Outcome of Thrombotic Thrombocytopenic Purpura Patients: A Single-Center Experience

Trombotik Trombositopenik Purpura Hastalarının İzlem Sonuçları: Tek Merkez Deneyimi

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To the Editor,

Thrombotic thrombocytopenic purpura (TTP) is a rare, life-threatening condition [1,2]. It is characterized by platelet-rich thrombi in the microcirculation caused by severely decreased activity of the von Willebrand factor-cleaving protease ADAMTS13 (a disintegrin and metalloprotease with thrombospondin type motif 13), leading to the accumulation of ultra-large von Willebrand factor multimers, microangiopathic hemolytic anemia, and sometimes organ damage. TTP can be acquired due to autoantibody inhibitor development against *ADAMTS13*, or it can be hereditary due to inherited mutations in *ADAMTS13*. Hereditary TTP represents less than 5% of all TTP cases; over 95% are cases of acquired autoimmune TTP [3]. TTP is a hematologic emergency that is almost always fatal if appropriate treatment is not initiated promptly, and even with treatment, the mortality can reach 10% to 20% [1].

In our retrospective study we aimed to investigate the factors affecting the outcome of TTP patients. Written informed consent was obtained from all patients. Nineteen TTP patients (11 females and 8 males) had a mean age of 41.5±12.7 (18-60) years; 12 (63.1%) had neurologic features, 4 (21.1%) fever, and 3 (15.7%) renal impairment (Table 1). All patients received plasma exchange (PEX) therapy within 5 h of admission. Eighteen (94.7%) patients received 1 mg/kg adjunctive methylprednisolone (except for one hereditary TTP patient). One refractory patient and two relapsed patients received rituximab. Statistical analyses were performed with Jamovi 0.9.2.6 software. We used Kruskal-Wallis and Mann-Whitney U tests to examine the mean differences. A p-value of <0.05 was considered statistically significant.

Table 1. Characteristics of the patients.

Characteristics	n	%
Age, mean (range) 41.5 (18-60)		
Sex		
Female	11	
Male	8	
Neurological features		
Syncope	3	15.8
Coma	3	15.8
Confusion	2	10.5
Headache	1	5.3
Dizziness	1	5.3
Seizures	1	5.3
Slurred speech	1	5.3
Renal manifestations	3	15.7
Fever	4	21.1

Laboratory results are presented in Table 2. Relapsed/refractory patients and non-relapsed/refractory patients were compared in terms of number of PEX sessions until obtaining remission, laboratory values, and ADAMTS13 panel.

Table 2. Laboratory results.

Parameter	Mean ± SD (minimum-maximum) values of patients	Normal reference range
WBC count	8.14±3.37 (2.92-16)x10^9/L	4-10x10^9/L
Hemoglobin	8.59±1.63 (5.93-12.4) g/dL	12-16 g/dL
Platelet count	26.42±25.11 (1-110)x10^9/L	150-400x10^9/L
Urea	47.4±19.8 (22-92) mg/dL	15-44 mg/dL
Creatinine	0.98±0.41 (0.5-2.26) mg/dL	0.72-1.25 mg/dL
Total bilirubin	3.33 (0.72-9.43) mg/dL	0.2-1.2 mg/dL
Indirect bilirubin	2.42 (0.44-8.89) mg/dL	0.1-0.7 mg/dL
Lactate dehydrogenase	1186 (228-2570) U/L	125-220 U/L
Alanine aminotransferase	31.2 (10-90)	0-55 U/L
Aspartate aminotransferase	41.8 (14-79)	5-34 U/L
Prothrombin time	15.4 (12.1-29.4) s	
International normalized ratio	1.24±0.39 (0.89-2.75)	1-1.5
Activated partial thromboplastin time	38.3 (16.1-180) s	26.5-40 s
D-Dimer	2.65 (0.54-10.7) µg/mL	0-0.4 µg/mL
Fibrinogen	341±106 (149-566) mg/dL	200-400 mg/dL
C-Reactive protein	20.3±24.1 (0.1-77.8) mg/L	0.1-5 mg/L
Mean platelet volume	10.7±2.85 (5.98-16.2) fL	7.8-11 fL

Table 2. Continued.

Parameter	Mean ± SD (minimum-maximum) values of patients	Normal reference range
Mean ADAMTS13 antigen	0.151 (0.02-0.70) µg/mL	0.60-1.60 µg/mL
Mean ADAMTS13 activity	1.09% (0%-8%)	40%-130%
Mean ADAMTS13 inhibitor	45.9 (4.4-90) U/mL	<12

SD: Standard deviation.

In conclusion, three interesting results were identified after analysis of data in our study. First, our overall mortality rate was 1 in 19 (5.3%). Higher mortality rates were reported in previous studies (10%-20%) [1,2]. This result may show that early PEX initiation is an effective factor in mortality reduction. Secondly, the mean d-dimer value of our TTP patients was higher than the reference limit at 2.65 µg/mL (reference values: 0-0.4 µg/mL). Thus, in cases of slightly elevated d-dimer levels, one should not hesitate to start urgent PEX treatment in patients with clinically high suspicion of TTP if ADAMTS13 panel results are not obtained quickly. Thirdly, relapsed/refractory patients needed more PEX sessions to achieve first remission. A smaller number of PEX sessions to achieve response may be predictive of durable remission without relapse.

Keywords: Thrombotic thrombocytopenic purpura, Plasma exchange, ADAMTS13, Rituximab

Anahtar Sözcükler: Trombotik trombositopenik purpura, Plazmaferez, ADAMTS13, Rituksimab

Informed Consent: Received.

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Severe Bone Marrow Hypoplasia with Black Cumin *(Nigella sativa)* Ingestion in a Patient with T-ALL in First Complete Remission

Tam Remisyonda T-ALL Hastasında Çörek Otu *(Nigella sativa)* Alımı Sonrası Gelişen Ağır Kemik İliği Yetmezliği

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To the Editor,

Nigella sativa L., commonly known as black cumin, black seed, or black caraway, contains the active component thymoquinone and has a historically extensive usage in traditional medicine. Most studies have focused on its beneficial effects and studies focusing on its possible toxicity are limited. To the best of our knowledge, this is the first report of an association between black cumin extract intake and myelosuppression.

A 36-year-old man with T-cell acute lymphoblastic leukemia (T-ALL) in complete remission-1 (Figure 1) in a period with