**Case Study**

**Precordial Catch Syndrome: An Adolescent Case Study**

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**Introduction**

When an adolescent has chest pain, there is immediate concern that it is cardiac-related because of the heightened awareness of sudden cardiac death in young adults, particularly those who are athletes. In the majority of cases, this chest pain is benign and self-limited, and doesn’t require a referral to a pediatric cardiologist. It does, however, require a thorough investigation with a detailed history and physical examination.

There are several sources of chest pain in children and adolescents, including those of cardiac, respiratory, musculoskeletal, psychogenic, and idiopathic origins. With investigation of these, targeted questions related to the chief complaint and the patient’s medical, family, and social history are important in ascertaining the focus of the physical examination. The purpose of this article is to present a case study of an adolescent male with chest pain, discuss the differential diagnoses considered, and identify the process used to arrive at the patient’s diagnosis of precordial catch syndrome.

**Literature Review**

Precordial catch syndrome is a benign condition that is idiopathic in origin. To explore this syndrome, including characteristics, frequency, diagnosis, and treatment, a literature review was conducted. Databases used for this search include CINAHL, Academic Search Complete, ProQuest, and Ovid, and keywords of precordial catch syndrome, chest pain, adolescent, and pediatrics were used to locate articles of interest. Inclusion criteria initially include the past 10 years but this was expanded to include the original presentation of this syndrome in 1955 and articles after this that described studies of pediatric chest pain. Other inclusion criteria were patients’ age range of 12-17 years old, and full-text articles. 102 abstracts were reviewed and articles selected focused on chest pain and differential diagnoses, and specific studies of patients with precordial catch syndrome.

**Characteristics of Precordial Catch Syndrome**

Precordial catch syndrome was first described by Miller and Texidor in 1955 with 10 cases discovered, including that of one of the authors [1]. Precordial catch syndrome involves pain that is described as sharp, needle-like, knife-like, or stabbing by patients. Its location can usually be pointed out by the patient with one or two fingers, as opposed to use of a clenched fist or whole hand, which would indicate more diffuse or deep pain. The location is commonly in the left anterior chest, in an intercostal space, or at the sternal border. Other less common locations include the right anterior chest or flank areas. The pain typically lasts from 30 seconds to three minutes, and resolves spontaneously. It is not exacerbated usually by movement or activity and can occur at rest or during activity, but has not been reported as occurring during sleep.

Typically, there are no accompanying symptoms with precordial catch syndrome. Patients can have anxiety based on the fear of the pain being cardiac. Shallow breathing or hyperventilation can be observed, and many times the patient is in a slouched position. There is not a change otherwise in vital signs or other more traditional accompanying characteristics of pain such as diaphoresis or dizziness. This acute pain spontaneously resolves and may be recurring, although it can be a single episode.

**Diagnosis and Treatment of Precordial Catch Syndrome**

Diagnosis of precordial catch syndrome can be by a detailed history and physical examination and does not require diagnostic testing. The healthcare provider should explore all the characteristics described by the patient; the older the child, the easier it is to identify precordial catch syndrome by their description. The pain is typically sudden and extreme and can cause the patient to stop moving and may momentarily ‘catch’ his or her breath, which is why the phrase includes the word ‘catch’. Exploring the characteristics of the pain is important, including any exacerbating or relieving factors, because there is not typically residual pain at the time of the physical examination although there may be an ache at the site, depending on the length of time seen after the episode.

While there may be recurring episodes of this pain, it can be self-limited to the one experience. There is no known cause of precordial catch syndrome; there is speculation that this may originate from the parietal pleura or chest wall. The patient may have a resolution to the pain by having more shallow breathing and sitting up straight if in a slouched position. For those with recurrent episodes, these usually resolve as a young adult. There is no prescribed treatment and no need for follow-up for those diagnosed with precordial catch syndrome. Reassurance for the patient and his/her family is the most important aspect with a certainty expressed on the diagnosis and not having to follow-up or be referred to a cardiologist.

**Studies of Precordial Catch Syndrome**

There have been a few documented studies of precordial catch syndrome, beginning with the initial article published as mentioned above by Miller and Texidor [1]. These ten patients were all young adults ranging in age from 22 to 35 years old and were equally divided into men and women. Further studies validated the diagnosis of precordial catch syndrome, including one published in 1978 which included 45 young people who were essentially healthy; this also documented that males and females were equally affected, onset of this was in adolescence, and the syndrome of pain typically occurred at rest or with mild activity [2]. Pickering identified 17 cases of precordial catch syndrome in a study from 1972-1979, with ten boys and seven girls. Reynolds in 1989 published the first report of precordial catch syndrome in the United States with ten children who were seen with a primary complaint of chest pain [3].

Precordial catch syndrome has been reported as a diagnosis in multiple studies of children with chest pain. These children had diagnoses of pain that was primarily not of cardiac origin but from different sources. In one retrospective review for children referred to cardiology, only one in 135 children had pain due to a cardiac cause; 54% of the cases were due to idiopathic reasons, which included precordial catch syndrome [4]. In a separate study of 380 children, under 18 years of age, referred for chest pain to a pediatric cardiology unit over a 10-month period, 15% of the cases were placed in the miscellaneous category for cause, of which precordial catch syndrome was included [5].

Precordial catch syndrome is not a diagnosis of exclusion and should be recognized as a benign condition that is not imagined or a conversion reaction in nature. It is important to recognize those common patterns that are found with this syndrome, while also ruling out other pathology.

**Case Presentation**

**Presenting Signs and Symptoms**

A 16-year-old male presented to the Emergency Department with complaints of chest pain. He has a past medical history of asthma which is controlled with medication as needed. The patient reports intermittent, nonexertional chest pain for the past 2 months which occurred three times at school on the day of admission without relief. He has experienced an increase in frequency of the episodes over the past month. He describes the pain as sharp and it suddenly takes his breath away. The pain is located mid sternum along the left costal margin. The pain does not radiate to the back, neck or arms. He denies any difficulty breathing, palpitations, near syncope or syncope. The episodes last from seconds to minutes and gradually resolves on its own. He does report that he feels like “Something gives way” and then the pain is gone. He is a competitive swimmer and participates in very intense aerobic exercise 4-5 days per week. He denies any history of cardiovascular symptoms or syncope or any cardiac family history.

**Examination**

Vitals signs were as follows: blood pressure 129/65 mm Hg, radial pulse 58 beats per minute, oral temperature 98.6 F, respirations 18 breaths per minute. General findings on the exam revealed no acute distress. Cardiovascular exam was within normal limits with no murmur supine or standing. S1, S2 normal and appropriate heart rate variation with standing. Lungs were clear to auscultation bilaterally. The patient’s heart rate varied from 50-60 beats per minute and ECG revealed sinus bradycardia without evidence of dysrhythmia, hypertrophy or chamber enlargement.

**Differential Diagnoses**

With the patient’s history and physical examination, considerations were given to musculoskeletal sources such as chest wall strain or costochondritis, which accounts for 30% of cases of chest pain in adolescents. Because the patient had not recently engaged in activities that could cause this type of pain, this was ruled out. With having clear lung sounds, a normal respiratory rate, and well-controlled asthma, respiratory problems, which can account for 21% of cases, were ruled out as well. Other sources such as gastrointestinal disorders (2-7% of cases) and psychogenic pain (9-20%) were also ruled out due to lack of accompanying symptoms. Cardiac disease is unlikely and rare (1-4% of cases), and the patient was in normal sinus rhythm with no indications of dysrhythmia or impaired cardiac output [6].

**Final Diagnosis**

It was important to consider the most likely source, given the patient’s history and physical examination. Laboratory tests are not usually helpful in this patient population and may actually increase anxiety. Based on the frequency and duration, location of the pain, and not having precipitating factors, the patient was diagnosed with precordial catch syndrome [7].

**Conclusion**

Precordial catch syndrome is a self-limiting, spontaneous condition of unknown occurrence [8]. The clinical case provided perspective on chest pain in the athlete; depicting the alarming chief complaint of chest pain often associated with serious maladies such as hypertrophic cardiomyopathy, and identified a more favorable diagnosis of precordial catch syndrome [8]. The clinical case presentation determines the necessity for nurses and other clinical health care providers to be educated on all differentials that potentiate the chief complaint of chest pain in order to properly care and sufficiently treat the athletic patient.

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