

INCIDENCE OF SUPRAVENTRICULAR ARRHYTHMIAS IN ACUTE EXACERBATIONS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS AND ITS IMPACT ON OUTCOME

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Introduction

Supraventricular and ventricular arrhythmias as well as conduction disturbances of varying severity are frequently observed in chronic obstructive pulmonary disease (COPD). The type of arrhythmia that occurs in patients with COPD is affected by their clinical state. The risk is further elevated during periods of acute exacerbation however, even patients with stable COPD have a fairly high rate of rhythm disturbances. COPD shares a lot of risk factors (e.g., age, smoking) with a number of disease processes and related treatment that are also associated with cardiac arrhythmias. Patients who develop supraventricular arrhythmias had longer ICU and hospital stay and increased mortality rates.

Aim of the work

The aim of this study was to prospectively assess the incidence of supraventricular arrhythmias during acute exacerbations of chronic obstructive pulmonary disease, to identify the associated factors, and to evaluate its impact on hemodynamics and outcome of patients..

Patients and Methods

A prospective cohort study was conducted that enrolled 100 mechanically ventilated patients with acute exacerbation of COPD (AECOPD). The patients were categorized into two groups based on the development of supraventricular arrhythmias. The first group (**SVT Group**) who developed supraventricular tachycardia or supraventricular arrhythmias other than sinus tachycardia. The second group (**SR Group**) who maintained sinus rhythm. The outcome included: need for mechanical ventilation (MV), duration of ICU stays, need for vasopressors and mortality.

Results

66 patients developed supraventricular tachycardia (**SVT Group**) and 34 patients-maintained sinus rhythm (**SR Group**)

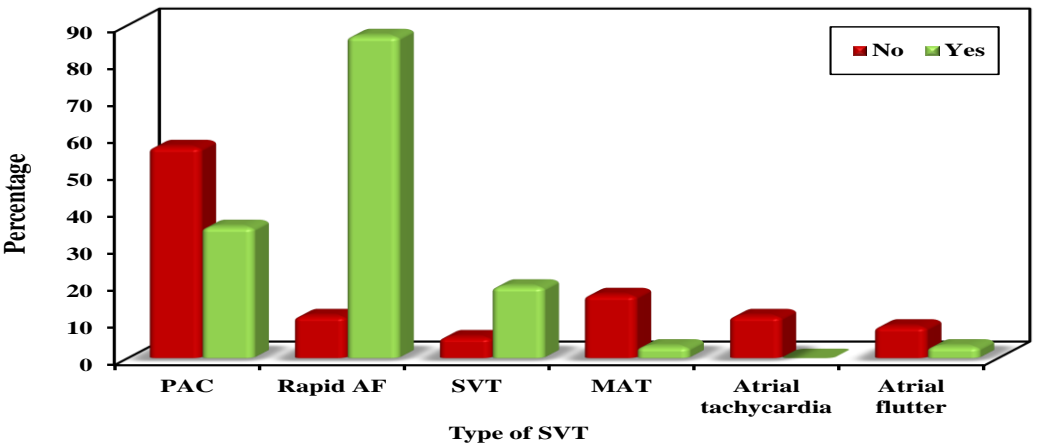
Table (1):Comparison between group 1 (SVT) and group 2 (SR) according to serum ionized Ca, phosphorus and magnesium (mg/dl) on the 1st, 3rd and 6th days of follow up.

		Group 1 (SVT)	Group 2 (SR)	Test of Sig.	p
Ca (mg/dl)	1 st day	(n = 66)	(n = 34)		
	Min. – Max.	2.0 – 5.40	0.80 – 5.20	t=	0.015*
	Mean ± SD.	3.93 ± 0.97	4.46 ± 1.11	2.482*	
	3 rd day	(n = 66)	(n = 34)		
	Min. – Max.	3.50 – 5.20	0.90 – 5.0	t=	0.762
	Mean ± SD.	4.43 ± 0.53	4.48 ± 0.94	0.304	
	6 th day	(n = 52)	(n = 18)		
	Min. – Max.	3.60 – 5.0	4.40 – 5.0	t=	0.766
	Mean ± SD.	4.60 ± 0.33	4.62 ± 0.17	0.299	
Phosphorus (mg/dl)	1 st Day	(n = 66)	(n = 34)		
	Median (Min. – Max.)	2.80 (1.10 – 5.20)	3.20 (2.50 – 7.0)	U= 822.0*	0.029*
	Mean ± SD.	2.87 ± 0.95	3.47 ± 1.27		
	3 rd day	(n = 66)	(n = 34)		
	Median (Min. – Max.)	2.60 (0.80 – 7.0)	3.0 (2.70 – 6.50)	U= 689.00*	0.002*
	Mean ± SD.	3.05 ± 1.58	3.46 ± 1.12		
	6 th day	(n = 52)	(n = 18)		
	Median (Min. – Max.)	3.0 (1.60 – 7.0)	3.0 (2.50 – 6.50)	U= 393.0	0.308
	Mean ± SD.	3.62 ± 1.52	3.21 ± 1.22		
Magnesium (mg/dl)	1 st day	(n = 66)	(n = 34)		
	Min. – Max.	0.50 – 2.0	1.20 – 2.0	t=	0.002*
	Mean ± SD.	1.59 ± 0.38	1.78 ± 0.21	3.153*	
	3 rd day	(n = 66)	(n = 34)		
	Min. – Max.	1.30 – 2.0	1.80 – 2.10	t=	<0.001*
	Mean ± SD.	1.72 ± 0.20	1.89 ± 0.10	5.921*	
	6 th day	(n = 52)	(n = 18)		
	Min. – Max.	1.50 – 2.0	1.50 – 2.10	t=	0.014*
	Mean ± SD.	1.74 ± 0.14	1.88 ± 0.21	2.659*	

Table (2):Comparison between group 1 (SVT) and group 2 (SR) according to different parameters of outcome.

	Total (n = 100)	Group 1 (SVT) (n = 66)	Group 2 (SR) (n = 34)	Test of Sig.	P
MV					
NIV	36 (36.0%)	16 (24.2%)	20 (58.8%)	x²= 11.950*	0.003*
Invasive	46 (46.0%)	35 (53.0%)	11 (32.4%)		
Both	18 (18.0%)	15 (22.7%)	3 (8.8%)		
MV days					
Median (Min. - Max.)	4.0 (2.0 - 20.0)	5.50 (2.0 - 20.0)	3.0 (2.0 - 8.0)	U= 481.50*	<0.001*
Mean ± SD.	5.93 ± 4.33	7.23 ± 4.73	3.41 ± 1.54		
ICU stay					
Median (Min. - Max.)	6.0 (3.0 - 20.0)	7.0 (4.0 - 20.0)	4.50 (3.0 - 8.0)	U= 393.50*	<0.001*
Mean ± SD.	7.14 ± 3.89	8.38 ± 4.15	4.74 ± 1.58		
Hospital stay					
Median (Min. - Max.)	7.0 (3.0 - 20.0)	8.0 (4.0 - 20.0)	6.0 (3.0 - 11.0)	U= 452.00*	<0.001*
Mean ± SD.	8.18 ± 3.72	9.35 ± 3.91	5.91 ± 1.85		
Mortality within 28 days					
discharged	63 (63.0%)	35 (53.0%)	28 (82.4%)	x²= 8.277*	0.004*
Yes	37 (37.0%)	31 (47.0%)	6 (17.6%)		

Figure (1): Relation between mortality within 28 days and type of SVT (n = 66)



Conclusion

New onset supraventricular arrhythmias is frequent during AECOPD and is associated with increased duration of MV, prolonged ICU stays and inpatient mortality