Case Report

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Recognition and Management of Achenbach Syndrome (Paroxysmal Finger Hematoma)

Urgent Message: By understanding the symptoms of paroxysmal finger hematoma, clinicians can reduce patient anxiety and decrease unnecessary testing, as the condition is generally mild and has a favorable prognosis.

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Introduction

Paroxysmal finger hematoma (PFH), also known as Achenbach syndrome, is a vascular disorder of unknown etiology characterized by subcutaneous bleeding in the fingers, which presents as an acute onset of finger swelling, pain, and a bluish-purple discoloration. It predominantly affects women. Although the symptoms are benign and self-limiting, they can mimic those of more severe conditions, causing concern for patients. Diagnosis is typically confirmed through clinical evaluation. Generally, the symptoms resolve spontaneously within a week, and management involves supportive care and reassurance. Raising physician awareness of Achenbach syndrome could reduce patient anxiety and decrease unnecessary testing, as the condition is generally mild and has a favorable prognosis.[1,2,3,4]

Clinical Scenario

A 56-year-old previously healthy woman visited a local urgent care (UC) due to the sudden onset of bluish-purple discoloration accompanied by pain and swelling in her left middle finger. The symptoms developed unexpectedly while she was at work approximately 2 hours

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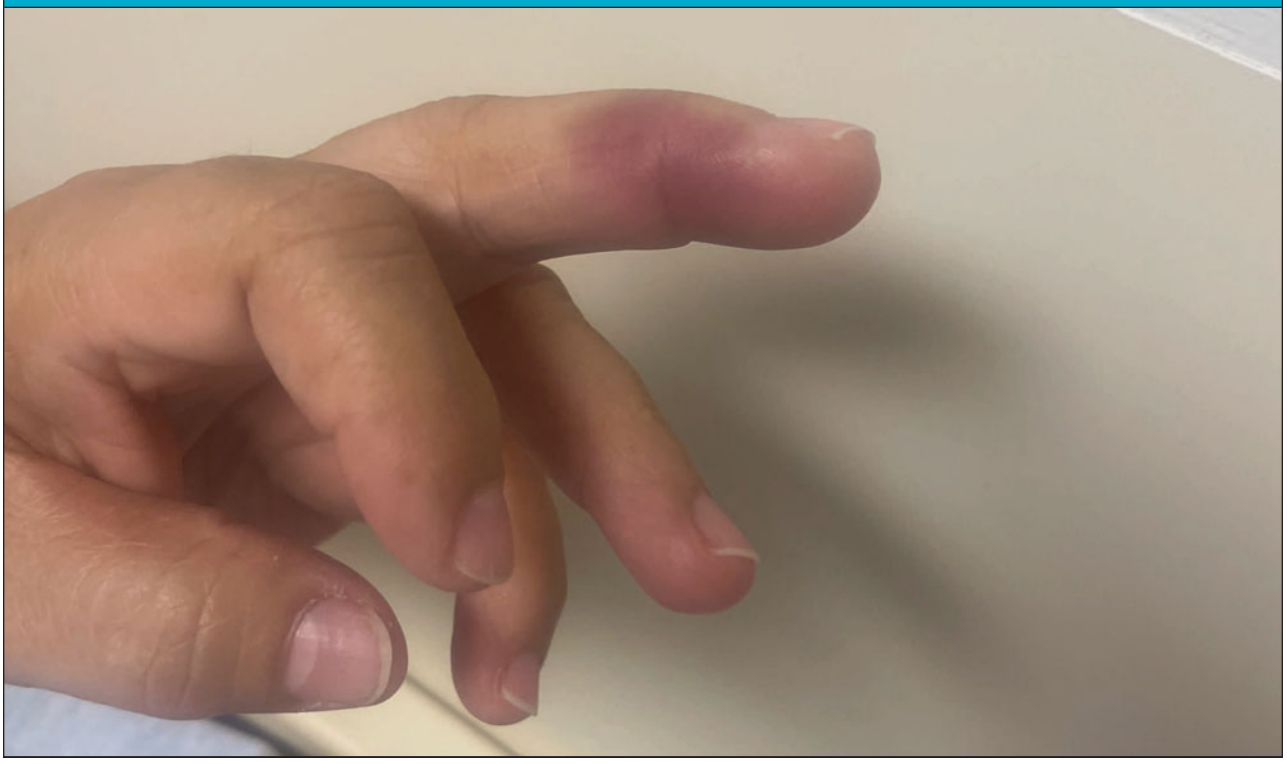
Figure 1. Finger discoloration with pain and swelling



earlier. She had no additional complaints and denied any history of trauma, spontaneous bleeding, palpitations, or cold-induced finger discoloration. Additionally, she reported being a nonsmoker with no personal or familial history of autoimmune diseases.

The physical examination indicated the presence of a purple skin discoloration (**Figure 1**) along with mild tenderness upon palpation. She exhibited a normal range of motion at the proximal and distal interphalangeal joints, normal capillary refill, and unimpaired 2-point discrimination. A point-of-care complete blood count (CBC) and x-ray performed at the UC center were both normal.

This overview synthesizes the etiology, pathogenesis, epidemiology, clinical picture, differential diagnoses, and available treatment options in this case, supported by the most reliable evidence.

Etiopathogenesis

Paroxysmal finger hematoma (PFH), also known as Achenbach syndrome, is a benign condition of unknown origin, first described by Walter Achenbach, MD, in the 1950s.[5] Its exact cause remains unclear, though it is believed to involve subcutaneous bruising due to venous, rather than arterial or arteriolar hemorrhaging. Reduced capillary resistance and decreased blood flow in the affected fingers have been observed, though these are likely consequences of blood infiltrating the tissues rather than the cause.[5] Increased vascular fragility, potentially triggered by minor trauma, has been proposed as a possible mechanism, however many cases occur without any identifiable trigger.[6]

The condition is not linked to thromboembolic or vasculitic processes. Associations have been reported with acrocyanosis, migraines, hypothyroidism, gastrointestinal disorders, and gallbladder disease.[7] Rare cases of PFH have also been noted after recovery from COVID-19, possibly due to COVID-19-induced endothelial damage in the finger vessels.[8]

The underlying mechanism is thought to involve a vasomotor disorder, decreased capillary resistance, and the infiltration of venous blood into the soft tissues.[4] Recent research has proposed a potential genetic predisposition for Achenbach syndrome, although further studies are necessary to explore this hypothesis.[2]

Epidemiology

A systematic literature review revealed that Achenbach syndrome primarily affected women, with a median age of 49.5 years.[9] Due to its sporadic nature and benign out-

come, the exact prevalence is challenging to determine. Although it appears to be a rare disorder (fewer than 100 cases have been reported), many more cases may exist that have never presented for medical attention.[10]

Clinical Picture

Patients most often present with a rapid onset of painful swelling and a distinctive blue-purple discoloration on the palmar side of 1 or more fingers. The ring finger is affected most often, followed by the middle finger, although any finger can be impacted. There seems to be a slight predominance of cases involving the right hand.[11] Notably, this discoloration often spares the distal segments and the nail bed, which allows for distinction when compared to conditions causing ischemia of one or more fingers.[5]

Key characteristics:

- **Onset:** Symptoms usually begin abruptly with swelling and pain in the affected digit(s).[7]
- **Coloration:** The blue or purple discoloration usually affects the proximal phalanx of the finger, distinguishing it from many other conditions that cause discoloration of the fingertip.[9]
- **Prodromal Symptoms:** Before discoloration, patients might experience pain, tingling, and itching that can start several minutes to hours beforehand.[5]
- **Duration and Resolution:** The discoloration and swelling typically resolve spontaneously within 3 to 5 days, with a median resolution time of 4 days.[9]
- **Clinical Course:** The overall course of this condition is benign with full resolution generally within 1 week of onset.[5]

Furthermore, while primarily affecting the fingers, episodes similar to those seen in the hands have occasionally been reported in the toes and even on the plantar aspects of the feet.[1] The unique aspect of this condition is that the lesions resolve quickly, bypassing the typical stages of ecchymosis resorption seen in common bruises.[2]

Diagnosis

The diagnosis of Achenbach syndrome can be made based on the history and characteristic appearance alone. Investigations, including duplex ultrasonography and radiography of the affected extremity, yield normal results.[2,3] While not generally clinically available, nail bed capillaroscopy, if performed, usually reveals multiple hemorrhages without any other abnormalities in capillary structure or blood flow.[4]

There are no laboratory tests that aid in the diagnosis of Achenbach syndrome. In one case series, no blood test, including CBC, prothrombin time, international normalized ratio, partial thromboplastin time, thrombophilia screening, and erythrocyte sedimentation rate showed any suggestive pattern across patients. In certain cases where there are non-classic features or more concerning associated signs or symptoms, it may be appropriate to pursue further diagnostic evaluation to exclude autoimmune, dermatologic, hematologic, or vascular disorders before arriving on a presumptive diagnosis of Achenbach syndrome.[3]

While Achenbach syndrome is almost exclusively a clinical diagnosis, it is also a diagnosis of exclusion. It is therefore prudent to consider a broad differential before assigning the diagnosis of PFH to a patient presenting with abnormal findings on finger examination.

Differential Diagnosis

1. Acute Ischemia Due to Embolic Digital Artery Occlusion

- **Description:** A sudden reduction in blood flow to the finger caused by embolic occlusion of a digital artery or its branches. Potential causes of acute ischemia include sequelae of thoracic outlet syndrome, atrial dysrhythmia, structural heart disease (eg, ventricular aneurysm, patent foramen ovale), atherosclerosis of limb arteries, or thrombophilia.[5]
- **Differentiation:** Unlike PFH, acute digital ischemia presents with more severe pain and other prominent signs including pale or blue discoloration of the distal phalanx, coolness, numbness, and loss of pulse and/or delayed capillary refill of the affected digit. This condition, if not promptly addressed, can result in ischemic necrosis of the distal digit, distinguishing it from the benign and self-resolving nature of Achenbach syndrome.[5]

2. Acrocyanosis

- **Description:** A non-paroxysmal, persistent, painless bluish-red symmetrical discoloration of the hands, feet, and face. Acrocyanosis can be divided into primary acrocyanosis, which is not due to an underlying disease, and secondary acrocyanosis, which is associated with underlying conditions such as hypoxemia, hematologic disorders, methemoglobinemia, etc. Primary acrocyanosis has no known treatments, but secondary forms may resolve if the cause is identified and addressed.[12]
- **Differentiation:** Unlike PFH, acrocyanosis is typically painless, persistent, and symmetric involving the distal most aspects of the digits of the hands and feet.[12]

3. Buerger's Disease (Thromboangiitis Obliterans)
- **Description:** Buerger's disease is a severe condition primarily affecting smokers and young men. It involves inflammation and thrombosis in small and medium-sized arteries and often irreversible tissue damage.[13]
- **Differentiation:** Unlike PFH, Buerger's disease causes recurrent and progressive symptoms that can lead to severe and permanent complications like ulcers and ischemic necrosis of the affected digits. Smoking is a significant risk factor for Buerger's disease, and its symptoms typically worsen with continued tobacco use with auto-amputation of the fingers occurring in some cases.[13]

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4. Digital Hematoma Due to Trauma (Physical Injury)
- **Description**: When a finger is injured, blood can accumulate under the skin leading to pain, swelling, and often visible bruising or discoloration.[14]
- **Differentiation**: History of injury differentiates PFH from traumatic hematoma/bruising.[14]

5. Gardner-Diamond Syndrome (Psychogenic Purpura)
- **Description:** Gardner-Diamond syndrome is a rare condition, predominantly affecting women, which is characterized by the sudden appearance of painful, swollen skin lesions which transform into bruises. While psychogenic purpura can involve the fingers, it more commonly involves more proximal areas of the extremities or torso.[3]
- **Differentiation:** Unlike PFH, the symptoms of psychogenic purpura often occur following emotional distress and can appear on any part of the body.[3]

6. Pernio (Chilblains)
- **Description:** Pernio, or chilblains, is a condition that results in itchy and painful lesions on the toes and fingers, typically after exposure to cold and damp conditions. Usually multiple or all digits are affected and exhibit reddish, brownish, or purplish spots. Skin breakdown or ulceration may also occur.[15]
- **Differentiation:** Unlike PFH, pernio typically affects the toes more than the fingers and occurs seasonally. The lesions usually heal when the extremity is removed from the cold environment. Pernio's dependency on cold exposure and its recurring nature differentiate it from the spontaneous, non-seasonal presentation of Achenbach syndrome.[15]

7. Raynaud's Phenomenon
- **Description**: Raynaud's phenomenon occurs recurrently and episodically. It is caused by arteriolar vasospasm, which results in pale or purple discoloration of the digits in response after exposure to cold, stress, or certain substances (eg, caffeine, nicotine).[16]
- **Differentiation**: Unlike PFH, Raynaud's phenomenon will affect multiple digits symmetrically, like pernio. Skin changes in color but with a faster onset and resolution than pernio.[16]

8. Vasculitis
- **Description:** Vasculitis is a general term for inflammation of blood vessels, and there are many forms. Vasculitis is often associated with a systemic autoimmune disease and therefore rarely will occur in isolation. Intense pain is also common with many forms of vasculitis.[5]
- **Differentiation:** In contrast to PFH, vasculitis is often progressive, especially if untreated, leading to wounds on the affected fingers. Additionally, as vasculitis is commonly a feature of a more systemic autoimmune disease, myriad associated symptoms are common such as arthralgia, fever, and rash.[17]

9. Dermatologic Manifestations of Infective Endocarditis
- **Description:** In patients with infective endocarditis (IE), septic emboli may occlude portions of the digital vasculature. Examination of the hands can reveal various clues to suggest this phenomenon. Osler's nodes are one finding associated with endocarditis. These are painful, purple nodules which are most commonly found on the tips of fingers and toes but can also appear on the thenar and hypothenar eminences. They can persist for a few hours to several days. Janeway lesions are painless, purple or brown macules which appear on the

palms, soles, and fingers and can last days to weeks.[18]

- **Differentiation:** PFH is an isolated disorder whereas the cutaneous findings associated with IE typically do not occur in isolation and are associated with other systemic symptoms, particularly a relapsing and prolonged fever.[18]

10. Herpetic Whitlow

- **Description:** Herpetic whitlow, also known as digital herpes simplex, is a painful viral infection on one or more fingers, often around the fingernails. It can be caused by both type I and type II herpes simplex virus (HSV). Herpetic whitlow is painful and presents as a group of small vesicles (fluid-filled blisters) and/or erosions with crusting. Like other forms of HSV infection, herpetic whitlow is acquired by contact with HSV lesions and may recur periodically in the same locations.[19]
- **Differentiation:** Herpetic whitlow is a very painful condition. The lesions often appear as small, fluid-filled blisters and sores, and may be accompanied by prodromal pain and/ or systemic symptoms like fever. Herpetic whitlow is typically much more painful than Achenbach syndrome and is more commonly mistaken for a paronychia based on whitlow's typical appearance of painful swelling commonly at the base of a fingernail.[19]

Treatment

In classic cases with little diagnostic uncertainty, follow-up within 2-3 days is reasonable if symptoms are not improving. Follow-up can be either with a primary care provider or with a recheck in urgent care. For atypical cases where PFH is a consideration but less certain, it is prudent for reassessment within 48 hours with primary care or a recheck sooner in UC if symptoms are becoming more severe. The mild pain that patients may experience can be mitigated with basic analgesics, such as non-steroidal anti-inflammatory drugs, and /or treated with topical over-the-counter analgesics and cold compresses. Recurrent cases may require further investigation.[1,5,7,9,13]

Prognosis

PFH has an excellent prognosis and full recovery without treatment is the expected course. Occasionally, episodes can recur in the same finger or other fingers. Patients recover fully after each episode without any appreciable or known risks for other serious conditions.[3,7]

Takeaway Points for Urgent Care

- PFH, or Achenbach syndrome, may bring patients to medical attention, particularly in UC, given its tendency toward sudden and unpredictable onset.
- It is important for UC clinicians to be familiar with the PFH diagnosis and recognize likely cases because it is a benign and self-resolving condition.
- Clinical diagnosis in cases without other concerning features can allow UC clinicians to appropriately reassure and discharge patients without further testing. ■

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