

Asthma-like attacks terminated by slow pathway ablation

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Abstract:

Asthma is a chronic airway disease in which the pathological mechanisms are reversible airway obstruction, bronchial hyper reactivity, and constriction of the lower airways. Supraventricular tachycardia (SVT) is a common arrhythmia which originates above the bundle of His and causing heart rates exceeding 150 beats/min. SVT patients present with palpitation, chest pain, chest discomfort, dyspnea, hyperventilation, and lightheadedness, occasionally. Besides, extraordinary presentations of SVT are available in literature. In this report, we describe a case of a patient presenting with treatment-resistant asthma-like attacks lasting for 20 years whom was suspected SVT as an underlying etiology and treated by slow pathway radiofrequency ablation.

Key words:

Asthma, cross-talk, supraventricular arrhythmia

Supraventricular tachycardia (SVT) is an arrhythmia having an electrophysiologic substrate of reentry, or automaticity arising above the bundle of His and causing heart rates exceeding 150 beats/min. Its prevalence is 2.25 in 1000 person and incidence is 35 per 100.000 person-years in the general population.^[1] Symptoms in SVT often include palpitation, pulsation in the neck, chest discomfort, dyspnea, hyperventilation, lightheadedness, and anxiety. SVT patients can present with chest pain, diaphoresis, nausea, presyncope, and syncope, rarely.^[2] Although SVTs may not cause any symptom and are diagnosed incidentally in some cases, they can mask themselves by imitating the symptoms of central nervous system or gastrointestinal system in rare cases.^[2,3]

Asthma is a chronic, inflammatory airway disease characterized by reversible airflow restriction, bronchial hyper reactivity, and constriction of the lower airways. These patients usually present with dyspnea, coughing, chest pain, and wheezing. Because of the atypical presentation and comorbid diseases related with aging, these patients can be misdiagnosed or underdiagnosed.^[4] In this report, we described a patient with asthma-like attacks lasting for 20 years, eventually treated by slow pathway radiofrequency ablation.

Case Report

A 56-year-old woman presented with the complaints of uncontrolled asthma attacks lasting for 20 years. Her attacks were told to occur paradoxically once or twice in a month continuing about 10–15 min, and there were

not any triggering factor such as smell, exercise, pollen, anxiety, smoke, or fog. During the attacks, she was complaining of shortness of breath, wheezing, continuous coughing, and sweating. After the attacks, the patient had described fatigue and weakness lasting for 1–2 days and polyuria for several hours. She denied palpitation, chest pain, syncope, or presyncope. Detailed anamnesis of the patient revealed no history of cardiac disease, hypertension, diabetes mellitus, hyperlipidemia, and smoking and she was a healthy woman otherwise. Her blood tests including liver, kidney, thyroid function tests, and complete blood count were in normal limits. Her pulmonary function test, chest X-ray, and tomography were normal. She had been prescribed bronchodilator therapy by pulmonologists. Due to the absence of symptomatic improvement, she had been also prescribed steroid therapy, but her asthma attacks did not recover. Unfortunately, adrenal insufficiency occurred which were thought to be secondary to steroid therapy and was discontinued. Her cardiac examination revealed

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S1, S2 with a regular rhythm and no murmurs, S3 or S4. Her blood pressure and heart rate were within the normal range. Her electrocardiographic and echocardiographic examinations were normal. Because of the paradoxical nature of the attacks, postevent fatigue, and polyuria, she has been thought to have SVT as an underlying etiology of uncontrolled asthma-like attacks. Then, the patient was scheduled for electrophysiological study in cardiology clinic. Programmed atrial and ventricular stimulation revealed dual atrioventricular node physiology. Then, successful empirical slow pathway catheter ablation was performed. After successful ablation procedure, acetylsalicylic acid was prescribed to the patient and was discontinued 3 months later. She has never experienced asthma-like attacks since then and she was symptom free for 2 years. Written informed consent was obtained from the patient.

Discussion

To the best of our knowledge, this is the first case of SVT patient mimicking symptoms of asthma, in the literature. It is well known from the previous reports that asthma attacks resistant to treatment can be the manifestation of diseases such as foreign body aspiration,^[5] pulmonary artery venous malformation,^[6] allergic bronchopulmonary aspergillosis,^[7] Langerhans cell histiocytosis,^[8] and severe mitral stenosis.^[9] Due to the comorbid diseases such as heart failure, panic disorder, obesity, coronary artery disease (CAD), or chronic obstructive pulmonary disease in the elderly, asthma attacks can be drawn with other pulmonary or nonpulmonary diseases.^[4] In our patient, pulmonary, cardiological, biochemical, and also radiological examinations were within normal limits. There were no heart failure, valvular heart diseases such as mitral stenosis or suspicion of CAD, and any risk factors causing CAD such as smoking or familial history. What have made us think of SVT in the etiology of asthma-like attacks were paradoxical nature of events, postevent polyuria, and fatigue which are characteristic symptoms of SVT as well.

There are some supraventricular arrhythmia^[10] and ventricular arrhythmia^[11] cases reported in the literature presenting with the symptom of coughing which may be thought to be a respiratory tract disease, at first glance. The possible mechanisms of arrhythmia causing cough speculated by the authors in these patients are anatomical close relationship of phrenic nerve and atrium causing supraventricular arrhythmia and increased pulmonary artery blood flow causing ventricular arrhythmia. Besides, we have reported some SVT patients presenting with extraordinary symptoms such as absence seizure like,^[3] burping,^[12] and tinnitus^[13] in whom we have speculated the plausible mechanism to be the cross-talk during the spreading of impulse through the nervous system.^[14] The conclusion can be drawn from this case report is that supraventricular arrhythmia should also be considered in the differential diagnosis of nonresponsive or resistant asthma attacks. Regarding the mechanism, it is difficult to make a conclusive statement. However, hemodynamic consequences of arrhythmia might have resulted in transient bronchospasm in bronchial tree. Second, asthma-like attacks might have been

induced by vocal cord stimulation or paralysis during the tachycardia attack due to cross-talk between cardiac afferent nerve and bronchopulmonary afferent innervations through the recurrent laryngeal nerve which is one of the branches of the vagus nerve.

Conclusion

In patients with resistant asthma-like attacks, paradoxical pattern of attacks and accompanying symptoms such as postevent polyuria, fatigue, and weakness should be taken into consideration with the suspicion of SVT as an underlying etiology.

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Conflicts of interest

There are no conflicts of interest.

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