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Successful Treatment with Dapsone for Refractory Immune Thrombocytopenia

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

In adult with immune thrombocytopenia (ITP), it has been known that steroids have been used as a first-line therapy. The therapy induced remission in more than 60% of patients. Here, we evaluated the results of dapsone for a steroid-resistant ITP patient. Further, dapsone has been reported to emerge as a safe and inexpensive therapy for chronic ITP. In this case, we showed a relationship between platelet count and grade of hemolysis by treatment with dapsone.

Keywords: ITP; drug-resistance; dapsone; hemolysis.

1. INTRODUCTION

Two of the newly developed thrombopoietin-receptor agonists, romiplostim and eltrombopag, are now available for the treatment of ITP [1]. In adult with immune thrombocytopenia (ITP), steroids have been used as a first-line therapy [1]. It has been reported that the therapy induced remission in more than 60% of patients [1]. Here, we evaluated the results of dapsone

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(Diaminodiphenyl sulfone) for a steroid-resistant ITP patient. Furthermore, we showed a relationship between platelet count and grade of hemolysis. A 21 year old woman admitted to our hospital because of petechial rash and purpura. Her full blood count on admission demonstrated WBC 4900/μl, Hb 8.0g/dl, MCV 77.9μm^3, PLT 0.1X10^4/μl, reticulocyte 24‰. Initial biochemistry confirmed normal hepatic and renal biochemistry excluding iron deficiency due to hypermenstration. Platelets associated IgG by ELISA was detected (PaIgG 3084ng/10^7 platelets). Bone marrow aspiration revealed to be consistent with ITP. Initial therapy consisted with high dose intravenous immunoglobulin (0.4 g/kg X 3 days) and steroid pulse therapy (1000mg/day methylpredonisone X 3 days). However, there was an initial transient rise in platelets count (Fig. 1). Although conventional therapy with oral 30mg predonisone was administered, platelets count did not increase. Thereafter, danasole, azathioprine or cyclophospamide could not induce platelets count. Diagnosis of refractory ITP was made. After consideration of the available options, 100mg daily dapsone was started. Interestingly, significant platelets count rise occurred after an initial two week with dapsone treatment.

Fig. 2C showed her clinical course. PLT count increased significantly with time dependent fashion. As shown in Fig. 2, simultaneously, reticulocyte (A) and serum LDH level (B) were increased with increase of PLT count, indicative of hemolysis. We tried to observe some relationship among PLT count, reticulocyte and LDH value. As shown in Fig. 3A, significant relationship between platelets count and reticulocytes value was observed, and also detected significant relationship between platelets count and LDH (Fig. 3B). The efficacy of dapsone for ITP was first reported in 1988 [2]. Several reports regarding to dapsone treatment have been reported [3-9]. Lush et al. [10] reported a pregnant woman with refractory ITP. Control of her platelet count and bleeding only occurred after use of dapsone [10]. A response rate of 50% was obtained and a median time to response was 21 days using a dose of 75-100mg daily. However, significant laboratory findings for hemolysis have been reported [11,12]. It has been reported hemolysis was occurred by blockade of reticuloendothelial system in a similar mechanism with anti-D [13]. It has been reported that mild hemolysis detected in 69% of treated patients [14]. Dapsone has been reported to emerge as a safe and inexpensive therapy for chronic ITP [14]. The mechanism of action with dapsone in ITP may be through competitive and inhibition of the reticuloendothelial system secondary to low-grade hemolysis and red cell phagocytosis [14]. We deeply believed that dapsone was an inexpensive and well-tolerated alternative therapy for the difficult patient with problematic, refractory ITP.

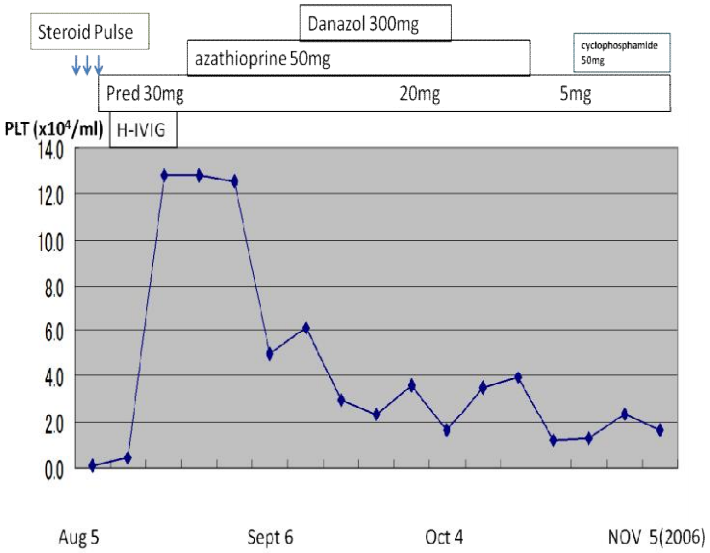

Fig. 1. Platelet count during course of treatment with high dose intravenous immunoglobulin, steroid pulse therapy, predonisone, danasole, azathioprine, cyclophospamide

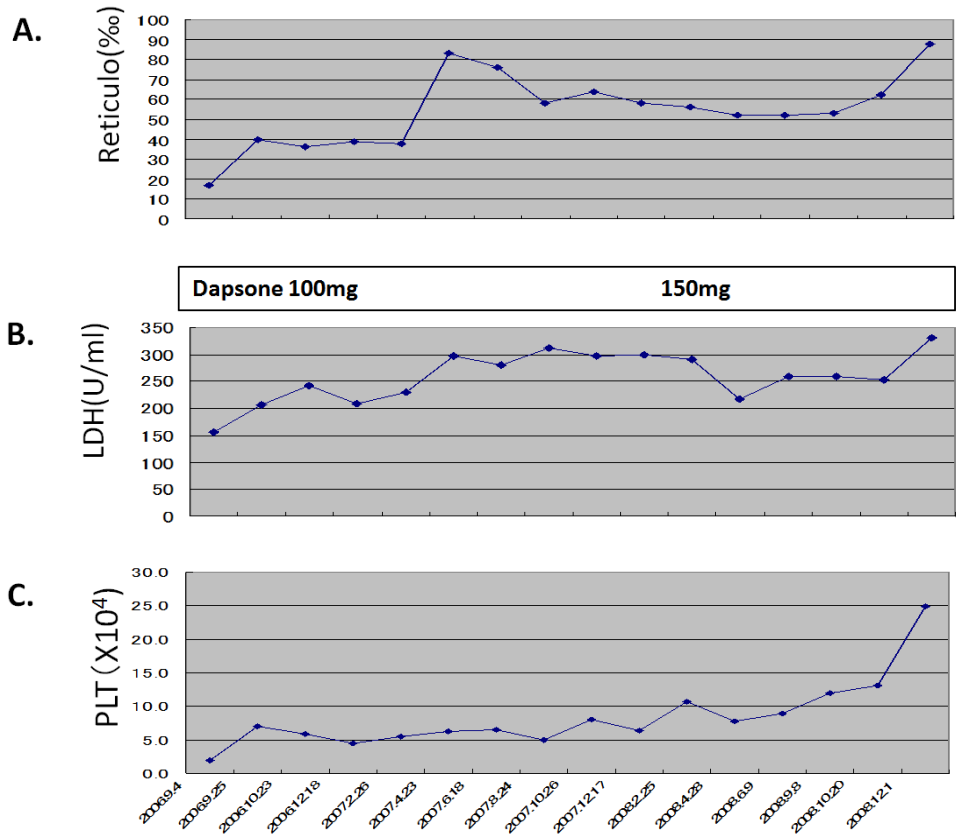

Fig. 2. Reticulocyte count (A), serum LDH level (B) and platelet count (C) after dapsone treatment

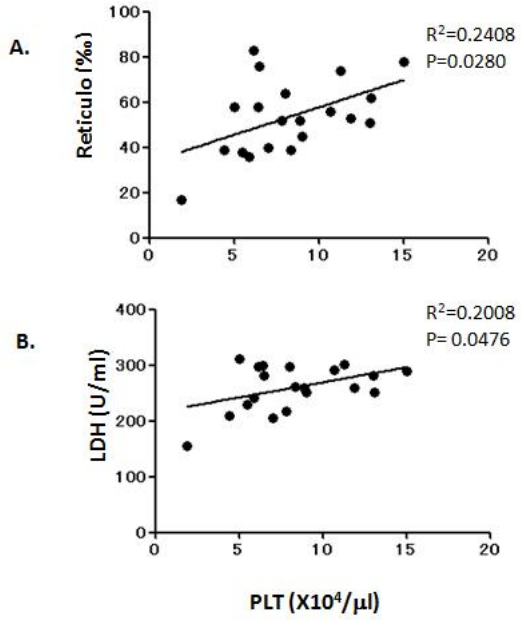

Fig. 3. A) Relationship between platelet count and reticulocyte count during dapsone treatment, B) relationship between platelet count and serum LDH level during dapsone treatment

2. CONCLUSION

We showed an effects of dapsone for a refractory ITP patient including conventional steroid therapy. Significant platelets count rise was observed after an initial two week with dapsone therapy. However, hemolysis was developed after administration of dapsone. Furthermore, tight relationship between hemolytic findings and platelet count. In conclusion, dapsone was an inexpensive and well-tolerated therapy for refractory ITP.

CONSENT

All authors declare that 'written informed consent was obtained from the patient.

ETHICAL APPROVAL

Not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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