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General Medicine

IMMUNE THROMBOCYTOPENIC PURPURA PRECIPITATED BY MILIARY TUBERCULOSIS

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ABSTRACT **INTRODUCTION** Tuberculosis (TB) is a major communicable disease in both developing and developed countries. The incidence is on the rise due to multidrug-resistant bacilli and Human Immunodeficiency Virus (HIV). Thrombocytopenia in TB is usually non-immunological, due to pancytopenia following bone marrow infiltration. Tuberculosis (TB) has been reported as a rare trigger of ITP, with complex treatment approaches, including corticosteroids, anti-TB therapy, and, in refractory cases, thrombopoietin receptor agonists. Aim and Objective-To report a case of ITP associated with miliary tuberculosis in an elderly patient, detailing the diagnostic challenges and management strategies. Methodology- A 68-year-old male presented with hematuria, fever, and abnormal behavior. Hematological investigations revealed severe thrombocytopenia and mild anemia. Radiological findings showed a miliary pattern on chest imaging, suggestive of disseminated TB. Bone marrow aspirate indicated immune-mediated thrombocytopenia. The patient underwent anti-TB therapy and immunosuppressive treatment with IVIG and cyclophosphamide. Results-The patient showed persistent thrombocytopenia despite platelet transfusions but improved with combined therapy. Anti-TB treatment was initiated based on radiological evidence, despite negative urinary CBNAAT for genitourinary TB. Summary- This case underscores the complexity of diagnosing and managing ITP secondary to TB, particularly in elderly patients. A thorough diagnostic approach integrating hematological, radiological, and microbiological findings enabled appropriate treatment. The case highlights the importance of addressing coexisting systemic conditions to optimize outcomes.

KEYWORDS : Immune thrombocytopenic purpura, Miliary tuberculosis, Tuberculosis.

INTRODUCTION-

Tuberculosis (TB) is a major communicable disease in both developing and developed countries. The incidence is on the rise due to multidrug-resistant bacilli and Human Immunodeficiency Virus (HIV). As of 2012 India has the highest incidence of the disease with an estimated 2.2 million cases, accounting for 26% of the global incidence according to the World Health Organization statistics. A wide spectrum of hematological manifestations has been observed in TB, with thrombocytopenia being common in miliary TB and thrombocytosis in pulmonary TB. Thrombocytopenia in TB is usually non-immunological, due to pancytopenia following bone marrow infiltration. Newly diagnosed immune thrombocytopenia in TB is rare and only 27 cases have been reported so far. We describe immune thrombocytopenia in two patients with active pulmonary TB and miliary TB, both of whom recovered completely with immunosuppressants and antituberculosis therapy (ATT) [1]. Many secondary ITP cases due to tuberculosis are usually treated with anti-tuberculosis treatment and corticosteroids, resulting in an increase of platelets from some days to 3 months [2]. Some cases of refractory ITP that required high-dose intravenous immunoglobulin (IVIG) have been reported [3]. However, there have been only one report of ITP due to tuberculosis that eltrombopeg, thrombopoietin receptor agonist (TPO-RA), was administered [4]

Case Report - A 68-year-old male, presented with chief complaints of blood in urine, abnormal behavior, and fever. Initial investigations revealed mild anemia with severe thrombocytopenia, normal liver function tests (LFT), and normal electrolytes. Urine routine microscopy showed numerous red blood cells (RBCs). The patient was transfused with RDPs (Random donor platelets).

RADIOLOGICAL FINDINGS:

Subsequent chest X-ray revealed a miliary pattern, which was confirmed by HRCT chest, showing reticulonodular infiltrates in a miliary pattern (sub centimetric) along with a tree-in-bud appearance. Pulmonary medicine consultation was obtained, and the patient was planned to start anti-tuberculosis treatment (ATT). To rule out a local cause of hematuria, an NCCT KUB scan was performed, which showed no significant abnormality.

HEMATOLOGICAL FINDINGS:

A repeat CBC demonstrated persistent severe thrombocytopenia, and the patient was transfused with RDPs again, receiving a total of 24 RDPs due to recurrent thrombocytopenia. Peripheral smear analysis revealed microcytic hypochromic anemia with neutrophilic leukocytosis and thrombocytopenia. Both direct and indirect Coomb's tests were negative. Serum LDH was elevated at 617. A bone marrow aspirate showed an increased number of megakaryocytes with both hyperplastic and hypoplastic forms, but with normal granularity, suggesting immune-mediated thrombocytopenia (ITP). The bone marrow also showed normal myelopoiesis and erythropoiesis. Given the findings, the patient was started on intravenous immunoglobulin and cyclophosphamide therapy and referred to a higher center for further management. Urinary CBNAAT was negative, ruling out genitourinary tuberculosis.

XRAY CHEST AP VIEW OF THE PATIENT-

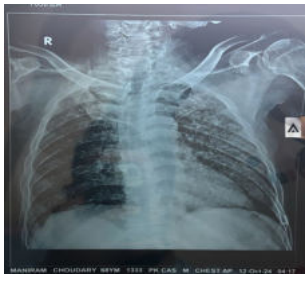


TABLE 1-

HEMATOLOGY	12/10/2024	14/10/24	15/10/24	17/10/24	19/10/24	20/10/24	23/10/24	24/10/24
HB	9.8	8.9	7	10	9.9	8.4	9.5	8.8
TLC	14800	20000	1201	14050	18180	14400	14030	11970
RBC	4.39	3.94	3.31	4.23	4	3.41	3.89	3.67
PLATELET	0.08	0.28	0.05	0.08	0.07	0.09	0.07	0.04

TABLE 2-

RFT	12/10/2024	13/10/24	18/10/24
BLOOD UREA	37	43	34
CREATENIN	1.52	0.97	1.47

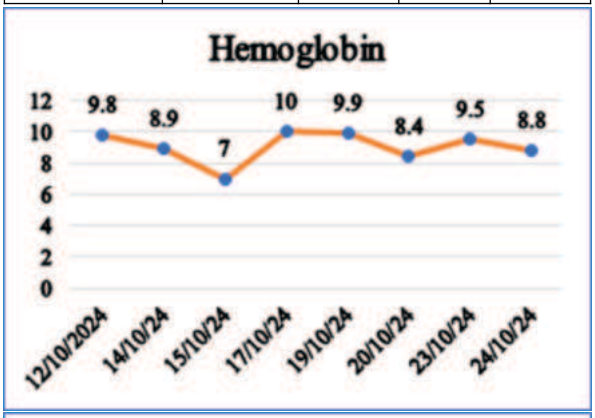
TABLE 3-

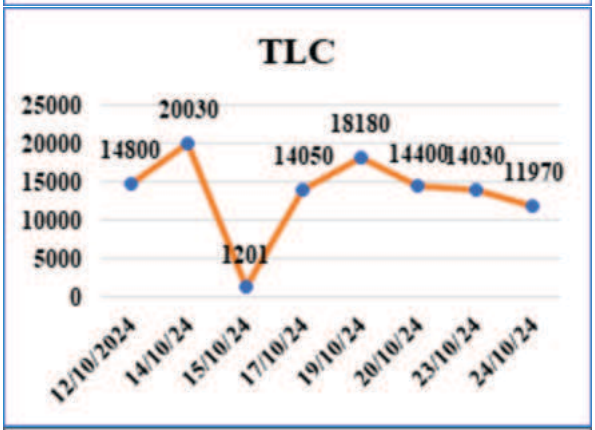
LFT	12/10/2024	13/10/24	19/10/24
TOTAL BILE	0.31	1.18	1.02

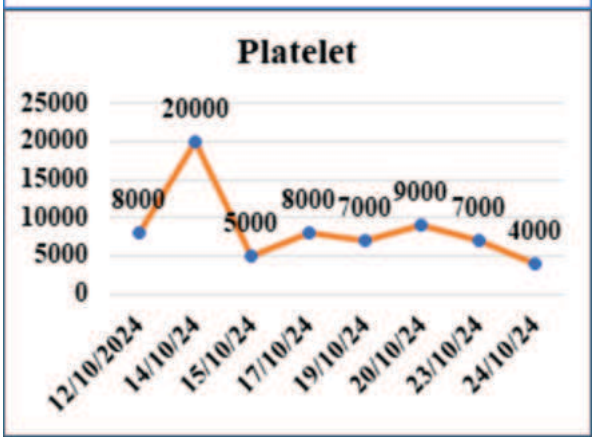
INDIRECT BILE	0.19	0.89	0.71
DIRECT BILE	0.21	0.29	0.31
SGOT	35	24	36
SGPT	32	18	29
ALKALINE PHOSPHATE	57	59	59
TOTAL PROTEIN	5.06	4.76	5.76
ALBUMIN	2.68	2.63	2.93
GLOBULIN	2.38	2.13	2.83
A/G	1.13	1.23	1.04

TABLE 4-

SERUM ELECTROLYTE	12/10/2024	13/10/24	15/10/24	18/10/24
NA+	125	127	126	127
K+	4	3.6	3.3	3.5
CL+	93	93	90	91







DISCUSSION

The case of 68-year-old male presenting with hematuria, fever, and abnormal behavior, offers a complex clinical picture requiring a multidisciplinary approach for diagnosis and management. The patient's presentation, in conjunction with hematological and radiological findings, suggests an underlying immune-mediated process, likely immune thrombocytopenia (ITP), with an incidental finding of a miliary pattern on chest imaging, which raised the suspicion for tuberculosis (TB). This case highlights the importance of a thorough diagnostic workup to rule out serious systemic infections and hematological disorders. The patient's blood counts showed severe thrombocytopenia, a hallmark of immune thrombocytopenia (ITP), where the body produces antibodies against its own platelets, resulting in their destruction. ITP can present with isolated thrombocytopenia and normal or near-normal bone marrow findings, which is consistent with the patient's presentation. A bone marrow aspirate revealed increased megakaryocytes (immature platelet precursors) with hyperplastic and hypoplastic forms, yet normal granularity. These findings are typical for ITP, as the bone marrow compensates for platelet destruction by increasing platelet production, though the production might be insufficient to maintain normal platelet counts. A study by Cines et al. (2009) [5] notes that ITP typically presents with isolated thrombocytopenia, often in the absence of other hematologic abnormalities, and is diagnosed when other causes of thrombocytopenia have been excluded. Sikirić et al. (2017)[6] further elaborate that in ITP, the bone marrow may show an increased number of megakaryocytes, which are a compensatory response to platelet destruction. Furthermore, elevated serum LDH (lactate dehydrogenase) is commonly observed in cases of hemolysis or platelet destruction, which is corroborated by the patient's serum LDH value of 6[17].

The management of ITP generally includes the use of intravenous immunoglobulin (IVIG) and corticosteroids for acute cases, with cyclophosphamide sometimes being used in refractory cases or severe thrombocytopenia. This aligns with the patient's management plan. Provan et al. (2019) [7] recommend IVIG as first-line treatment in patients with severe bleeding or extremely low platelet counts. The radiological findings in this patient included a miliary pattern on chest X-ray, which raised suspicion for disseminated tuberculosis (TB). HRCT of the chest confirmed the miliary pattern with reticulonodular infiltrates and a tree-in-bud appearance, which are strongly suggestive of miliary tuberculosis. Miliary TB is a form of disseminated TB that occurs when the infection spreads hematogenously, leading to small, diffuse lesions in the lungs. The tree-in-bud appearance on HRCT is typically associated with bronchial or bronchiolar obstruction, which can be due to tuberculosis or other infections like bronchiolitis Chung et al., 2015[8]. However, the urinary CBNAAT was negative, ruling out genitourinary tuberculosis. Genitourinary TB is a common cause of hematuria, and negative urinary CBNAAT is a reassuring finding in this case. A study by Lata et al. (2014) [9] emphasized the importance of CBNAAT in diagnosing genitourinary TB, particularly in patients with hematuria and systemic symptoms. It has a high sensitivity and specificity compared to conventional methods like urine culture and microscopy. Despite the negative urinary CBNAAT, the presence of a miliary pattern and the tree-in-bud appearance on HRCT raised the suspicion for pulmonary tuberculosis, which was managed with anti-tuberculosis therapy (ATT) following consultation with a pulmonary specialist. The decision to start ATT was based on the radiological findings and the patient's clinical symptoms of fever and abnormal behavior, which could be consistent with disseminated TB or a severe systemic infection. The miliary pattern on chest X-ray is a classic radiological feature of disseminated tuberculosis, as outlined by Mehta et al. (2003) [10], who reported that a miliary pattern is often associated with advanced or disseminated TB and requires prompt initiation of ATT. The case exemplifies the need for an integrated diagnostic approach when faced with a patient who presents with both hematological and pulmonary symptoms. The severe thrombocytopenia was ultimately attributed to ITP, a diagnosis confirmed by the bone marrow findings, while the miliary pattern on chest imaging prompted the consideration of disseminated tuberculosis. The patient's clinical and radiological findings led to the initiation of both ITP-specific therapy (IVIG and cyclophosphamide) and anti-TB treatment, although no genitourinary TB was found, which underscores the complexity of diagnosing multi-system diseases in elderly patients.

CONCLUSION:

This case emphasizes the importance of a comprehensive diagnostic workup, combining hematological assessments, radiological imaging, and microbiological investigations. The simultaneous management of immune thrombocytopenia (ITP) and suspected disseminated tuberculosis in this elderly patient required careful consideration of both conditions and led to a treatment plan that included both immunosuppressive therapy for ITP and anti-tuberculosis therapy. The outcome highlights the need for early and accurate diagnosis in

complex presentations, especially in elderly patients with multi-system involvement.

REFERENCES:

1. Gopalakrishnan, S., Gopalakrishna Pillai Syamala, N., Adusumilli Venkatakrishna, K., & Kuppusamy, J. (2014). Immune thrombocytopenia in tuberculosis: causal or coincidental? Journal of Global Infectious Diseases, 6(3), 128–131. https://doi.org/10.4103/0974-777X.138512
2. S.F. Weber, S. B´elard, S. Rai, et al., Immune thrombocytopenia secondary to tuberculosis: a case and review of literature, Int. J. Tubercul. Lung Dis. 21 (4) (2017) 466–470.
3 B. Akyildiz, N. Uzel, D. Yanni, et al., Immune thrombocytopenic purpura associated with pulmonary tuberculosis, Turk. J. Pediatr. 51 (2009) 271–274.
4 A.P. Sunara, K.M. Shelgikar, S. Melinkeri, et al., Immune Thrombocytopenia (ITP): A Rare Association of Lymphnode Tuberculosis. J Assoc Physicians India vol. 62, 2014, pp. 74–76. Jan;.
5. Cines, D. B., et al. (2009). "Immune thrombocytopenic purpura." New England Journal of Medicine, 361(1), 1-10.
6. Sikirić, P., et al. (2017). "Bone marrow findings in immune thrombocytopenia." Journal of Clinical Pathology, 70(9), 728-734.
7. Provan, D., et al. (2019). "International consensus report on the investigation and management of primary immune thrombocytopenia." Blood, 133(22), 2383-2392.
8. Chung, J. H., et al. (2015). "HRCT features of miliary tuberculosis." Clinical Imaging, 39(6), 1027-1033.
9. Lata, S., et al. (2014). "Role of urinary CBNAAT in diagnosis of genitourinary tuberculosis." Indian Journal of Urology, 30(4), 280-285.
10. Mehta, P., et al. (2003). "Miliary tuberculosis: The role of radiological imaging in diagnosis." Chest, 123(3), 1124-1130.