

CLINICAL IMAGE

SEIZURE-INDUCED THORACOCERVICOFACIAL PETECHIAE

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A 31-year-old male presents with seizure activity and a diffuse rash. The patient has a known history of seizures beginning at age 11. He states that the previous day he developed lightheadedness, intermittent lapses in memory and malaise, so he went home from work and immediately went to sleep. When he woke up the next morning, he was lying on his right side covered in vomit, had urinated on himself and had a tongue laceration. He feels that he had a generalized seizure overnight but denies falling off his bed. He denies fevers, chills, chest pain, shortness of breath, headache or diarrhea. His daily medications include 500 mg of levetiracetam twice a day, but he indicates that when he starts to feel like he might have a seizure, he generally increases the dosage to 1000 mg twice a day. He took 1000 mg orally the morning of presentation. The patient also admits to a periorbital and anterior chest wall rash (Figures 1–3). He states the last time he developed this rash was about 2 years ago after a seizure.

FIGURE 1:



FIGURE 2:



FIGURE 3:



QUESTIONS:

1. What is the diagnosis of this patient?

- Henoch-Schönlein purpura
- Medication reaction
- Meningococemia
- Thoracocervicofacial petechiae
- Vitamin C deficiency

2. What would be an appropriate treatment option for this patient?

- Antihistamine
- Immediate IV ceftriaxone and vancomycin
- Supportive care
- Systemic corticosteroid therapy
- Vitamin C supplementation of 90 mg daily

ANSWERS:

1. What is the diagnosis of this patient?

Correct answer:

D) Thoracocervicofacial petechiae

Thoracocervicofacial petechiae is a petechial rash involving the anterior chest, the cervical region and areas on the face, particularly periorbital areas and the conjunctiva, that can occur after an epileptic seizure.^{1–7} Henoch-Schönlein purpura (HSP) most commonly occurs in children following an upper respiratory

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infection and is characterized by a palpable purpura located on the extremities and buttock region.⁸ A medication reaction can present in numerous ways, most commonly being allergic in nature or urticarial.⁹ Meningococemia is caused by *N. meningitidis* and presents as acute meningitis with associated fever, generalized weakness, headache, petechial rash and hypotension.¹⁰ The patient in the clinical scenario did not exhibit any of the infectious symptoms associated with the petechial rash, thus making this diagnosis less likely. Severe Vitamin C deficiency, which is quite rare in the United States, can result in scurvy. Associated symptoms include petechial rashes, gingival hemorrhages and poor wound healing.¹¹

2. What would be the appropriate treatment option for this patient?

Correct answer:

C) Supportive care

The appropriate treatment for thoracocervicofacial petechiae is supportive care. It usually resolves within 3 weeks.^{3-5,7} Systemic corticosteroid therapy is appropriate for the treatment of HSP and has been shown to reduce the duration of skin lesions and gastrointestinal complications.⁸ It has not, however, been shown to prevent the recurrence of purpura with HSP.⁸ Should the patient be experiencing urticaria from a medication reaction, first-line therapy is antihistamines.¹² Intravenous ceftriaxone and vancomycin are empiric treatment for a patient with bacterial meningitis.¹³ The treatment of scurvy is up to 1000 mg of ascorbic acid (Vitamin C) daily in oral or IV form depending on illness severity.¹⁴

DISCUSSION:

Petechiae is a rash that can be very concerning clinically and a clue to potentially life-threatening illness. The rash can be caused by various infections, trauma, autoimmune conditions, hematologic disorders, asphyxiation and certain medications. However, thoracocervicofacial petechiae is a rare sequela of epileptic seizure activity and has been reported to follow generalized tonic-clonic seizures.^{1,2} Although the incidence of thoracocervicofacial petechiae is unknown, epilepsy syndrome is one of the most common brain conditions in the world, with more than 70 million people affected and a prevalence estimated at around 4–12 per 1000.^{15,16} Epilepsy also carries an increased risk of premature death and is associated with numerous other comorbidities that are important to identify.¹⁵ In a patient unaware of their own seizure diagnosis, thoracocervicofacial petechiae may be the only objective finding noted, or the only reason for which a patient presents for medical attention after seizure activity.

Petechial rashes develop via the leakage of erythrocytes from capillaries and result in small hemorrhages under the skin.³⁻⁸ A petechial rash, by definition, is 1 of 6 subtypes of purpura in which the lesions are non-palpable, not in a branching pattern (non-retiform) and >4 mm in diameter.⁸ The distribution and morphology of the purpuric lesions are important when trying to develop a differential diagnosis. In this patient, the rash was located primarily on the upper anterior portion of his body, helping to distinguish it from other known causes of life-threatening petechiae, which result in a more diffuse or differing pattern on presentation.

Petechiae is believed to occur following epileptic events due to the Valsalva maneuver-like response that occurs during the intense contraction of the chest and abdominal muscles.^{1,3,8} Seizure-induced petechial rashes are commonly reported to be observed in the anterior chest area, the cervical region and the conjunctival portion of the eye.¹⁻⁷ Although less commonly reported, the rash can also be observed in the periorbital region.⁵⁻⁷ Similar eruptions can appear after prolonged coughing or vomiting, supporting that the cause may have to do with markedly increased intrathoracic pressure due to intense contractions of the thoracic musculature against a closed glottis.⁷ A thoracocervicofacial petechial rash may be the only indicator of epileptic activity in a presenting patient.³ It is essential that this diagnosis be recognized due to the complexity and seriousness of epilepsy, although the rash itself appears to be self-limiting with no serious sequelae.^{3-5,7}

DIFFERENTIAL DIAGNOSIS

The differential diagnosis for a patient presenting with petechial rash is quite vast. The severity ranges from life-threatening to benign. Rash distribution and associated symptoms are helpful in delineating the cause.

Bacterial meningitis, specifically caused by *N. meningitidis*, must be ruled out quickly due to the mortality associated with such a diagnosis.^{10,17} In this case the petechial rash would usually involve the trunk, extremities and possibly the soles, palms and face typically following mucosal petechiae.¹⁸ A patient with meningococemia may also present with fever, myalgias, nuchal rigidity, headache and/or nausea.¹⁸ Meningitis is rapidly fatal, with mortality rates between 7% and 15% depending on the serotype, but only 60% of patients present with the classic symptoms of fever and petechiae.^{18,19}

Generalized petechiae can result from myelodysplastic syndrome (MDS), idiopathic thrombocytopenic purpura or drug-induced thrombocytopenia (DIT). The signs and symptoms of MDS are usually related to the pancytopenia that results from the bone marrow failure. These can include fever, fatigue, pallor and bruising.²⁰ ITP is an autoimmune condition that results in the self-destruction of platelets, potentially causing a generalized distribution of petechiae.²¹ DIT could be caused the medication causing destruction of platelets, or it could be an immune response to the drug that is causing the thrombocytopenia to occur.²² There are currently more than 200 drugs that are known to have caused DIT, including heparin, antibiotics, antiplatelet agents, antiepileptic agents and cardiac agents.²²

Periorbital and conjunctival petechiae can result from traumatic or sexual asphyxia.²³ Facial congestion, edema, cyanosis, abrasions and bruising are other potential associated findings.²³ It is important to consider this in a differential if there is not another major underlying cause, as it may identify if your patient is in an abusive or unsafe situation.²³

CONCLUSION

There are numerous causes for petechiae, varying from benign to life-threatening. The clinician needs to keep a broad differential in mind, while incorporating the presentation with the clinical signs and symptoms to conclude with an appropriate diagnosis. Seizure-induced thoracocervicofacial petechiae should remain in the differential for a patient who presents with the specific distribution noted in this clinical case. This clinical sign may be the only presenting feature of an underlying epileptic disorder, ultimately resulting in neurologic referral for appropriate long-term management, as the diagnosis is associated with numerous comorbidities and driving restrictions.^{3,15,24}

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