

The magnitude of inflammatory response to any surgery is directly related to the magnitude of complications including cardiac arrhythmias¹².

We have been observing cardiac arrhythmias in surgical patients admitted in the surgical ICU of PUMHS Nawabshah, when we are called upon by surgical teams for various reasons. Hence we designed this study to determine the prevalence of various cardiac arrhythmias in postsurgical patients in surgical ICU at our local setup.

MATERIAL & METHODS:

The study was conducted at the Surgical Intensive Care Unit of PUMHS Hospital, Nawabshah. It is a tertiary care teaching hospital attached with Peoples University of Medical & Health Sciences for Women, Nawabshah. Surgical ICU of PUMHS is situated near to cardiology department and is fully equipped ICU accommodating 08 beds. This study was a prospective study conducted from July 2014 to December 2014. Adult patients of both sexes who went for major general surgery and were shifted to be cared in ICU postoperatively were included in this study. Daily ECG and continuous cardiac monitoring for 72hrs were used to note for occurrence of any arrhythmia.

High risk patients like Ischemic and other heart disease and those who were having known arrhythmia or history of arrhythmias were excluded.

RESULTS:

Total 118 patients were studied. 72 patients were male (Table-1). Mean age of patients was 47 years. Percentage of various surgeries is given in Table-2. Abdominal surgery was performed on 47 patients. Obstetrics and Gynaecological surgery was performed on 21 patients. 19 patient undergone orthopaedic surgeries. 17 patients were operated for urological reason. Neurosurgery was performed on 09 patients. 05 patients undergone Ear Nose and Throat surgery. Arrhythmias were recorded in 46 patients, among these 18 were female and 28 were male patients.

Most common arrhythmia was atrial fibrillation encountered in 22 patients (Fig.1). This was followed by atrial ectopic beats in 12 patients.

Ventricular ectopic beats were present in 9 patients. 2 patients suffered from Supraventricular tachycardia. One patient was having runs of nonsustained ventricular tachycardia.

DISCUSSION:

Varieties of arrhythmias have been reported in postoperative settings in non-cardiothoracic surgical patients. These include supraventricular arrhythmias (SVAs), Atrial fibrillation, Premature Atrial Contractions (PACs), Premature Ventricular Contractions (PVCs) and ventricular arrhythmias. Among postoperative arrhythmias most commonly encountered arrhythmia is atrial fibrillation, ventricular arrhythmias and bradyarrhythmias are rare⁵. In our study postoperative arrhythmias

Table-1: Sex Distribution of Patients.

Sex	Arrhythmia		No Arrhythmia		Total	
	No	%	No	%	No	%
Male	28	23.7	44	37.3	72	61
Female	18	15.2	28	23.7	46	39
Total	46	39	72	61	118	

Table-2: Percentages of Various Surgical Patients.

S.No.	Type of Surgery	Number (%)
1	Abdominal	47 (39.8)
2	OBG	21 (17.8)
3.	Orthopaedics	19 (16.1)
4.	Urology	17 (14.4)
5.	Neurosurgery	9 (7.6)
6	ENT	5 (4.2)
Total		118

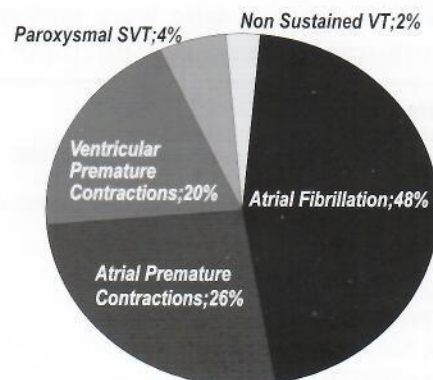


Fig-1: Percentages of Various Cardiac Arrhythmias

occurred in 39% of patients. In studies conducted by Batra et al and Walsh SR on postoperative patients at high dependency surgical unit the incidence was 9% to 20%^{6,7}. In other studies conducted on non-cardiothoracic postsurgical patients in intensive care units reported incidence was 10%^{6,13}. In these studies significant number of patients went only under daily ECG for recording arrhythmias, continuous cardiac monitorization was not performed; hence certain arrhythmias may have gone unnoticed. In our study daily ECG and continuous cardiac monitoring was performed for recording of arrhythmias, so there remained no chance of missing arrhythmia. As for as surgery is concerned; postoperative arrhythmias are more common in patient undergoing cardiothoracic and vascular surgeries^{14,15}. Non- cardiothoracic major surgeries are next to these surgeries^{6,7}. Atrial fibrillation was the most common arrhythmia (48%) seen in our study. Frequency of atrial fibrillation varies in different type of surgeries in different studies^{15,16}. In patients with ischemic heart disease the rate of postoperative after coronary bypass grafting, atrial fibrillation was 65 % in other studies^{16,17}. In one study conducted on patients undergoing coronary artery bypass grafting and AVR (Aortic Valve Replacement) postoperative atrial fibrillation occurred in 44.1% of cases¹⁸. In another study rate of postoperative atrial fibrillation in non -cardiothoracic surgical patients varied between 10% to 40%.¹⁹

Christian et al reported 0.37% atrial fibrillation in their study²⁰. However this study is retrospective, which included orthopaedic patients ophthalmology patients and included patients with relatively minor procedures. Moreover ophthalmology patients have a very low i.e 0.01% risk of atrial fibrillation²¹. Our study is prospective and ophthalmology patients were not included. In vascular surgical studies by Valentine RJ et al and Perzanowski C et al on aorta, Atrial fibrillation affected 10% to 20% of patients^{22,23}. Both of these series were retrospective and continuous ECG monitoring was used for recording of arrhythmias. Atrial fibrillation was the only arrhythmia that was

considered for study, other supraventricular arrhythmias were not included. However we recorded any arrhythmia, postoperatively by both means including daily ECG and continuous ECG monitoring. Another small vascular surgery study found that almost all patients had brief periods of supraventricular or ventricular premature contractions on postoperative Holter monitoring, though there was no major sustained arrhythmias²⁴. In our study no vascular surgery was carried out and Holter was not used for recording of arrhythmias. In our study other Supraventricular arrhythmia apart from atrial fibrillation were seen in 30% of our patients which includes premature Atrial Contractions (26%) and Non-sustained supraventricular tachycardia (4%). The reported incidence of SVA in orthopaedic patients is about 4%.²⁵ Goldman²⁶ reported a 4% incidence of postoperative SVA in patients over the age of 40 years while Polanczyk et al. reported rate of 7.6% in patients over 50 years.⁹ In our study the average age was 47 years and we did not categorized age further. Both series included thoracic surgical patients while the group of Polanczyk and co-workers also included patients with a previous history of SVAs or digoxin use. These studies included also those patients who were at high-risk for developing arrhythmias. But we excluded high risk patients postoperatively through their records and history. In these studies different length of stay and the ECG recording methods were used but we used daily ECG and continuous monitorization for 72 hrs. Hence our study does not show overall in hospital incidence of arrhythmias. These studies also included cardiothoracic patients as well, but we studied only non-cardiothoracic surgical patients. Derin S et al reported 33% premature atrial contractions²⁷. In study conducted by Talwar S et al in paediatric surgical patients junctional tachycardia occurred in 46% of patients and supra ventricular tachycardia occurred in 33% of cases²⁸.

In our study junctional tachycardia was not recorded but supraventricular tachycardias were observed in 4% of patients as discussed above but our patients were adults and undergone non-cardiothoracic surgeries.

CONCLUSION

Postoperative arrhythmias are commonly seen in general surgical patients. Atrial fibrillation is most frequent among these arrhythmias. These observations need further research for their precipitating factors before surgery and their related postoperative morbidity and mortality.

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