

CASE REPORT

A Case of Thrombocytopenia Caused by Gynostemma Pentaphyllum

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SUMMARY

Background: The clinical harm of thrombocytopenia is significant, including bleeding, anemia, thrombosis, and increased risk of infection. Gynostemma pentaphyllum, a prominent traditional Chinese medicine, is clinically utilized to treat various conditions such as diabetes mellitus, hepatic fibrosis, hypertension, hyperlipidemia, and other disorders. This report details a case of a cerebral infarction patient who developed significant thrombocytopenia following treatment with Gynostemma pentaphyllum. This case underscores the importance of monitoring platelet counts in patients using Gynostemma pentaphyllum.

Methods: The patient's platelet counts were measured using a fully automated blood cell counter. Her whole blood cell concentrations were assessed before and after discontinuation of Gynostemma pentaphyllum.

Results: Initial blood tests revealed leukocyte and platelet concentrations of $3.27 \times 10^9/L$ and $6.0 \times 10^9/L$, respectively, after the patient had used Gynostemma pentaphyllum continuously for over three months. Post-discontinuation, two subsequent blood tests showed leukocyte counts of $5.26 \times 10^9/L$ and $5.52 \times 10^9/L$, and platelet counts rebounded to $156 \times 10^9/L$.

Conclusions: Gynostemma pentaphyllum may induce thrombocytopenia. Patients on long-term therapy with this medication should have their platelet levels closely monitored.

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KEYWORDS

Gynostemma pentaphyllum, thrombocytopenia, leukocyte

INTRODUCTION

Gynostemma pentaphyllum (G. pentaphyllum), a famous edible and medicinal plant, is widely used as traditional medicine or herbal tea in China and several other Asian countries [1]. It has multiple beneficial effects including antimicrobial, anticancer, antiaging, antifatigue, antiulcer, hypolipidemic and immune-modulatory activities [2-4]. The primary chemical constituents of Gynostemma pentaphyllum are saponins, polysaccharides and flavonoids [5], and saponins are the principal active components which are also known as gypenosides. Studies have indicated that saponins of Gynostemma pentaphyllum can inhibit platelet aggregation, prevent thrombosis, and prolong partial thromboplastin

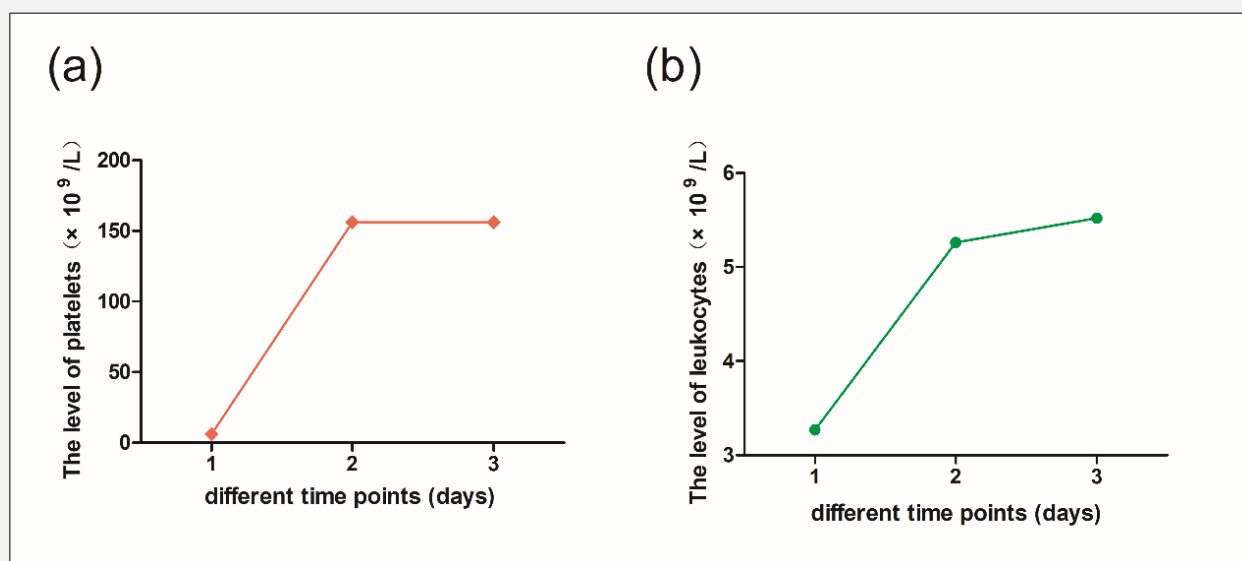


Figure 1. a) Platelet levels at different time points. b) Leukocyte levels at different time points.

The patient stopped taking *Gynostemma pentaphyllum* on day 2, and both platelet and leukocyte counts markedly increased.

time and clotting times [6]. This article presents a case of thrombocytopenia associated with the use of *Gynostemma pentaphyllum*.

CASE REPORT

A 69-year-old female patient was admitted to the emergency department of our hospital on July 19, 2023, due to “sudden unconsciousness with limb convulsions lasting two hours”. She was diagnosed with secondary epilepsy and sequelae of cerebral infarction. And she had been taking *Gynostemma pentaphyllum* for over three months without concurrent use of other medications. Blood tests on admission showed a white blood cell (WBC) count of $3.27 \times 10^9/\text{L}$ and a platelet (PLT) count of $6 \times 10^9/\text{L}$. We ruled out the possibility of any specimen collection error, and there were no suspicious factors regarding the test result. In addition, we reviewed the patient’s past blood tests in the laboratory information system (LIS) and found all the results were normal over the past year. The most recent test on December 11, 2022, showed a PLT count of $149 \times 10^9/\text{L}$ and WBC count of $6.48 \times 10^9/\text{L}$. Despite the critical platelet level, the patient’s family declined platelet transfusion. Excluding other common causes of thrombocytopenia, *Gynostemma pentaphyllum* was considered the most likely culprit. After discontinuing *Gynostemma pentaphyllum*, two consecutive tests were conducted, and the

counts of WBC and PLT increased significantly. The results of the tests are shown in the following figure (Figure 1).

DISCUSSION

Thrombocytopenia may lead to skin and mucosal bleeding, presenting as petechiae, ecchymoses, nosebleeds, gum bleeding, etc. In severe cases, it may lead to gastrointestinal bleeding, hematuria, hemoptysis, and even intracranial bleeding, posing life-threatening risks [7,8]. Various factors can cause thrombocytopenia, including certain medications that interfere with platelet levels. *Gynostemma pentaphyllum* is an important traditional Chinese medicine and has a wide range of clinical applications, including the treatment of diabetes mellitus, hepatic fibrosis, hypertension, hyperlipidemia, and other disorders [4]. Saponins are one of the most significant components of *Gynostemma pentaphyllum* and have a significant impact on platelet function by inhibiting platelet aggregation and exhibiting anti-thrombotic effects [9,10], which may potentially lead to pseudo-thrombocytopenia. The proposed mechanism involves that saponins inhibiting the activity of the protein SRC kinase, thereby reducing platelet activation [11]. This case highlights the potential for *Gynostemma pentaphyllum* to cause thrombocytopenia with long-term use, as evidenced by the rapid recovery of platelet counts

upon discontinuation. It is crucial to monitor platelet concentrations in patients using *Gynostemma pentaphyllum*.

Declaration of Interest:

All authors declare that they have no competing interests.

References:

1. Wu PK, Tai WC, Choi RC, et al. Chemical and DNA authentication of taste variants of *Gynostemma pentaphyllum* herbal tea. *Food Chem* 2011;128(1):70-80. (PMID: 25214331)
2. Yang C, Zhao Y, Ren D, Yang X. Protective Effect of Saponins-Enriched Fraction of *Gynostemma pentaphyllum* against High Choline-Induced Vascular Endothelial Dysfunction and Hepatic Damage in Mice. *Biol Pharm Bull* 2020;43(3):463-73. (PMID: 32115504)
3. Ji X, Shen Y, Guo X. Isolation, Structures, and Bioactivities of the Polysaccharides from *Gynostemma pentaphyllum* (Thunb.) Makino: A Review. *Biomed Res Int* 2018;2018:6285134. (PMID: 30410935)
4. Li K, Ma C, Li H, Dev S, He J, Qu X. Medicinal Value and Potential Therapeutic Mechanisms of *Gynostemma pentaphyllum* (Thunb.) Makino and Its Derivatives: An Overview. *Curr Top Med Chem* 2019;19(31):2855-67. (PMID: 31724506)
5. Nguyen NH, Ha TKQ, Yang JL, Pham HTT, Oh WK. Triterpenoids from the genus *Gynostemma*: Chemistry and pharmacological activities. *J Ethnopharmacol* 2021;268:113574. (PMID: 33186700)
6. Su C, Li N, Ren R, et al. Progress in the Medicinal Value, Bioactive Compounds, and Pharmacological Activities of *Gynostemma pentaphyllum*. *Molecules* 2021;26(20):6249. (PMID: 34684830)
7. Ding Q, Xu W, Chen Y, Chang S, Zhang J. Correlation between thrombocytopenia and adverse outcomes in patients with atrial fibrillation: a systematic review and meta-analysis. *Front Cardiovasc Med* 2024;11:1383470. (PMID: 39691493)
8. Kayano SS, Santana PV, Colella R, Colella MP, Caruso P. Lower platelet count and metastatic tumor are associated with increased risk of spontaneous bleeding in critically ill patients with cancer: An observational study. *Transfusion* 2023;63(12):2311-20. (PMID: 37818876)
9. Luo H, Chen J, Su C, Zha L. Advances in the Bioactivities of Phytochemical Saponins in the Prevention and Treatment of Atherosclerosis. *Nutrients* 2022;14(23):4998. (PMID: 36501028)
10. Ahmed I, Leach DN, Wohlmuth H, De Voss JJ, Blanchfield JT. Caco-2 Cell Permeability of Flavonoids and Saponins from *Gynostemma pentaphyllum*: the Immortal Herb. *ACS Omega* 2020;5(34):21561-9. (PMID: 32905390)
11. Liu Y, Zhao J, Song J, et al. Mechanism of *Gynostemmae Pentaphylli* Herba in the treatment of ischemic stroke based on network pharmacology and molecular docking. *Am J Transl Res* 2023;15(6):4079-89. (PMID: 37434834)