Inducible Reciprocating Tachycardia in Collegiate Football Player
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Background: A 20 year-old male collegiate football player suffered chest pain and palpitations due to inducible reciprocating supraventricular tachycardia. Mechanism of injury: while playing football, athlete states he felt his heart “racing” and complained of chest pain. The symptoms were reported after performing sprinting and blocking during one offensive series in a game. Initial assessment found his pulse strong and rapid and heart rate at 120 bpm. Auscultation of the heart was normal and lung sounds were clear. Initial treatment included removing the athlete from physical activity and trending the athlete’s vital signs and chest pain levels. The athlete reported that his heart palpitation and chest pain returned to normal after he breathed deeply into his fist for a few minutes (Valsalva Maneuver). The athlete was referred to a cardiac specialist for further testing. Differential Diagnosis: Ischemic heart disease, pulmonary emboli, hemopneumothorax, angina pectoris, myocardial infarction, atrial fibrillation, hypertrophic cardiomyopathy, hypovolemic shock due to internal bleeding. Electrophysiology study confirmed inducible reciprocating tachycardia in the heart’s left lateral wall bypass tract. Treatment: The athlete was seen by an electrophysiologist about 5 days after the initial incident. A 24h Holter Monitor recorded the athlete’s heart rhythm, which was worn almost 4 weeks. Several episodes of supraventricular tachycardia were captured, as well as the athlete’s record of recurring heart palpitations and chest pain. 3 months after symptom onset, a successful radiofrequency cardiac ablation was performed to correct the electrical malfunction of the heart. A follow-up visit was conducted to ensure that the electrical malfunction within the heart was corrected. Upon assessment, the physician found no contraindications from the treatment and cleared the athlete to play for his upcoming season. Uniqueness: Supraventricular tachycardia is a common congenital heart arrhythmia that affects 1 out of every 2500 people within the United States, but the arrhythmia typically corrects itself by adolescence. Typically, it is considered a non-lethal and manageable dysfunction in athletes due to vagal maneuver breathing techniques, medications, and procedures that can be taught, administered, or performed to return a patient’s heart rate within normal ranges. The athlete’s choice of treatment was a cardiac catheter ablation, which has a 90-95% effectiveness in correcting a heart’s electrical dysfunction. This is a unique case due to the insidious onset of symptoms without any prior history of cardiac pathology, at rest or during exertion. Approximately 1 year post-surgery, the athlete reported a similar episode during exertion in football practice. Consequently, the recurring of the event discontinued his participation in collegiate football. Conclusion: Supraventricular tachycardia is a broad term that refers to any abnormal electrical signal that is present within the cardiac conduction system located superior to the ventricles. The sinoatrial (SA) node is responsible for stimulating the heart’s electrical signal and transmitting the impulse across the atrium. After contraction of the atrium, blood is pumped into the ventricles and the electrical message is relayed to the atrioventricular (AV) node. The AV node is responsible for ventricular contraction. Supraventricular tachycardia occurs at or near the atrioventricular node and is usually the result of 2 pathological causes: (1) a divide in the AV node, or (2) the presence of multiple pathways from the SA node. Due to this abnormal pathway, the electrical signal becomes trapped and the impulse keeps traveling in its normal pattern, causing the heart to increase the rate of contraction. A possible explanation for the reoccurrence of the condition is the presence of multiple pathways in the athlete’s heart. Additionally, the patient's athletic nature could have increased the probability of the arrhythmia returning due to the physical demands placed on the heart during exertion. Word Count: 597.