



Adenosine Response and Failure for Terminating Paroxysmal Supraventricular Tachycardia (PSVT) in Emergency Department (ED)

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INTRODUCTION

Paroxysmal supraventricular tachycardia (PSVT) is a common cardiac arrhythmia presenting to the emergency departments (ED).⁽¹⁾ The use of adenosine after the failure of vagal maneuvers in patients with PSVT is recommended.⁽²⁾ Despite adenosine being the first-line therapy, its failure has been suspected in patients with history of previous PSVT.⁽³⁾ However, such association could not be seen in other studies and the specific reason that may contribute to adenosine failure are not yet conclusive.⁽⁴⁾

OBJECTIVES

The aim of our study is to assess the level of adenosine response and to identify the factors that may contribute to adenosine failure by comparing patients' demographic, medical history and clinical features between adenosine responders and non-responders.

METHODS

All adult patients who were diagnosed with PSVT in the ED of King Saud University Medical City and treated with adenosine between June 2015 to June 2021 were included in this retrospective study. Patients' demographics, medical history, clinical features, and treatment management were collected. Data were analyzed using SPSS software and P values less than 0.05 was considered statistically significant.

RESULTS

Around 311 of PSVT incidents treated with adenosine were documented. Most cases occurred in females (70.7%) with mean age of 46.7 ± 13.7 and mean BMI of 32 ± 7.9 . About 93.9% and 69.2% of the patients have palpitation as chief complaint and previous history of PSVT respectively. Although of comparable baseline of heart rate between the adenosine responders and non-responders (184.35 ± 24.5 versus 179.52 ± 23.3), the overall responses from any doses of adenosine was 83.3% (n=259) with mean heart rate of 100 ± 16 , while 16.7% (n=52) of patients have failed to return to sinus rhythm. Of those who failed adenosine, they showed 100% response rate to diltiazem and verapamil. Regarding the association between the adenosine response and patients' factors, it is found that likelihood response to adenosine is positively correlated with age (OR=1.038; 95%CI 1.011-1.065) and history of PSVT (OR=2.824; 95%CI 1.353-5.894).

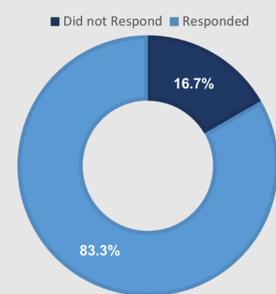


Figure 1: The overall responses from any doses of adenosine.



Figure 2: The sequence of pharmacological interventions received.

Demographic	Response to Adenosine	Mean	OR	95% C.I
Age	Didn't Respond	41.92±17.9	1.045	1.011-1.080
	Responded	47.66±12.5		
BMI	Didn't Respond	29.202±7.3	1.026	0.972-1.083
	Responded	32.695±7.8		
SBP	Didn't Respond	119.20±20.7	0.981	0.947-1.016
	Responded	122.98±21.2		
MAP	Didn't Respond	90.80±17.1	1.015	0.970-1.062
	Responded	93.99±15.5		
HR at baseline	Didn't Respond	184.35±24.4	1.001	0.985-1.017
	Responded	179.52±23.2		

Table 1: Response to Adenosine based on Demographic Characteristics

Past Medical History	Response to Adenosine		OR	95% C.I
	Did not Respond	Responded		
Past-PSVT	11% (n=23)	89% (n=186)	2.939	1.374-6.287
Hypertension	16.9% (n=10)	83.1% (n=49)	0.623	0.202-1.919
Diabetes	9.7% (n=13)	90.3% (n=121)	1.093	0.389-3.067
Dyslipidemia	6.8% (n=3)	93.2% (n=41)	1.302	0.313-5.414
Asthma/COPD	22.2% (n=2)	77.8% (n=7)	0.798	0.064-9.982
Hypothyroidism	14.3% (n=4)	85.7% (n = 24)	0.459	0.122-1.734
Arrhythmia	50% (n=2)	50% (n=2)	0.031	0.002-0.534
Anxiety	3.3% (n=2)	96.7% (n=59)	2.211	0.387-12.633
IHD	14.3% (n=1)	85.7% (n=6)	0.300	0.022-4.185
Atrial fibrillation	83.3 (n=1)	16.75 (n=1)	0.014	0.001-0.163

Table 2: Response to Adenosine based on Past Medical History

CONCLUSIONS

Our study results showed that the failure of adenosine among PSVT patients is independent of patients' demographic, past medical history, and clinical features. In contrast, adenosine response is positively correlated with age and history of PSVT. Thus, our study findings refute the suspicion of adenosine failure in patients with history of PSVT and support the use of adenosine as first-line therapy for PSVT regardless.

REFERENCES

