PREVALENCE OF SINUS TACHYCARDIA AMONG PATIENTS PRESENTING IN EMERGENCY DEPARTMENT

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ABSTRACT:
Tachycardia, also called tachyarrhythmia, is a heart rate that exceeds the normal resting rate. In general, a resting heart rate over 100 beats per minute is accepted as tachycardia in adults. This cross-sectional study was conducted among the patients presenting in the emergency department of different hospitals. Name, age, gender and history of palpitations and ECG findings were noted on a predefined proforma. All the data was entered and analyzed with SPSS Ver. 23.0. A total of 60 patients presenting with the history of palpitations in the emergency department were included in this study i.e., 30 males (50%) and 30 females (50%). The mean age of the patients was 32.22±3.32 years. Out of these patients, ten patients were having sinus tachycardia. Further investigations and management were planned accordingly.

Keyword: Sinus Tachycardia
INTRODUCTION:

Tachycardia, also called tachyarrhythmia, is a heart rate that exceeds the normal resting rate. In general, a resting heart rate over 100 beats per minute is accepted as tachycardia in adults. Heart rates above the resting rate may be normal (such as with exercise) or abnormal (such as with electrical problems within the heart). Tachycardia can lead to fainting. When the rate of blood flow becomes too rapid, or fast blood flow passes on damaged endothelium, it increases the friction within vessels resulting in turbulence and other disturbances. According to the Virchow’s triad, this is one of the three conditions that can lead to thrombosis (i.e., blood clots within vessels). Heart rate is considered in the context of the prevailing clinical picture. For example, in sepsis >90 bpm is considered tachycardia. When the heart beats excessively or rapidly, the heart pumps less efficiently and provides less blood flow to the rest of the body, including the heart itself. The increased heart rate also leads to increased work and oxygen demand by the heart, which can lead to rate related ischemia. Relative tachycardia involves a greater increase in rate than would be expected in a given illness state.

The body has several feedback mechanisms to maintain adequate blood flow and blood pressure. If blood pressure decreases, the heart beats faster in an attempt to raise it. This is called reflex tachycardia. This can happen in response to a decrease in blood volume (through dehydration or bleeding), or an unexpected change in blood flow. The most common cause of the latter is orthostatic hypotension (also called postural hypotension). Fever, hyperventilation, diarrhea and severe infections can also cause tachycardia, primarily due to increase in metabolic demands.

An increase in sympathetic nervous system stimulation causes the heart rate to increase, both by the direct action of sympathetic nerve fibers on the heart and by causing the endocrine system to release hormones such as epinephrine (adrenaline), which have a similar effect. Increased sympathetic stimulation is usually due to physical or psychological stress. This is the basis for the so-called fight-or-flight response, but such stimulation can also be
induced by stimulants such as ephedrine, amphetamines or cocaine. Certain endocrine disorders such as pheochromocytoma can also cause epinephrine release and can result in tachycardia independent of nervous system stimulation. Hyperthyroidism can also cause tachycardia. The upper limit of normal rate for sinus tachycardia is thought to be 220 bpm minus age (1-3).

MATERIAL AND METHODS:
This cross-sectional study was conducted among the patients presenting in the emergency department of different hospitals. Name, age, gender and history of palpitations and ECG findings were noted on a predefined proforma. All the data was entered and analyzed with SPSS Ver. 23.0. The quantitative variables were presented as mean and standard deviation. The qualitative variables were presented as frequency and percentages.

RESULTS:
A total of 60 patients presenting with the history of palpitations in the emergency department were included in this study i.e., 30 males (50%) and 30 females (50%). The mean age of the patients was 32.22±3.32 years. Out of these patients, ten patients were having sinus tachycardia. Further investigations and management were planned accordingly.

DISCUSSION:
Sinus tachycardia (also colloquially known as sinus tach or sinus tachy) is an elevated sinus rhythm characterized by an increase in the rate of electrical impulses arising from the sinoatrial node. In adults, sinus tachycardia is defined as a heart rate greater than 100 beats/min (bpm). The normal resting heart rate is 60–100 bpm in an average male adult and 60-90 bpm in an average female adult. Normal heart rate varies with age, from infants having faster heart rates (110-150 bpm) and the elderly having slower heart rates. Sinus tachycardia is a normal response to physical exercise, when the heart rate increases to meet the body's higher demand for energy and oxygen, but
sinus tachycardia can also indicate a health problem. Thus, sinus tachycardia is a medical finding that can be either physiological or pathological. Tachycardia is often asymptomatic. It is often a resulting symptom of a primary disease state and can be an indication of the severity of a disease. If the heart rate is too high, cardiac output may fall due to the markedly reduced ventricular filling time. Rapid rates, though they may be compensating for ischemia elsewhere, increase myocardial oxygen demand and reduce coronary blood flow, thus precipitating an ischemic heart or valvular disease. Sinus tachycardia accompanying a myocardial infarction may be indicative of cardiogenic shock. Sinus tachycardia is usually apparent on an ECG, but if the heart rate is above 140 bpm the P wave may be difficult to distinguish from the previous T wave and one may confuse it with a paroxysmal supraventricular tachycardia or atrial flutter with a 2:1 block. Ways to distinguish the three are i.e. Vagal maneuvers (such as carotid sinus massage or Valsalva's maneuver) to slow the rate and identification of P waves or administer AV blockers (e.g., adenosine, verapamil) to identify atrial flutter with 2:1 block. Heart sounds should also be listened (4-6).

REFERENCES:
