Original Article

Demographic Analysis of Syncope Patients after Head up Tilt Test

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ABSTRACT

Objective: To determine the demographic analysis of diagnosed cases of syncope patients on head up tilt test
Study Design: cross sectional analytical study
Place and Duration of Study: This study was conducted at the Islamic International Medical College and in Armed forces Institute of Cardiology, Department of Electrophysiology, Rawalpindi from April 2017 to March 2018.
Materials and Methods: In this study 70 cases were taken on the basis of their past record of syncope, episodes of syncope and on the basis of their findings of head up tilt test. During the collection of the data of syncope, their age, gender, episodes of syncope, occupation and pattern of syncope was observed. The descriptive analysis of collected data was represented as mean ± standard deviation on SPSS statistics version 21.
Results: In Analysis of Demographic data we took 70 cases of syncope among these there were 15 females and 55 males. Mean age of the syncope patients were 36.17± 11.93, while the episodes of syncope were mean of 2.90 ± 1.83. In our Analysis of syncope, we also found that among 70 cases, 41 of the positive cases were soldiers or belongs to army because of prolong standing during duty hours. During this study two patterns of syncope were observed which were vasovagal syncope and Postural tachycardia syndrome.
Conclusion: we conclude that syncope is more prevalent in middle age groups and most of the patients presents with 2 or more episodes of syncope. Syncope is more prevalent in those who are more prone to prolong standing at work.

Key Words: syncope, Head up tilt test, Age, vasovagal syncope, Postural tachycardia syndrome

Citation of articles: Raziq H, Sadiq N, Riaz U, Samad A. Demographic Analysis of Syncope Patients after Head up Tilt Test. Med Forum 2019;30(6):2-5.

INTRODUCTION

Syncope is a transitory and self-resolving loss of consciousness, which occurs due to the decreased perfusion of the cerebral tissues usually due to hypotension leading tohypo-perfusion. Syncope commonly occurs in those who are intolerant to orthostatic stresses. In orthostasis a person is unable to maintain his venous return and blood pressure during standing or due to the effect of gravity[1]. Brain is the most sensitive organ to decreased perfusion among all organs and it utilizes 15-20% percent of the cardiac output with little reserves as for metabolic needs, so decrement in blood supply to brain manifests in the form of syncope or pre-syncope like state. A case of syncope usually comes with complains of blurry vision, sweating, lightheadedness, nausea and vertigo and it have been found that syncope affects 6.2 per 1000 persons per year[2].

Syncope is commonly occurring complaint of patients visiting in the hospitals, which is 1-2% of emergency visits. Pathophysiology of Progression of the syncope is same irrespective of the cause of syncope so the ultimate mechanism is fall in blood pressure, which either occurs due to fall in blood pressure, hypervolemia or due to fall in peripheral vascular tone[3]. Syncope has different etiological causes which may be vasovagal (Reflex syncope), Orthostatic, cardiac syncope (structural heart anomaly or Arrhythmias), Neurogenic, Endocrinological and psychiatric. Neurocardiogenic syncope also known as vasovagal syncope is the most prevalent and common syncopal cause, which usually occurs due to abnormal vasodilatation and bradycardia in response orthostasis or vascular stresses due to the effect of gravity[4]. In vasovagal syncope bradycardia and hypotension are the characteristic features found that progresses toward cerebral hypoperfusion due to accumulation of venous blood in lower extremities and dependent parts of the body that advances toward syncope[5]. Another common subset of syncope is postural tachycardia in which there is reflex tachycardia of 30 beats/minute or increased

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Received: March, 2019
Accepted: April, 2019
Printed: June, 2019

heart rate up to 120 beats in ten minutes of standing but occurs in the absence of hypertension[6]. This type of syncope occurs due to autonomic dysfunction to counter intravascular volume depletion. Cases of postural tachycardia encounter palpitations, cardio respiratory discomfort, vertigo and dizziness[7].

Syncope is difficult to diagnose because of its multiple etiologies. Head up tilt test is used as a gold standard for testing the syncope patients. Head up tilt (HUT) test is widely used tool to uncover the symptoms of the syncope. During this test patient is positioned at the angle of 70° for 45 minutes followed by pharmacological provocation by sublingual nitroglycerin (NTG 0.3mg). During this whole test blood pressure and cardiac rate is monitored, which varies in syncopal patients that progress them towards syncope and on the basis of these parameters, variations in cardiovascular parameters patient can be labeled as positive tilt table test or syncope patients. Head up tilt test gives certain different types of syncope patterns which may be neurocardiogenic, psychogenic syncope, cerebral syncope, postural tachycardia syndrome (POTS) and dysautonomic but vasovagal syncope (Neurocardiogenic syncope) and Postural tachycardia syndrome (POTS) are the most common and prevalent one[8].

MATERIALS AND METHODS

In this study 70 cases were taken from the Electrophysiology department, who came with the compliant of syncope. Then there head up tilt test was performed, on the basis of their past medical record of syncope, episodes of syncope and on the basis of their findings of head up tilt test patients were chosen. After the selection of Positive patients of syncope after head up tilt test, their age, gender, episodes of syncope, occupation and pattern of syncope was observed and recorded. The descriptive analysis of collected data was represented as mean ± standard deviation which was analyzed on SPSS statistics version 21.

RESULTS

In Demographic analysis of the syncope patients that might be vasovagal syncope or postural tachycardia syndrome, we took 70 cases of syncope among these there were 15 females and 55 males. Mean age of the syncope patients were 36.17± 11.93 which shows that it is more prevalent in middle age group as compared to younger or older age group, while the episodes of syncope were mean of 2.90 ± 1.83, which shows that cases of presents for head up tilt test when they have two or more episodes of syncope or presyncope like state. In our Analysis of syncope as we performed our study in military hospital, we found that among 70 cases, 41 of the positive cases were soldiers or belongs to army. As syncope or presyncope like state can occur due to orthostatic intolerance or incompetent compensatory mechanism to prevent venous pooling that is due to prolong standing during duty hours leading towards vertigo, fainting and syncope.

Table No.1: Demographic analysis of syncope patients

Number of cases	70	
Age	36.1±11.9	
Episodes of syncope	2.9±1.8	
Gender	Male	Females
	55	15
Occupation	Army	Civilian
	41	29

DISCUSSION

Head up tilt test is a tool used to evaluate the syncope as we did in our study. on head up tilt test different hemodynamic and cardiovascular variations are seen that lead to syncope among which neurocardiogenic (reflex or vasovagal syncope) is most common one followed by (POTS) postural tachycardia syndrome during head up tilt test[9]. In another study by Kenny et al,.(2000) in which he observed the variation of blood pressure and heart rate and label them as cases of vasovagal and postural tachycardia as we experienced similar hemodynamic and syncopal indications and patterns during this study[10].

Central nervous system is highly sensitive organ to ischemia and when there is hypo perfusion to brain tissues, it can leads to syncope or syncope like state. This cerebral hypo perfusion is usually of shorter duration averaging of twelve seconds. In an average life span of 70 years syncope occurs once in 42% of the population. It occurs in 6 % of the new cases per year[11]. Cases of syncope varies in age ranging from 18 years of age in 15% of population to 23% of elderly population and these values are in accordance with the results of our study thus supporting the results of age variability of our study[12].

In different studies it have been found that episodes of syncope varies with age and the average age of patients who comes for head up tilt test with previous episodes of syncope was 36 ± 16.3 years, which resembles the age of our patients in our study. In another study it have been found episodes of syncope increases with age i.e. 5.7 episodes per year after the age of 60, while 11 episodes per year after the age of 70 years[13]. In those patients who have two or less than two episodes of syncope their recurrence rate is 22% as compared to those who have more than six episodes have recurrence rate of 69%. In this study it also has been found that forty percent of the overall population has encountered syncope at least once in their life and new cases reported in hospitals are found to be 1.3 /1000 persons in a year[14]. The epidemiology of syncope varies with different age groups. In young age group it is more commonly neuro cardiogenic (reflex syncope)

mediated, while in older age group it is usually occur due to cardiovascular irregularities.

Among all the cases of the syncope, Reflex syncope found to be the most prevalent one because it is account for 21 percent of all syncope and 56 to 78 percent of the syncope patients in specialized units belongs to this type of syncope[15]. The prevalence of reflex syncope (Vasovagal Syncope) and its occurrence in general population on the basis of gender is 3% in male population and 3.5% in female population. It was also observed that females are encountered with syncopal episode greater in frequency as well as longer in duration as well[16].

In cases of postural tachycardia syndrome female are most common as compared to male i.e. male to female ratio is 4:1 and age varies from 15 to 50 years of age[17]. Prevalence of more syncope more in females as compared to that of male might be due to female androgenic hormones that could effects sensitivity and metabolism of catecholamine.

In our cases we also have found that out of seventy cases in our study forty one cases were soldiers and belongs to the army, the greater prevalence of syncope in soldiers shows that syncope is associated with prolonged standing that leads to venous pooling, decreased venous return, cerebral hypo perfusion and ultimately syncope occurs. In another study conducted on soldiers predicted the causes of ailment and sudden death and found that most common cause was cardiac diseases which was 54% followed by syncope which account for 23 % of anomalies and deaths due to this, which emphasize the importance of evaluation of young soldiers associated with syncope during exercise and during prolonged standing while duty[18].

In another study by Glifrich et al conducted on US soldiers in which he proposed that syncope is the most common cause of referral after cardiac diseases[19]. Different injuries are also found to be associated with syncope and Number of episodes of syncope and symptoms of syncope and pre syncope gives predictive values for positive tilt table result and Number of episodes of syncope and symptoms of syncope along with positive tilt table result gives the clue for recurrence of syncope which are in accordance to our study[20].

CONCLUSION

This study concludes that syncope is usually prevalent in the middle age groups and the patients come to hospital with more than 3 episodes. Females also have a large share in the prevalence of the syncope. This disease is also associated with history of prolonged standing and this is the major reason that's why it is common in those who are exposed to prolonged standing in the day like in soldiers. In future it is recommended to perform hormonal analysis like androgens of syncope patients should be done.

Author's Contribution:

Concept & Design of Study:	Hammad Raziq
Drafting:	Noman Sadiq
Data Analysis:	Uzma Riaz, Abdul Samad
Revisiting Critically:	Hammad Raziq, Noman Sadiq
Final Approval of version:	Hammad Raziq

Conflict of Interest: The study has no conflict of interest to declare by any author.

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