

Case report

## An unusual immune thrombocytopenia case associated with dietary supplements containing 3G (Green tea, Ginseng and Guarana)

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**Abstract:** Immune thrombocytopenia (ITP) is caused by autoantibodies to platelet antigens. Ginseng, a herbal remedy, inhibits platelet aggregation as well as green tea and guarana. We present a case of secondary ITP due to food supplement that contains ginseng, guarana and green tea, which is not previously reported in medical literature. A 39-year-old man was admitted to our clinic because of 2 days history of oral mucosal hemorrhage and recently developed skin lesions on extensor surfaces of bilateral upper extremity and both ankles. Platelet count was  $5,470/\text{mm}^3$ . He was diagnosed with secondary ITP, possibly due to herbal supplement contained green tea, ginseng and guarana, which patient was received for 4-5 days about 1 month ago. He responded well to the treatment with methyl prednisolone. Since herbal medicines and dietary supplements have many toxic effects it should be kept in mind that secondary ITP may develop during supplementation with these herbal products.

**Keywords:** secondary ITP, ginseng, guarana, green tea, thrombocytopenia.

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### Introduction

Immune thrombocytopenia (ITP) is an acquired thrombocytopenia caused by autoantibodies to platelet antigens [1]. Primary ITP is defined when isolated thrombocytopenia (platelet count  $<100 \times 10^9/\text{L}$ ) was present in the absence of other causes that may be associated with thrombocytopenia [1]. On the other hand, secondary ITP is defined as immune thrombocytopenia driven by any other cause. Hepatitis C virus [2], Cytomegalovirus (CMV), Epstein Barr virus (EBV), human immunodeficiency virus (HIV), varicella zoster virus (VZV) [3], various vaccines [4] and certain drugs [5] are among the causes of secondary ITP.

Ginseng, a herbal remedy, inhibits platelet aggregation [6]. Similarly, green tea [7] and guarana [8], which are common in dietary supplements also affect platelet functions. However, food supplements containing ginseng, guarana and green tea have been reported to cause thrombocytopenia, too [8].

In this article, we aimed to present a case of secondary ITP due to food supplement that contains ginseng, guarana and green tea, which is not previously reported in medical literature.

### Clinical Case

A 39-year-old man was admitted to our clinic because of 2 days history of oral mucosal hemorrhage and recently developed

skin lesions on extensor surfaces of bilateral upper extremity and both ankles. The patient's medical history was unremarkable and there was no history of drug use. The patient used a complex food supplement containing green tea, ginseng and guarana for 4-5 days as food supplement about 1 month ago. Rest of the medical history was unremarkable.

The vital signs of the patient were as follows: arterial blood pressure 110/70 mmHg, heart rate 60 beats/minute, body temperature 36.7 celcius degree and respiration rate 16/minute. Physical examination revealed intra-oral bullae, petechiae lesions on extensor surfaces of both upper extremity and on both ankles, and ecchymosis with a 2x4cm diameter on the right axillary region. There were also petechiae on the skin of the abdomen.

Laboratory analyses revealed that white blood cell count was  $10400/\text{mm}^3$ , hemoglobin was 15.7 g/dL, hematocrit was 47%, platelet count was  $5,470/\text{mm}^3$ . Serum vitamin B12 level was 300 ng/L, folic acid level was 6.5 pg/L, and ferritin was 145 pg/L. Platelet count in blood smear was counted as  $5,000/\text{mm}^3$ , without any atypical cells and any abnormalities in erythrocytes.

Prothrombin time (PT), partial thromboplastin time (aPTT) and INR of the patient were normal. Hepatitis serology panel and anti-HIV antibody were negative. EBV IgM and CMV IgM were negative. Helicobacter pylori antigen was negative in stool analysis. Thyroid function tests were within normal range and anti-thyroid autoantibodies were negative. Similarly anti-nuclear antibody was

negative. Abdominal sonography was not detected any abnormalities, including splenomegaly.

A diagnosis of secondary ITP was established according to the clinical features and laboratory tests. He was started on prednisolone 80 mg/day. Daily hemogram count and peripheral smear were followed-up. Pulse steroid treatment (1g methyl prednisolone daily, for 3 days) was initiated since the platelet count decreased to a critical level of 3,000/mm<sup>3</sup> during clinical follow-up. It reached up to 11,000/mm<sup>3</sup> with pulse steroid treatment. Then, the prednisolone dose was reduced to 80 mg/day. Subsequently, the platelet count increased to 86,000/mm<sup>3</sup> on the 8th day of hospitalization.

Since his complaints were diminished and platelet count rose to a relatively safe level, the patient was referred to the hematology department with full recovery. His platelet counts were remained in normal range in his control examinations.

### Discussion

In this case report, we present a young man diagnosed with secondary ITP due to dietary supplementation which includes 3Gs (green tea, ginseng and guarana). To the best of our knowledge, there are no other cases of ITP related to ginseng, guarana and green tea complex in the literature.

Immune thrombocytopenia is a common hematological disease affecting individuals of all races, ages and genders. While ITP affects more men in childhood, it affects more women in the young population. Its incidence increases by aging. The rate of ITP in men and women in the elderly population is similar [9]. 80% of ITP cases are idiopathic and 20% occur by secondary causes [10]. Secondary ITP often develops after infection. However, the patient presented had no previous infection. It has been reported that ITP may develop as a result of *Helicobacter pylori*, CMV, VZV, hepatitis C virus and HIV infections [3]. In our patient, hepatitis panel, other viral agents and *Helicobacter pylori* were all negative. Therefore, no ITP secondary to infection was considered.

Prescription and non-prescription drug use, including herbal medicine and food supplements, may cause secondary ITP [11]. Our patient did not have any history of drug use, recently. However, he consumed green tea, ginseng and guarana complex which was used as food supplement for the last 1 month. These 3 components have been reported to affect platelet numbers and functions [6-8]. Green Tea inhibits thrombogenesis by inhibiting platelet aggregation with its catechin [7]. Similarly, ginseng and guarana also inhibit platelet aggregation [6,8]. Causes of Secondary ITP include herbal remedies and food supplements. Therefore we established the diagnosis of secondary ITP in present case which was driven by dietary supplements.

Recently, the use of herbal remedies and food supplements as alternative medicine is increasing. Many side effects and toxicities arise during the usage of these herbal remedies and food supplements. These include hepatotoxicity, renal injury, allergic skin reactions, hypertension and bleeding [12]. However, we have reported that even secondary ITP may be associated with these substances, as in presented patient. Secondary ITP is an important hematological disease characterized by petechiae and ecchymoses. Secondary cause of ITP should be removed in sake of successful treatment. However, corticosteroid therapy may be necessary in cases with very low platelet counts. In our case, a medium dose of steroid was given because of low platelet levels both in hemogram and blood smear. In cases where platelet levels

do not increase despite medium dose steroids, high dose steroids, intravenous immunoglobulin and anti-D could be alternative treatment choices and platelet suspension may be given in life-threatening situations. In present case, platelet levels did not increase with medium dose steroid therefore, pulse steroid treatment initiated and platelet count was increased after this treatment. Since he did not start on herbal medicine that include green tea, ginseng and guarana, he did not suffer from thrombocytopenia during his clinical follow up. Therefore, we assume that immune thrombocytopenia in present case could be driven by the use of herbal medicine that include green tea, ginseng and guarana.

### Conclusion

Since herbal medicines and dietary supplements have many toxic effects it should be kept in mind that secondary ITP may develop during supplementation with these herbal products.

### Conflict of Interest

Authors declare that they have no conflict of interest to disclose.

### Informed Consent

The patient presented in this case report was given informed consent for this study.

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