodular interstitial and fissural thickening and linear fibrotic bands in lung field's. Enlarged mediastinal and hilar lymph nodes. These Features could represent pulmonary sarcoidosis. Osteophyte induced fibrotic changes in bilateral lung fields. Patient's serum calcium and creatinine levels were gradually decreased to normal levels. Viral markers were non

- reactive. Serum ACE was sent was found to be high (231.6). CECT findings correlates with possible sarcoidosis. the microscopy showed Section shows tissue fragments exhibiting multiple discrete non - caseating granulomas composed of epithelioid histiocytes with abundant eosinophilic cytoplasm and langhan's giant cells and other type of multinucleated giant cells. Intervening areas show small lymphocytes and occasional giant cells show asteroid - like bodies in the cytoplasm.

3. Discussion

Sarcoidosis occurs in 90 - 98 % of patients during the course of their disease. 11 - 22 % of patients have involvement of either the liver, Skin, ocular (uveitis), Lymph nodes and spleen. The occurrence of hypercalcemia is < 5%. The presence of non - caseating/necrotizing granuloma must be present on biopsy. In this study, the microscopy studies of the patient showed tissue fragments exhibiting multiple discrete non - caseating granulomas composed of epithelioid histiocytes with abundant eosinophilic cytoplasm and langhan's giant cells and other type of multinucleated giant cells.

From a study conducted The most common reasons for sarcoid hospitalizations were cardiovascular, followed by respiratory, hematologic, and infectious. Among the 330, 470 sarcoid hospitalizations, cardiovascular (20.4%) and respiratory (16.9%) diagnoses were the most common reasons for hospitalization.

Neurological involvement in sarcoidosis is relatively uncommon, with a reported prevalence of 3 - 10%. Any part of the nervous system can be affected, with the cranial nerves, meninges, and brain parenchyma being the most commonly involved. Cranial nerves II, VII, and VIII are frequently affected. Mildly reduced CMAP amplitudes from bilateral facial (Nasalis) nerves were noted in the nerve conduction study, and Blink reflex study from bilateral eyes were absent for our patient.

Hypercalcemia is seen in about 6 - 18% of cases of sarcoidosis and is driven by an increased 1, 25 - dihydroxy vitamin D due to underlying granulomatous inflammation. Patient was found to have increased levels of calcium (14.2) and also suppressed PTH.

4. Conclusion

The occurrence of bilateral nerve palsy and hypercalcemia in patients with sarcoidosis is relatively uncommon. The presence of non - caseating/necrotizing granuloma must be present on biopsy to detect sarcoidosis. In the neurological involvement of sarcoidosis the Cranial nerves II, VII, and VIII are frequently affected. Hypercalcemia is seen in about 6 - 18% of cases of sarcoidosis and is driven by an increased 1, 25 - dihydroxy vitamin D due to underlying granulomatous inflammation.

Acknowledgement

The authors would like to thank the Department of General Medicine, Believers Church Medical College Hospital, Thiruvalla and the Department of Pharmacy practice,

Nazareth College of Pharmacy, Othara for helping in publishing this case report.

Conflict of Interest

The authors declared that there is no conflict of interest.

Abbreviations

NS: Neurosarcoidosis

CMAP: Cyclic adenosine monophosphate

PTH: Parathyroid hormone

ACE: Angiotensin Converting Enzyme

CECT: Contrast Enhanced Computed Tomography

USG: Ultrasonography

References

- [1] Sarcoidosis: Review of Diagnosis and Treatment <https://austinpublishinggroup.com/orthopedics-rheumatology/fulltext/ajor-v8-id1097.pdf>
- [2] Manansala M, Sami F, Arora S, Manadan AM. Reasons for Hospitalization and All - Cause Mortality for Adults with Sarcoidosis. American Journal of Medicine Open.2023 Jun 1; 9: 100037.
- [3] Nascimento ML, Casanova R, Rocha FR, Malheiro F, Araújo P. Neurosarcoidosis: a case report. Cureus.2022 Apr 26; 14 (4).
- [4] Gandhi T, QUIROGA EF, Atchley W. HYPERCALCEMIA IN SARCOIDOSIS: A CASE WITH INAPPROPRIATELY NORMAL LEVELS OF 1, 25 - DIHYDROXY VITAMIN D. Chest.2022 Oct 1; 162 (4): A1253.
- [5] Chen ES, Moller DR. Etiologies of sarcoidosis. Clinical reviews in allergy & immunology.2015 Aug; 49: 6 - 18.
- [6] Nwebube CO, Bou GA, Castilho AJ, Hutto SK. Facial nerve palsy in neurosarcoidosis: clinical course, neuroinflammatory accompaniments, ancillary investigations, and response to treatment. Journal of Neurology.2022 Oct; 269 (10): 5328 - 36.
- [7] Conron M, Young C, Beynon HL. Calcium metabolism in sarcoidosis and its clinical implications. Rheumatology.2000 Jul 1; 39 (7): 707 - 13.
- [8] https://www.researchgate.net/publication/368795893_Reasons_for_Hospitalization_and_All_Cause_Mortality_for_Adults_with_Sarcoidosis