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## Çocuk Acil Kliniğinde Supraventriküler Taşikardili Hastalara Yaklaşım

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### **Amaç:**

Supraventriküler taşikardi (SVT) çocukluk yaş grubunda en sık görülen aritmidir. Biz bu çalışmada çocuk acil kliniğinde SVT tanısı alan hastalarla ilgili deneyimimizi paylaşmayı amaçladık.

### **Gereç ve Yöntem:**

Çocuk Acil kliniğimizde Eylül 2016-Mayıs 2019 tarihleri arasında SVT tanısı alan hastaların dosyaları retrospektif olarak incelendi.

### **Bulgular:**

14 hastanın SVT tanısı aldığı tespit edildi. Hastaların 6'sı (%42,9) kız, 8'i (%57,1) erkek idi. Tüm hastaların yaş ortalaması  $7,97 \pm 3,01$  idi. Hastaların tamamına vagal uyarı uygulanmıştı. 13 (%92,9) hastaya adenozin, 5(%35,7) hastaya amiodaron tedavileri uygulanmıştı. Bir hastaya kardiyoversiyon yapılmıştı. Hastaların 8'i (%57,1) adenozin, 4'ü (%28,6) amiodaron, 1'i (%7,1) kardiyoversiyon ve 1'i (%7,1) vagal uyarı tedavisinden fayda gördü. 1 (%7,1) hasta yoğun bakıma yatırılmıştı ve bu hasta kardiyoversiyon yapılan hastaydı. Cinsiyet ile geliş semptomları, tedavi yöntemi ya da tedavi başarısı arasında istatistiksel olarak anlamlılık tespit edilmedi. Çarpıntısı olan 12 hastanın 8'inin (%66,7) istatistiksel anlamlı olarak en sık 8-10 yaş arasında olduğu görüldü.

### **Sonuç:**

SVT, çocuklarda semptomatik taşiaritminin en sık görülen biçimidir. Bu nedenle çocuk acil kliniklerinde bu hastaların tanılarının hızlı bir şekilde konup, gerekli müdahale ve tedavilerinin ivedilikle yapılması gerekmektedir.

**Anahtar Kelimeler:** *acil, çocuk, supraventriküler taşikardi*

## Approach To Patients With Supraventricular Tachycardia In Pediatric Emergency Clinic

### **Background:**

Supraventricular tachycardia (SVT) is the most common arrhythmia in childhood. In this study, we aimed to share our experience with patients diagnosed with SVT in the pediatric emergency clinic.

### **Methods:**

The files of patients diagnosed with SVT between September 2016 and May 2019 in our Pediatric Emergency Department were retrospectively reviewed.

### **Results:**

14 patients were diagnosed as SVT. Six patients (42.9%) were female and 8 patients (57.1%) were male. The mean age of all patients was  $7.97 \pm 3.01$  years. While vagal stimulation was applied to all patients, adenosine to 13 (92.9%) and amiodarone to 5 (35.7%) patients. One patient went on cardioversion. While 8 of the patients (57.1%) responded to adenosine, 4 (28.6%) to amiodarone, 1 (7.1%) to cardioversion and 1 (7.1%) to vagal stimulation. One patient (7.1%) was hospitalized in intensive care unit and underwent cardioversion. There was

no statistically significant difference between gender and presentation symptoms, treatment method or treatment success. Of the 12 patients with palpitations, 8 (66.7%) were found to be most frequent between the ages of 8-10 which was statistically significant.

### **Conclusion:**

SVT is the most common form of symptomatic tachyarrhythmia in children. Therefore, the diagnosis of these patients in pediatric emergency clinics should be made quickly and necessary interventions and treatments should be done immediately.

**Keywords:** *child, emergency, supraventricular tachycardia*

### **Introduction**

Although pediatric dysrhythmias are not common among the admissions to pediatric emergencies, they are very important in terms of morbidity and mortality. With the successful surgical treatment of congenital heart diseases, dysrhythmia is more frequently diagnosed in pediatric patients. As a result, admittance due to rhythm disorders to the pediatric cardiology polyclinics and pediatric emergency departments has been increased (1).

Supraventricular tachycardia (SVT) is the most common symptomatic pediatric tachyarrhythmia since neonatal period. It is usually caused by atrioventricular re-entry and an abnormal mechanism originating from the proximal part of the his bundle (2,3).

Pediatric dysrhythmias should be recognized rapidly due to the important hemodynamic effects they may cause (1). We aimed to share our experience on patients diagnosed with SVT in our pediatric emergency clinic which is the most frequently encountered arrhythmia disorder in childhood.

### **Patients and Methods**

The records and hospitalization files of patients under the age of 18 who were diagnosed with SVT between September 2016 and May 2019 in the Pediatric Emergency Medicine Clinic were analyzed retrospectively. Age, gender, vital signs, complaints of the patients, follow-up and treatment methods in emergency department were recorded in the standard data entry form. Patients whose data were found to be deficient were excluded from the study.

Package for the Social Sciences for Windows ver. 20.0 package program was used for statistical analysis. Descriptive statistics were used for the analysis of distribution and frequency of data, and for the comparison of frequency in 2 independent groups, a chi-square test was used. A multicell chi-square test was applied for 3 or more groups. In all statistical analyses, the level of significance was accepted as  $p < 0.05$ .

### **Results**

14 patients were diagnosed as SVT. Six patients (42.9%) were female and 8 patients (57.1%) were male. The mean age of the patients was  $7.97 \pm 3.01$  years,  $6.80 \pm 3.50$  for girls and  $8.85 \pm 2.45$  for boys. According to age groups, the most common age was 8 (57.1%). When the complaints were examined, it was seen that 12 (85.7%) patients had chest pain and palpitation, 8 (57.1%) patients had dizziness and 6 (42.9%) patients presented with fatigue. The mean heart rate at presentation was  $203.07 \pm 3.01$  / min (Female:  $200 \pm 5.89$ ; Male:  $205.37 \pm 6.23$ ).

None of the patients had hemodynamic disorder on admission. While vagal stimulation was applied to all patients, adenosine to 13 (92.9%) patients and amiodarone to 5 (35.7%) patients. One patient underwent cardioversion. Eight of the patients (57.1%) responded to adenosine treatment, 4 (28.6%) to amiodarone, 1 (7.1%) to cardioversion and 1 (7.1%) to vagal stimulation. One (7.1%) hemodynamically impaired patient was hospitalized in intensive care unit and underwent cardioversion. One patient (7.1%) had a history of drinking too much energy drink. There was no statistically significant difference among gender and presentation

symptoms, treatment method or treatment success. Of the 12 patients with palpitations, 8 (66.7%) were found to be mostly between the ages of 8-10 which was statistically significant.

### Discussion

SVT is the most common form of symptomatic tachyarrhythmia in children. As well as being asymptomatic, it may present with complaints such as weakness, dizziness, fainting, and fatigue, and sometimes cardiac arrest may be the first presentation finding (4). In our study, there were no cases presenting with cardiac arrest. The most common presenting complaint was chest pain and palpitation.

The treatment of SVT is decided by considering the hemodynamic status of the patients. Patients who are hemodynamically stable (conscious, pulse (+), capillary filling time normal, blood pressure within normal limits) are firstly treated with vagal maneuvers. In our study, none of our patients had hemodynamic instability at the time of admission and all of our patients underwent vagal maneuver.

Patients who do not respond to vagal maneuvers are given adenosine treatment at a dose of 0.1mg / kg / dose, preferably via a vessel close to the heart in the upper extremity. Since adenosine is rapidly destroyed in the body, 2-4 ml of physiological saline is pushed to the patient through the same vein and the drug reaches the heart as soon as possible (5). In our study, adenosine treatment was given to 13 (92.9%) patients.

Patients who do not respond to adenosine treatment undergo synchronized cardioversion with the dose of 0.5-1 joule/kg. However, direct cardioversion should be applied to patients with impaired hemodynamic status without delay (6,7). In our study, one patient did not respond to vagal stimulation and repeated doses of adenosine, was hospitalized in intensive care unit and underwent cardioversion.

In conclusion, SVT is the most common form of pediatric dysrhythmias. Adenosine is the first drug of choice. Chronic and permanent tachycardia may result in cardiomyopathy. Therefore, the diagnosis of these patients in pediatric emergency clinics should be made quickly and necessary interventions and treatments should be done immediately.

### References

1. Bilici M, Demir F. *Pediatric Disrhythmias. Dicle Tıp Dergisi. 2015; 42 (1): 128-135.*
2. Moak JP. *Supraventricular tachycardia in the neonate and infant. Prog Pediatr Cardiol 2000; 11: 25-38.*
3. Deal B. *Supraventricular tachycardia mechanisms and natural history. In. Deal B, Wolff G, Gelbrand H, editors. Current concepts in diagnosis of arrhythmias in infants and children, Futura Armonk, NY,1998: 117-143.*
4. Doniger DJ, Shariieff GQ. *Pediatric dysrhythmias. Pediatr Clin North Am 2006;53:85-105.*
5. Diaz-Parra S, Sanchez Yanez P, et al. *Use of adenosine in the supraventricular tachycardia in a pediatric emergency department. Pediatr Emerg Care 2014;30:388-393.*
6. Spearman A, Williams P. *Supraventricular tachycardia in infancy and childhood. Pediatr Ann 2014;43:456-460.*
7. Tripathi A, Black GB, Park YMM, et al. *Factors associated with the occurrence and treatment of supraventricular tachycardia in a pediatric congenital heart disease cohort. Pediatr Cardiol 2014;35:368-373.*