

## Original Research Article

# The aetiological profile of new onset palpitations in natives of Western Himalayas: a cross sectional observational study

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## ABSTRACT

**Background:** Palpitation is a common presenting complaint in out patient department. Etiological profile of such patients has not been studied in the recent past. The aim of the study was to study the aetiological profile of patients with new onset palpitations in North Indian tertiary health care centre.

**Methods:** 130 consecutive patients of new onset palpitations were enrolled in the study and the aetiological profile of palpitation was evaluated using detailed history, examination and investigations.

**Results:** The study group had 53% female and 47% male with a ratio of 1.13:1. Majority of the patients in the age group of 18-29 years. The mean age was 32.04±15.14 years. Most common symptom associated was shortness of breath seen in 17% patients. Of the 130 patients 43.8% of patients had cardiac aetiology, 35.38% psychiatric and 20% had miscellaneous aetiology. Among cardiac aetiology, arrhythmias were most common. PSVT was encountered in 15.4% and AF in 13.1% of the total patients. Psychiatry causes were observed in 35% of patients. In psychiatric causes 71.7% patients had panic attack whereas 28.2% patients had generalised anxiety disorder (GAD). In third group of miscellaneous causes which was 20% of total 6.9% had anaemia, 10% hyperthyroidism and 3.8% were on beta agonists.

**Conclusions:** Palpitation is a presenting symptom of various diseases. The cause can be easily ascertained in most of the patients by a good history and examination; serious cardiac diseases require special investigation. Palpitation as a symptom should not be overlooked the underlying cause must be identified; this can be a helpful clue to improve patient outcome.

**Keywords:** Anaemia, Arrhythmia, Palpitations, Panic attack

## INTRODUCTION

Palpitation is defined as unpleasant awareness of irregular/forceful beating of heart.<sup>1</sup> Palpitation has been described in a myriad of ways such as flip-flopping in the chest, rapid fluttering in the chest and pounding in the neck. The description of the sensation itself may be that of a flutter, flip-flop, pounding, or skip. It may be fast,

slow, regular, or irregular. Palpitation is one of the most common symptoms in general medical practice and reported in 16% of the patients.<sup>2</sup>

This symptom may be caused by a variety of disorders ranging from life threatening conditions such as ventricular tachycardia to various psychiatric illnesses. There can be many causes. Usually, palpitations are either

related to cardiac causes, psychiatry causes or other causes like anaemia, hyperthyroidism etc. cardiac causes include arrhythmia, valvular heart disease, ventricular premature contractions, ventricular tachycardia.

Non-heart-related causes include strong emotions like anxiety, fear, or stress, caffeine, nicotine, alcohol, or illegal drugs such as cocaine and amphetamines, medical conditions, including thyroid disease, a low blood sugar level, anemia, low blood pressure, fever. Psychiatric disorders include panic attack, generalised anxiety disorders and somatisation disorder. Psychiatric disorders are a common cause of palpitations; this diagnosis should not be accepted until true arrhythmic causes have been excluded.<sup>3</sup>

The examination is focused primarily on uncovering abnormalities that may indicate structural heart disease or arrhythmia. As palpitation is a common presenting symptom, and underlying cause can range from completely benign to life threatening condition including arrhythmias and to best of our knowledge no study has evaluated the aetiological profile of palpitation in India. So, this study has been planned to know the common aetiologies of the palpitation among the patients presenting to our institute with new onset palpitation.

## METHODS

The study was conducted in all consecutive patients presenting with chief complaint of new onset palpitation to the Department of Emergency Medicine, Medicine, Cardiology and Psychiatry of Indira Gandhi Medical College, Shimla, India, a tertiary care hospital in western Himalayas. Institutional ethical committee clearance was taken. Only those patients who were natives of the area were included in the study. Palpitation was defined as unpleasant awareness of irregular/forceful beating of heart.<sup>1</sup>

All the patients presenting first time with palpitations as chief complaint and above the age of 18 years were included in the study. Patients with previous history of

diagnosis and evaluation for palpitation, patients in whom palpitation was not the chief complaint or who refused to give consent were excluded. A detailed history with duration of symptoms was taken and recorded in pre-formed format. All patients were subjected to detailed clinical examination and relevant laboratory investigations as per proforma.

## Statistical analysis

Data was recorded on a microsoft excel spreadsheet. All discrete variables were expressed as percentages. Statistical analysis was performed using Epi Info2000 and SPS student version 16.0 (SPSS Inc, Chicago, USA). All discrete variables were expressed as percentages.

## RESULTS

This prospective observational study included a total number of 130 patients of palpitations over a year, the age group of the study population ranged from 18 years to 75 years with a mean age of 32.04±15.14 years. Maximum number of patients were 38 (29.23%) in the age group of 18-30 years. The number of females in the study group were 69 (53.07%) and males 61 (46.92%) with a ratio of 1.13:1. Majority (86.92%) of patients in current study belonged to rural areas.

## Clinical features

Of the total study group 83.4% of the patients had palpitations at rest and in 14.6% on exertion. Palpitations were abrupt in onset in 83.07% patients and slow onset was seen in 16.92% patients.

Among all patients, 86.2% were having regular palpitations while 13.8% of them had irregular intermittent palpitations.

About 71.5% patients had no associated symptoms with palpitations whereas shortness of breath was the most common associated symptom seen in 16.9% patients. Chest pain was associated in 9% of patients (Table 1).

**Table 1: Characteristics of palpitation.**

	Male	Female	Total	P value
Exertional	9 (14.8%)	10 (14.5%)	19 (14.6%)	0.96
Resting	52 (85.2%)	59 (85.5%)	111 (83.4%)	
Abrupt	49 (80.3%)	59 (85.5%)	108 (83.1%)	0.28
Slow	12 (19.7%)	10 (14.5%)	22 (16.9%)	
Regular	53 (86.9%)	59 (85.5%)	112 (86.2%)	0.82
Irregular	8 (13.1%)	10 (14.5%)	18 (13.8%)	
Chest pain	5 (41.7%)	7 (58.3%)	12 (9%)	
Shortness of breath	11 (50%)	11 (50%)	22 (16.9%)	
No association	38 (40.9%)	55 (59.1%)	93 (71.5%)	

On clinical examination Pallor was present in 6.92% patients, 47.69% of patients had tachycardia at presentation, out of which 54.83% were males and 45.17% were females. The pulse was irregular in 16.15% patients at presentation. Anaemia was present in 9 (6%) patients out of whom 4 patients had microcytic anaemia and rest five had macrocytic anaemia.

Thyroid function tests were done in all patients with palpitations. 10% of the patients had hyperthyroidism where as 90% patients with palpitation had normal thyroid function tests. Proportion of hyperthyroidism among female patients was found higher than male patients but the difference was not statistically significant (p=0.53).

Electrocardiography (ECG) was done in all the patients, in 60 (46.15%) patients ECG was normal while in 70 (53.84%) had abnormal findings. Among abnormal findings, 17 (13.07%) showed atrial fibrillation, 3 (2.3%) had atrial flutter (AFL), 20 (15.3%) had paroxysmal supraventricular tachycardia (PSVT), 3(2.3%) showed bradycardia, 19 (14.6%) had sinus tachycardia, 5 (3.8%) patients had AF with AFL, 2 (1.5%) patients had VT and 1 patient had junctional rhythm.

Echo was done in all patients with palpitations, 8.5% had abnormal ECHO findings, 6(4.6%) had rheumatic heart disease. 3 (2.3%) patients had dilated cardiomyopathy, mitral valve prolapses and ascending aortic aneurysm was seen each in one patient.

**Table 2: Aetiology of palpitation among study subjects.**

		Frequency	Percentage
Cardiac (57)	AF	17	13.1%
	Atrial flutter	3	2.3%
	Sick sinus syndrome	3	2.3%
	PSVT	20	15.4%
	RHD	6	4.6%
	VT	2	1.53%
	MVP	1	0.8%
	Ascending aortic aneurysm	1	0.8%
	DCMP	3	2.3%
	Junctional rhythm in ECG	1	0.8%
	Psychiatric (46)	Panic attack	33
GAD		13	10%
Miscellaneous (27)	Anaemia	9	6.9%
	Hyperthyroidism	13	10%
	Due to $\beta$ 2 agonist	5	3.8%
Total		130	100

### **Etiology**

Overall 43.8% of patients had cardiac aetiology, 35% had a psychiatric etiology, and 20% had miscellaneous aetiologies. Among cardiac etiology, arrhythmia was most common. PSVT encountered in 15.4% patients, AF in 13.1%, rheumatic heart disease in 4.6%, atrial flutter in 2.3%, ventricular tachycardia in 1.6%, sick sinus syndrome in 2.3%, mitral valve prolapses in 0.8%, ascending aortic aneurysm in 0.8%, dilated cardiomyopathy in 2.3%, Junctional rhythm in 0.8% patients (Table 2).

Psychiatry causes were observed in 35% of patients. Out of these 71.7% patients had panic attack whereas 28.2% patients had generalised anxiety disorder (GAD). Miscellaneous causes were noted in 20% of patients.

Under these, anaemia was present in 6.9% and hyperthyroidism was present in 10% of patients and 3.8 % of patients were those who were on beta 2 agonists.

### **DISCUSSION**

In literature, there is insufficient data about the age and gender distribution of palpitations. And even there are insufficient data about aetiology of palpitations. We grouped the causes of palpitations into categories including cardiac, psychiatric and miscellaneous. Cardiac causes included arrhythmia, rheumatic heart disease, aneurysm and mitral valve prolapse. Psychiatric causes included panic attack and generalized anxiety disorder. Miscellaneous causes included anaemia, drugs and thyroid disorders. In present observational study, the age of the study group ranged from 18 years to 75 years. Our

study supports that palpitation in Indian context is a disease of comparatively younger population with maximum number of patients 38 (29%) in the age group of 18-30 years of age. Male to female ratio of palpitation varies according to various studies, however in all studies females were affected more commonly than male.

Females were affected significantly more frequently than males an observation similar to that of Kapoor et al.<sup>4</sup>

In the present study palpitations were on exertion in 19 patients out of 130, and all were related to cardiac aetiology and were statistically significant in comparison to patients with non-cardiac aetiology with p value of (<0.0001). Similar observations were found in a study by Summerton et al which showed palpitations during exertion had cardiac aetiology.<sup>5</sup>

Associated symptoms of palpitation were chest pain, shortness of breath and syncope. Chest pain was encountered in 9 % and shortness of breath was present in 17 % of patients. Summerton et al et al has also reported chest pain in 11% of patients.<sup>5</sup>

In present study cardiac causes were observed in 43% cases, psychiatric in 35% and miscellaneous causes in 20% of the cases. Miscellaneous causes were noted in 20% of patients. Under these, anaemia was present in 6.9% and hyperthyroidism was present in 10 % subjects and 3.8 % of patients were those who were on beta 2 agonists.

In a similar study by Weber and Kapoor in 190 patients presenting with a complaint of palpitations at a university medical centre, causes of palpitations were arrhythmias in 41% (16% of whom had atrial fibrillation/flutter, 10% had supraventricular tachycardia, and 2% had ventricular tachycardia), structural heart disease in 3%, psychosomatic disorders in 31% (mainly panic and anxiety disorders), systemic causes in 4%, and the use of a medications, illicit substances, or stimulants in 6%.<sup>4</sup>

In present study, arrhythmia contributed to 80.7% of % cardiac cases. PSVT was seen in majority of cases. In these patients, majority were within age group of 18-40 years of age and 65% cases were females.

In another study by Porter MJ et al on Influence of age and gender on the mechanism of supraventricular tachycardia reported mean age of PSVT was 45 and majority were women (62%) cases.<sup>6</sup> In present study, male sex, description of an irregular heartbeat, history of heart disease was found to be independent predictors of a cardiac aetiology.

Weber and Kapoor et al, also observed male sex, description of an irregular heartbeat, history of heart disease as independent predictors of cardiac aetiology.<sup>4</sup>

Psychiatric causes were present in 35% of cases in our study and majority of the patients were females. Jonsbu E et al in their study of 154 patients, noted psychiatric disorder at attendance in 39% study subjects and they were more likely to be females with younger age.<sup>7</sup>

Barsky AJ et al in their study of 154 patients, had panic disorder in 40 (27.6%) patients of palpitation.<sup>8</sup> In a study done by Chignon et al, the prevalence of panic disorder in patients with palpitations was 15 to 31 percent.<sup>9</sup> Similarly Delamater BA et al studied 125 patients of palpitations, among them 29% of patients had psychiatric disorder.<sup>10</sup> Miscellaneous causes include 20% of patients in present study. Anaemia was present in 6.9% of patients. Hyperthyroidism was present in 10% of patients. And palpitation was encountered in 3.8% patients who were on beta 2 agonists. Similar study done by Weber and Kapoor et al in which 2.6% of patients on beta agonists.<sup>4</sup>

Mitral valve prolapse was an incidental finding in patients with palpitation. Ascending aortic aneurysm was also encountered in patients. And three patients had dilated cardiomyopathy. Weber and Kapoor et al also reported similar number of cases in their study.<sup>4</sup>

## CONCLUSION

Palpitation is a presenting symptom of various diseases. The cause can be easily ascertained in most of the patients by a good history and examination; serious cardiac diseases require special investigation. Palpitation as a symptom should not be overlooked the underlying cause must be identified; this can be a helpful clue to improve patient outcome.

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