

Case Report

## Immune Thrombocytopenia That Developed After Use of Isoniazide (INH) for Tuberculosis Prophylaxis: A Case Report

### *Tüberküloz Profilaksisi için İsoniazid (İNH) Kullanımı Sonrası Gelişen İmmün Trombositopeni: Olgu Sunumu*

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#### ABSTRACT

Tuberculosis has is an important public health issue that has been leading to morbidity and mortality for ages. A treatment for the disease is available; but the most significant problem is adherence to treatment. The leading reason for poor adherence to treatment is side effects of the drugs. We present an 8-year-old male boy with immune thrombocytopenia, a rare complication on isoniazid prophylaxis for tuberculosis, to contribute to the literature. Questioning for drug use is important in cases diagnosed with immune thrombocytopenia.

**Keywords:** *Thrombocytopenia, immune, isoniazid, tuberculosis*

#### ÖZET

Tüberküloz çağlardan beri morbidite ve mortaliteye neden olan önemli bir halk sağlığı sorunudur. Hastalığın tedavisi mevcuttur ancak en önemli sorun tedaviye uyumsuzluktur. Tedaviye uyumsuzluğun en önemli nedeni ilaçların yan etkileridir. Tüberküloz maruziyeti sonrası isoniazid profilaksisi sırasında nadir görülen bir komplikasyon olan immün trombositopeni tanısı alan 8 yaşında erkek olguyu literatüre katkı sağlamak amacıyla sunuyoruz. İmmün trombositopeni tanısı alan olgularda ilaç kullanımına yönelik sorgulama önemlidir.

**Keywords:** *Trombositopeni, immün, isoniazid, tüberküloz*

#### INTRODUCTION

Tuberculosis is a leading chronic, granulomatous and communicable disease that has been leading to morbidity and mortality for ages all over the world(1).

The treatment of the disease is challenging due to longer duration and need for adherence to treatment. One of the most important factors leading to poor adherence is side effects of the drugs. Some side effects are self-limiting, whereas some necessitate

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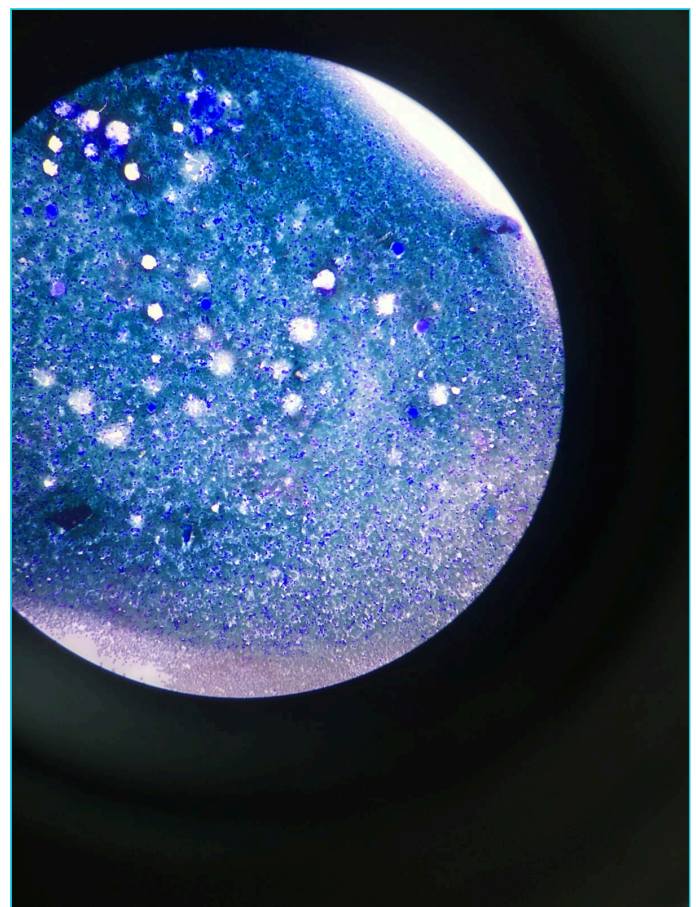
discontinuation of the treatment. Common side effects include hepatotoxicity, hypersensitivity reactions, visual loss, hearing loss, hemolytic anemia, acute kidney failure, shock, neuropathy, arthralgia and thrombocytopenia(2). Thrombocytopenia is a severe side effect of the treatment, which is generally associated with rifampicin; however, there are reported cases of isoniazide (INH) induced thrombocytopenia, though rare(3). We report our case of immune thrombocytopenia (ITP), which is a rare and life-threatening complication due to INH, to contribute to the literature.

## CASE REPORT

An 8 year old male patient underwent screening for tuberculosis after his uncle who cohabitated with him, had been diagnosed with tuberculosis 1.5 months before, despite of lack of any active complaints. On initial admission, his respiratory system and other system examinations were normal. He had hilar enlargement on chest x-ray. The quantiferon test was positive and tuberculin skin test was 12 mm. The laboratory results were as follows: White blood cell:10700/mm<sup>3</sup>, hemoglobin:13.1 gr/dL, platelet:271000/mm<sup>3</sup>, AST:19.9 IU/L and ALT:10.6 IU/L. The patient was given INH prophylaxis(10mg/kg once day). Personal and family history of the patient was unremarkable.

On the 30<sup>th</sup> day of INH prophylaxis, the patient was admitted with bruises on the skin. He had had no history of trauma, recent infection or use of different drugs. On physical examination: ecchymoses with dimensions of 7x5 cm on the left forearm, 3x3 cm on the left knee and 3x2 cm on the nasal bridge, as well as multiple petechiae on the trunk, legs and in the orbital cavity were detected and examination of other systems was normal. The laboratory results were as follows; white blood cell:8630/mm<sup>3</sup>, hemoglobin:11.4 gr/dl, platelet:4000/mm<sup>3</sup>, AST:25.4 IU/L and ALT:14.7 IU/L and coagulation parameters were normal. Peripheral blood

smear showed 65% polymorphonuclear cells, 28% lymphocytes and 7% monocytes with very rare single platelets. A bone marrow aspiration was performed and the bone marrow was normocellular with an increased number of young megakaryocytes without any malignant infiltration, which was consistent with ITP. Intravenous immunoglobulin (IVIG) at a dose of 1 gr/kg was given and the INH prophylaxis was discontinued. The repeat complete blood count studied after 2 days showed the following; White Blood Cell:6930/mm<sup>3</sup>, Hemoglobin:11.4gr/dL, and Platelet:38000/mm<sup>3</sup>. The repeat complete blood count studied one week later showed the following; White Blood Cell:8310/mm<sup>3</sup>, Hemoglobin:11.1 gr/dL and Platelet:118000/mm<sup>3</sup>.



**Figure 1.** Bone Marrow Examination



**Figure 2.** Ecchymoses On Knee

## DISCUSSION

The disease of tuberculosis is caused by *Mycobacterium tuberculosis* bacilli. It is transmitted via air droplets from a tuberculosis patient to a healthy individual. The risk of transmission is increased for those who have close and prolonged exposure to patients. Our patient had been evaluated for transmission, as his uncle, who cohabitated with him, had growth of *M. tuberculosis* in sputum culture. Our patient was given isoniazid (INH) prophylaxis and

developed thrombocytopenia on the 30th day of follow-up; however, in the literature, hematological toxicity has been reported to occur as early as the third day of treatment in some cases(2).

Early recognition of thrombocytopenia is crucial, as it may lead to life-threatening bleeding. Drug-induced thrombocytopenia is a common condition. Despite of reports of thrombocytopenia that develop during antituberculosis treatment, INH-induced thrombocytopenia is an extremely rare condition(3,4). The underlying mechanism by which INH-induced thrombocytopenia occurs has not been clarified. INH is a synthetic chemical and a pyridine derivative of nicotinamide. The major targets of INH toxicity include central nervous system, liver and hematological system. When the hematological system is affected, hemolytic anemia, sideroblastic anemia, aplastic anemia, agranulocytosis, eosinophilia or thrombocytopenia may develop(5). Our case developed thrombocytopenia, which is among rare complications. The INH prophylaxis was discontinued and the diagnosis of immune thrombocytopenia was confirmed by bone marrow aspiration. Although the exact mechanism by which IVIG acts has not been revealed, it is thought to facilitate elimination of anti-platelet antibodies, inhibit Fc-gamma receptor-mediated thrombocyte clearance and suppress production of anti-thrombocyte antibodies(6). IVIG therapy remains one of the mainstays of management for immune thrombocytopenia, as recommended by current guidelines, including the American Society of Hematology (ASH) 2019 guidelines for immune thrombocytopenia(7).

In accordance with these guidelines our patient was given IVIG treatment at a dose of 1 gr/kg. Post-IVIG platelet count was 38000/mm<sup>3</sup>. Rifampicin prophylaxis was initiated. During the follow-up, the platelet count increased up to 118000/mm<sup>3</sup>.



**Figure 3.** Ecchymoses On Arm

## CONCLUSION

Our case who developed immune thrombocytopenia, which is a rare but life-threatening complication, was reported to contribute to the literature. Questioning for drug use is important in cases diagnosed with immune thrombocytopenia.

### Patient Consent Form / Hasta Onam Formu

The parents' of this patient consent was obtained for this study.

### Conflict of Interest / Çıkar Çatışması

The authors declared no conflicts of interest with respect to authorship and/or publication of the article.

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### Author Contributions / Yazar Katkıları

Concept: OY,UY; design: OY,UY; supervision: SP; materials: MG,ÖMA; data collection and/or processing: OY,HT; analysis and interpretation: HT; literature review: OY,UY; writing manuscript: OY; critical reviews: SP. All authors contributed to the final version of the manuscript and discussed the results and contributed to the final manuscript.

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