

Serum Sodium Levels in Sigmoid Volvulus

Sigmoid Volvulusta Serum Sodyum Düzeyleri

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Abstract

Objective. Sigmoid volvulus (SV) is an uncommon type of large bowel obstruction. This study sought to determine serum sodium concentrations in patients with SV.

Materials and Methods. The records of 89 patients with SV and 40 patients with obstructive rectosigmoid cancer (ORC) were reviewed retrospectively

Results. The mean serum sodium concentrations in patients with SV and in those with ORC were 138.4±4.5 mEq/L and 137.7±3.2 mEq/L, respectively (t:0.7, P>0.05). The numbers of hyponatremic and hypernatremic patients were 13 vs. 4 and 1 vs. 0, respectively, in the SV and ORC groups (x²:0.5, P>0.05).

Conclusion. No cause-effect relationship was determined between serum sodium concentrations and SV.

Keywords: Sigmoid colon, Volvulus, Sodium

Özet

Amaç. Sigmoid volvulus (SV) az görülen bir kalın barsak tıkanıklığı şeklidir. Bu çalışmanın amacı SV'li hastalarda serum sodyum düzeylerini araştırmaktır.

Gereç ve Yöntem. SV'li 89 hastanın ve tıkaçıcı rektosigmoid kanserli (ORC) 40 hastanın kayıtları retrospektif olarak incelendi.

Bulgular. Ortalama serum sodyum konsantrasyonu SV'li hastalarda 138.4±4.5 mEq/L iken, ORC'li hastalarda 137.7±3.2 mEq/L idi (t:0.7, P>0.05). Hiponatremik ve hiperonatremik hasta sayıları SV ve ORC gruplarında sıra ile 13-4 ve 1-0 idi (x²:0.5, P>0.05).

Sonuç. Serum sodyum düzeyleri ile SV arasında bir neden-sonuç ilişkisi bulunamadı.

Anahtar Kelimeler: Sigmoid kolon, Volvulus, Sodyum

Introduction

Sigmoid volvulus (SV), the wrapping of the sigmoid colon around itself and its own mesentery, is an uncommon type of large bowel obstruction [1-4]. Although electrolyte imbalance is not marked in distal intestinal obstructions, it is an important result of intestinal obstructions [5]. In this article, serum concentrations of sodium, the most important caution in organisms, were investigated in patients with SV.

Materials and Methods

In this study, the clinical records of 89 patients with sigmoid volvulus treated in the Department of General Surgery, Faculty of Medicine, Ataturk University between July 1998 and June 2008 were reviewed retrospectively. The records of 40 patients with obstructive rectosigmoid cancer treated during the same period were considered as the control group.

Age, gender, and serum sodium concentrations that were obtained on admission were studied and compared. A level of 135-145 mEq/L was considered a normal serum sodium concentration. T and Chi-square tests were used in statistical analyses. The statistical significance level was set at $P < 0.05$.

Results

The findings and the results of the statistical analyses are given in Table 1. The mean age of the patients with sigmoid volvulus (SV) was 61.7 ± 16.7 years, while the mean age of the patients with obstructive rectosigmoid cancer (ORC) was 58.4 ± 14.4 years. Of the patients with SV, 71 were male and 18 were female, while the male/female ratio in the patients with ORC was 21/19.

The mean serum sodium concentration was 138.4 ± 4.5 mEq/L in the patients with SV and 137.7 ± 3.2 mEq/L in the patients with ORC. Thirteen (14.6%) of the patients with SV were hyponatremic, while four patients (10.0%) were hyponatremic in ORC group. The numbers of hypernatremic patients were one (1.1%) and zero (0.0%) in the SV and ORC groups, respectively.

There were no statistically significant differences between the two groups with respect to mean serum sodium concentrations or the numbers of hyponatremic and hypernatremic patients.

Discussion

Fluid-electrolyte imbalance is an inevitable result of intestinal obstruction [5,6]. During the early period of distal intestinal obstruction, fluid loss into the lumen is evident, but electrolyte imbalance is not apparent. In this period, minimal decreases in serum sodium and potassium concentrations are expected. Additionally, replacement of the intravascular fluid loss with water with no sodium content may lead to hyponatremia. As the obstruction is prolonged, retention of sodium and discharge of potassium in and from the renal tubules occur. Consequently, serum sodium levels may differ relative to the severity and duration of the intestinal obstruction [5].

Sigmoid volvulus (SV) is a type of distal colonic obstruction that leads to a closed-loop obstruction [1-4]. Thus, SV may be expected to cause a fluid-electrolyte imbalance. In the present study, serum sodium concentrations were found to be normal in 84.3% of patients, but were lower in 14.6% and higher in 1.1% of the patients with SV. The differences between the rates of normonatremic, hyponatremic, and hypernatremic patients in the SV and obstructive rectosigmoid cancer groups were not statistically significant. Similarly, the mean serum sodium concentrations were statistically similar in the two groups. The results of the present study show that serum sodium concentration has no importance in SV.

We can conclude that there is no cause-and-effect relationship between serum sodium concentrations and SV.

Table 1. Findings from the patients and the results of the statistical analyses

Criteria	SV	ORC	Statistical analysis
Number	89	40	-
Mean age (years)	61.7±16.7	58.4±14.4	t test
minimum	23	31	t:1.1, P>0.05
maximum	98	90	
Male/female	71/18 (79.8%/20.2%)	21/19 (52.5%/47.5%)	Chi-square test x ² :10.0, P<0.01
Mean serum sodium concentration (mEq/L)	138.4±4.5	137.7±3.2	t test
minimum	126	128	t:0.7, P>0.05
maximum	154	145	
Hyponatremia	13 (14.6%)	4 (10.0%)	Chi-square test x ² :0.5, P>0.05
Hypernatremia	1 (1.1%)	0 (0.0%)	Chi-square test x ² :0.5, P>0.05

SV: sigmoid volvulus, ORC: obstructive rectosigmoid cancer

Conflict interest statement The authors declare that they have no conflict of interest to the publication of this article.

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