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# Chest Epilepsy

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ABSTRACT

In epileptic patients with pain discomfort as a manifestation of the form of seizures is relatively rare, but seizures of chest pain epilepsy performance are less and less. This article summarizes the characteristics of this form of epilepsy from the aspects of historical progress, morbidity, clinical characteristics and treatment, hoping to be helpful in understanding the epilepsy of this form of seizures.

**Keyword:** Epilepsy; Chest Pain; Morbidity; Clinical Manifestations; Treatment

## Historical Evolution

In 1945, Moore MT [1] diagnosed a case of paroxysmal abdominal pain as a new focal epileptic attack and for the first-time seizures with pain as a manifestation were reported. In 1948, Fischer JW [2] published an expression of paroxysmal severe chest pain in a patient with idiopathic epilepsy, presenting the relationship between chest pain and epilepsy for the first time. More significantly, in 1953, Janjigian ER [3] reported seizures with paroxysmal angina, and for the first time put forward the name of "cardiac epilepsy". In addition to seizures performed with angina pectoris, Richardson DE [4] reported that a 60-year-old woman had epilepsy of localized chest wall pain, which was aggravated by local muscle contraction and which could be reproduced by stimulating gray matter next to the ventricle. The symptoms could be alleviated by intravenous use of diazepam. For the first time, epilepsy may be performed with chest wall pain.

## Morbidity

According to statistics, the incidence of focal epilepsy in epilepsy patients ranges from 6% to 12% [5]. Pain epilepsy is only part of focal epileptic attack. Mauguiere F and Corjon J [6] reviewed 8938 epilepsy patients who were treated in the past 10 years. Only two of them had epileptic in the form of pain. In 2016, Kuloğlu Pazarcı N [7] retrospectively summarized 4736 epilepsy patients, of whom only 9 patients had pain as a precursor or as the initial symptom of seizures. According to the above, there are few cases of epilepsy with pain attack, but epileptic seizures with chest pain are even rarer. Currently, there is no statistical data on this aspect.

## Clinical Features

### Epilepsy with Chest Pain as the only Symptom

**Characteristics of Chest Pain:** Sanjeev Gulati and Lata Kumar [8] reported in 1992 that a 6-year-old boy with paroxysmal localized chest wall pain was diagnosed as epilepsy by electroencephalographic evidence of spikes wave and sharps wave in bilateral cerebral hemispheres during the interval of epilepsy attacking and being alleviated by anti-epileptic drugs. Chest pain was characterized by recurrent non-radioactive pain in the left chest wall, accompanied by sweating, each pain lasted 10-15 minutes, seizures 5-10 times a day, lasting 8 months. More importantly, Sureshbabu S [9] reported a 14-year-old boy in 2017 who had severe pain in the right lower chest when completing 24-hour video EEG. During the same period, EEG showed slow waves of 4-4.5 Hz in the parasagittal sinus area after several seconds of clinical symptoms, and then fast rhythms of 9-10 Hz in the left middle and posterior temporal region, suggesting that epileptic originated in the left hemisphere. Paroxysmal chest pain is characterized by sharp and intolerable localized pain in a range of about 2 transverse fingers in the left lower chest. It lasts from several seconds to half a

minute each time and can occur 1-8 times a day. The degree of pain varies from time to time, but the location of pain is fixed without any other accompanying symptoms and lasts for 2 weeks.

**The origin Location of Epilepsy with Somatic Pain as a Symptom:** Siegel AM [10] reviewed 573 patients treated in the past six years, including 8 epilepsy patients with pain onset symptoms, including unilateral torso pain, headache or abdominal pain. Five patients identified the origin of discharges in the parietal lobe or parietal by intracranial electrodes EEG combined with MR and SPECT, and three by scalp EEG and neuroimaging methods. Foldvary-Schaefer N and Unnwongse K [11] studied the role of aura of epileptic with focal and lateral characteristics in locating epilepsy in 2011 and found that posterior insular discharges could produce abnormal sensation in a wide range of skin distribution of warm or numb. Alkawadri R [12]. studied the electrical clinical manifestations of 14 cingulate gyrus epilepsy by clinical, video electroencephalogram, neuroimaging, pathology and follow-up for 1-11 years after surgical resection. It was found that the somatosensory-motor area and cingulate cortex were also involved in the epileptic manifestations of sensory abnormalities, such as subjective feeling of cold.

### Autonomic Nerve Epilepsy Represented by Angina Pectoris

**Characteristics of Angina Pectoris:** In 1986, Devinsky O [13] through coronary images to eliminate coronary heart disease, at the same time through EEG to find epileptic-like discharge, and anti-epileptic drugs effective methods to confirm 6 cases of angina manifestations of complex partial seizures of epilepsy, accompanied by radiation to the lower jaw or left upper limb pain, accompanied by shortness of breath, sweating, nausea. At the same time, epilepsy with such chest pain also combined with arrhythmia, in which sinus tachycardia is the most common arrhythmia [14]. Mulder DW [15] also reported that these seizures often also have skin plant nerve performance, such as skin flushing, pale, sweating and so on. It can also be accompanied by fear, high blood pressure, dilated pupils, tremors [16]. Hilz MJ [17] monitored the heart rate and systolic blood pressure of 18 patients with temporal lobe epilepsy before and after operation and found that the abnormal heart rhythm and mortality were significantly reduced after operation. It was speculated that epilepsy with cardiac autonomic nerve manifestations was associated with sudden death of unknown cause of epilepsy. Kothari SS [18] found that disturbance of consciousness is a very important clinical symptom and sign to differentiate heart disease from epilepsy with cardiovascular as the main clinical manifestation.

**The Origin Location of Epilepsy with Angina:** The structure of autonomic nervous central network was studied by electro-microstimulation, chemical methods, neurosurgery, electrophysiological recording and tracer [14]. Benarroch EE [19] discovered in 1993 that the network structure of autonomic nervous system includes insular lobe, amygdala, hypothalamus, gray matter around mesencephalic aqueduct, parapontine complex, nucleus tractus solitarius, ventrolateral region of spinal cord.

## Conclusions and Treatment

Sanjeev Gulati and Lata Kumar [8] treated a 6-year-old boy with epileptic seizures manifested by chest wall pain with carbamazepine 10mg/kg/day. The seizures were reduced after treatment. No seizures were observed in a follow-up period of 1 year after the dosage of 20 mg/kg/day. During the period of no seizures, the normal EEG was re-examined after 9 months. In a book on simple partial seizures of epilepsy written by Anil Kumar and Sandeep Sharma [5], it is mentioned that simple partial seizures include focal sensory epilepsy and autonomic neurological epilepsy. Lamotrigine and carbamazepine are recommended as first-line antiepileptic drugs for such epilepsy. The alternative drugs are sodium valproate, levetiracetam and oxcarbazepine.

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