Original Research

Assessment of cases of tetany

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ABSTRACT
Background:A variety of criteria, including cramps, muscle twitches, circumoral numbness, hand and foot paresthesias, laryngeal stridor, carpopedal spasm, and convulsions, are used to classify tetany. The present study was conducted to evaluate the cases of tetany in adults.
Materials & Methods: 56 cases of tetany of both genders were included. Etiology and clinical features of tetany was recorded.
Results: Out of 56 patients, 30 were males and 26 were females. Common causes were hypomagnesaemia in 3, anxiety hyperventilation in 17, idiopathic hyperparathyroidism in 8, acute pancreatitis in 5, Bartter' syndrome in 4, and vitamin deficiency in 19 patients. The difference was significant (P< 0.05). Common symptoms were cramps in 41, laryngeal stridor in 32, carpopedal spasm in 36, circumoral numbness in 20, muscle twitching in 19 and paresthesia of hand and feet in 38 patients. The difference was significant (P< 0.05).
Conclusion: Vitamin deficiencies, hypomagnesemia, anxiety, hyperventilation, idiopathic hyperparathyroidism, acute pancreatitis, and Bartter's syndrome were among the major causes of tetany.
Keywords: Laryngeal stridor, Tetany, hypomagnesaemia

Introduction

A variety of criteria, including cramps, muscle twitches, circumoral numbness, hand and foot paresthesias, laryngeal stridor, carpopedal spasm, and convulsions, are used to classify tetany. Tetany is characterized by the hyperexcitability of peripheral nerve axons, which results in the production of repeated discharges.[1] The illness known as tetany has a very diverse clinical appearance. Increased neuromuscular activity and related sensory disruption are among its features. Hand and foot paresthesias, muscle spasms, and circumoral numbness are examples of mild symptoms. In extreme situations, patients could exhibit seizures, cardiac malfunction, laryngospasm, or widespread muscle spasms. Clinical tests to reveal latent tetany include the Trousseau sign and the Chvostek sign.[2]

Either low serum calcium (true hypocalcemia indicates a decrease in the ionized calcium level even though the total serum calcium level may be normal) or alkalosis (a decrease in the proportion of the serum calcium in the ionized form) is the cause of the increased excitability of the peripheral nerves.[3] A condition known as hyperventilation occurs when breathing exceeds metabolic needs, leading to hypocapnia. This syndrome can result from a variety of medical and mental health issues.[4] The symptoms of hypocapnia can vary greatly from person to person, but some common ones include tetany, fasciculations, and facial, trunk, and extremity paresthesias. Geographical differences in illness prevalence may influence the causes of tetany. However, aside from case reports or case series of specific disorders, research detailing the etiological spread of tetany are rarely reported in the literature.[5]The present study was conducted to evaluate the cases of tetany in adults.

Materials & Methods

The present study was conducted on 56 cases of tetany of both genders. All were informed regarding the study and their written consent was obtained.

General information such as name, age, gender etc. was recorded. A comprehensive clinical assessment was conducted. The levels of intact parathyroid hormone, serum phosphate, alkaline phosphatase, and magnesium were estimated. Results thus obtained were subjected to

statistical analysis. P value less than 0.05 was considered significant.

Results

Table: I Distribution of patients

Total- 56		
Gender	**Males**	**Females**
Number	30	26

Table I shows that out of 56 patients, 30 were males and 26 were females.

Table: II Etiology of tetany

Etiology	Number	P value
Hypomagnesium	3	0.01
Anxiety hyperventilation	17	
Idiopathic hyperparathyroidism	8	
Acute pancreatitis	5	
Bartter' syndrome	4	
Vitamin deficiency	19	

Table II, graph I shows that common causes were hypomagnesaemia in 3, anxiety hyperventilation in 17, idiopathic hyperparathyroidism in 8, acute pancreatitis in 5, Bartter' syndrome in 4, and vitamin deficiency in 19 patients. The difference was significant (P< 0.05).

Graph: I Etiology of tetany

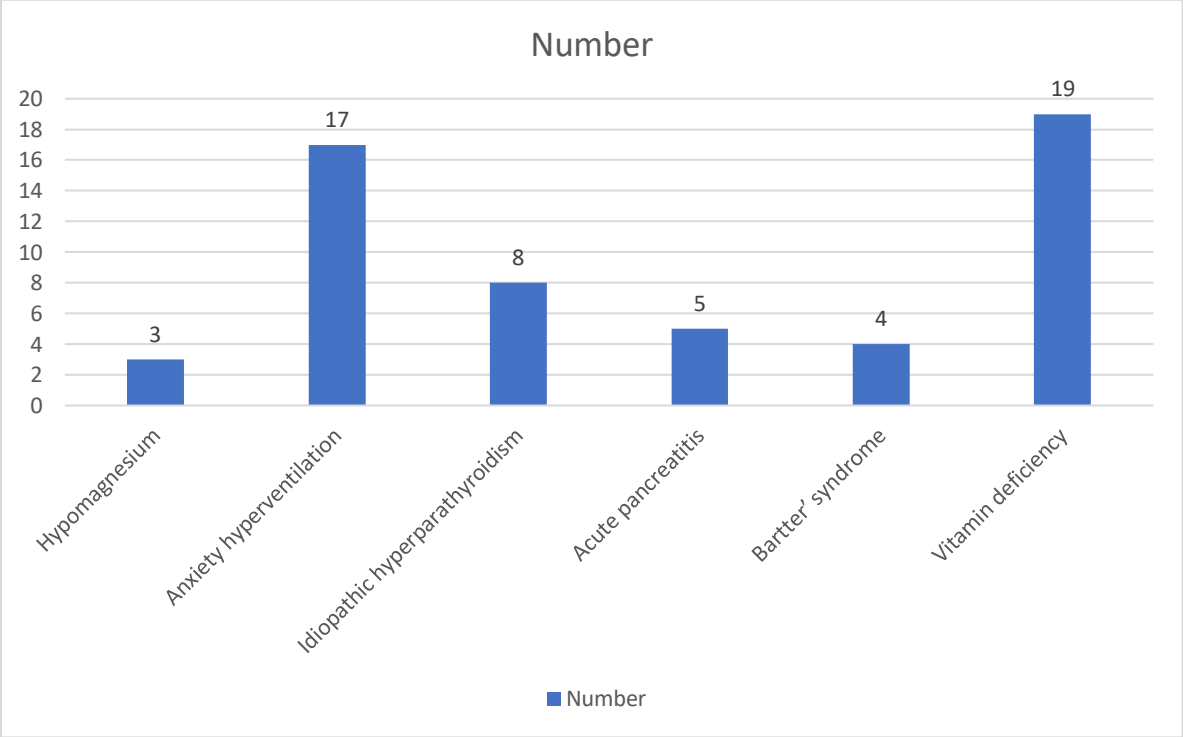

Table: III Assessment of clinical findings

Symptoms	Number	P value
Cramps	41	0.01
Laryngeal stridor	32	
Carpopedal spasm	36	
Circumoral numbness	20	

Muscle twitching	19	
Paresthesia of hand and feet	38	

Table III shows that common symptoms were cramps in 41, laryngeal stridor in 32, carpopedal spasm in 36, circumoral numbness in 20, muscle twitching in 19and paresthesia of hand and feet in 38 patients. The difference was significant (P< 0.05).

Discussion

Circumoral numbness, muscle twitches, cramps, hand and foot paresthesias, carpopedal spasm, laryngeal stridor, and convulsions (caused by cerebral vasoconstriction) are some of the various combinations of symptoms that define tetany.[6] Latent tetany is revealed in patients experiencing tingling, numbness, and cramping in their extremities by the Trousseau sign (carpopedal spasm observed after application of an inflated blood pressure cuff over brachial artery 20 mmHg above systolic blood pressure for 3 minutes) and Chvostek sign (twitching of circumoral muscles with tapping on facial nerve below zygomatic process 2 cm anterior to earlobe).[7] It is commonly recognized that tetany is caused by a drop in serum calcium. However, since ionized calcium is the physiologically active component, its decline is more significant than the level of total calcium.[8]

When ionized calcium is low, total serum calcium may be normal in many tetany reasons. A low blood calcium level is the cause of tetany. Action potentials are more likely when there is a gradual depolarization brought on by low ionized calcium levels in the extracellular fluid, which also increase the permeability of neuronal membranes to sodium ions.[9] This happens as a result of calcium ions interacting with sodium channels' outer surface in nerve cell plasma membranes.The most common cause of tetany is decreased calcium ion concentration, but the literature reports numerous cases of normocalcemic tetany in the context of hyperventilation.[10] This is due to alkalosis causing a change in the relative amounts of bound versus free calcium ions in the plasma. This interpretation has been supported by the frequent observation that normocalcemic patients with tetany still present with Chvostek's sign or a positive Trousseau test, both generally considered indicative of low calcium.[11]The present study was conducted to evaluate the cases of tetany in adults.

We found that out of 56 patients, 30 were males and 26 were females. In their research, Esra et al[12] identified a number of distinct causes of tetany, including acute pancreatitis, tumor lysis syndrome (TLS), idiopathic hypoparathyroidism (IHP), postoperative hypoparathyroidism (PHP), recurrent vomiting, anxiety hyperventilation, Gitelman's syndrome (GS), Bartter's syndrome (BS), and hypomagnesemia. 82 patients with metabolic or pulmonary alkalosis out of 106 had total serum calcium levels that were normal. Only 24 patients had low total calcium. All patients had low levels of ionized calcium. The most prevalent was GS (38%). VDD (11%) and anxiety hyperventilation (13%), as well as recurrent vomiting (19%), were also prevalent. Acute pancreatitis, TLS, hypomagnesemia, and IHP were rare, but PHP was less prevalent (4%).

We found that common causes were hypomagnesaemia in 3, anxiety hyperventilation in 17, idiopathic hyperparathyroidism in 8, acute pancreatitis in 5, Bartter' syndrome in 4, and vitamin deficiency in 19 patients. In their study, Santra et al[13] assessed individuals with overt or latent tetany using laboratory testing and clinical evaluation. Serum calcium, potassium, and arterial blood gas analysis were the first tests conducted. Total and ionized calcium levels were measured and adjusted based on serum albumin levels. Additional tests, such as blood phosphate, alkaline phosphatase, parathyroid hormone, and magnesium levels; as well as urine potassium, calcium, and chloride levels, were conducted based on preliminary data. The various causes of tetany that were found included acute pancreatitis, tumor lysis syndrome (TLS), idiopathic hypoparathyroidism (IHP), postoperative hypoparathyroidism (PHP), recurrent vomiting, anxiety hyperventilation, Gitelman's syndrome (GS), Bartter's syndrome (BS), and hypomagnesemia. Of the 53 patients, 41 had metabolic or respiratory alkalosis (GS, BS, recurrent vomiting, and anxiety hyperventilation), while their total serum calcium levels were normal. Only 12 patients (with VDD, IHP, PHP, acute pancreatitis, TLS, and hypomagnesemia) had low total calcium. All patients had low levels of ionized calcium. The most prevalent was GS (38%). VDD (11%) and anxiety hyperventilation (13%), as well as recurrent vomiting (19%), were also prevalent. Acute pancreatitis, TLS, hypomagnesemia, and IHP were rare, but PHP was less frequent (4%).

We found that common symptoms were cramps in 41, laryngeal stridor in 32, carpopedal spasm in 36, circumoral numbness in 20, muscle twitching in 19and paresthesia of hand and feet in 38 patients. Gandhi et al[14]reported a rare case of Gitelman's syndrome presenting with hypocalcemic tetany along with hypokalemic periodic paralysis in a 17-year-old female. Past history was significant for three episodes of transient lower limb weakness. On examination, blood pressure was 110/70 mm Hg. Chvostek's sign and Trousseau's sign were positive. Neurologically, she was fully oriented. She had Grade 3 power in all the four limbs with intact sensation. Laboratory tests showed hypocalcemia (7.8 mg/dL), hypokalemia (2.2 mEq/L), hypomagnesemia (0.9 mEq/L), and hypocalciuria (104

mg/day). Arterial blood gas showed mild metabolic alkalosis with respiratory compensation.
The shortcoming of the study is small sample size.

Conclusion

Authors found that vitamin deficiencies, hypomagnesemia, anxiety, hyperventilation, idiopathic hyperparathyroidism, acute pancreatitis, and Bartter's syndrome were among the major causes of tetany.

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