



## Thunderclap headache in children

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### Introduction

In adults, the diagnostic criteria for thunderclap headache are the presence of an intense headache with an abrupt onset, which reaches peak intensity in less than 1 minute, lasts for at least 5 minutes and is not attributed to another ICHD-3 (International Classification of Headache Disorders) disorder. The literature on secondary thunderstorms is limited in the pediatric population compared to the adult population. Most pediatric patients with thunderclap present with primary thunderclap due to primary headache or primary thunderclap headache. Rapid resolution with normal neuroimaging indicates a benign course. Secondary causes are rare and usually caused by benign diseases.

### Objectives

To review the clinical criteria and primary and secondary diagnoses of pediatric thunderclap headache.

### Methods

This is a narrative review of the main studies on the subject published in the PubMed, Science Direct and Cochrane databases up to the year 2022, without language restriction.

### Results

According to the literature, non-life-threatening diseases are the most frequent etiology of secondary headaches in pediatrics. Respiratory tract infections and minor head trauma are present in most of the patients. In general, children with thunderclaps have a benign evolution; most headaches improve before discharge from the emergency room. Infection is the most common cause of pediatric headache diagnosis in pediatric emergency room admissions. In a large study of 2,354 adolescents and children with headaches, infectious causes accounted for 39%: 18% had an upper respiratory infection, 17% had a fever illness, 3.5% rhinosinusitis and 0.2% meningitis. In comparison, in the systematic review on thunderclap headache in adults, 50% had secondary headache, only 7% had causes related to infectious diseases. A reliable pain measurement tool is crucial for an accurate diagnosis. A pediatric scale validated for the child's age is needed to diagnose severe pain and pain that is worse or more unbearable. The visual analog scale (VAS), which measures pain according to increasing numerical intensity and color, is useful for children aged 7 and over. For younger or developmentally delayed children, or children who don't understand the explanation of the VAS, the pain scale used in the pediatric emergency room, the Faces Pain Scale - Revised, can be used. In addition, according to studies, children and their parents generally do not report that the pain reaches its maximum intensity in less than 1 minute, but they do report a sudden or abrupt intense headache. In general, the likelihood of identifying intracranial pathology in children who arrive at the emergency room with acute headaches is substantially lower than in adults. Intracranial vascular pathologies are less common in children. The incidence of hemorrhagic stroke in children is estimated at 1.1-1.4 per 100,000 children and this is much lower than in adults (51.4-57.3 per 100,000).

### Conclusion

Further research is needed to examine whether neurovascular and non-vascular neurological causes are related to thunderclap headache in pediatric patients presenting to primary, secondary and tertiary emergency services. Validated pain scales suitable for the pediatric and adolescent age groups are mandatory for diagnosing severe pain.

**Keywords:** Thunderclap headache; Children; Diagnosis.