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Case Report

Transient Neurological Deficit and Severe Periorbital Reaction Following Routine Surgery: A Diagnostic Dilemma.

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Abstract

We present the case of a 44-year-old woman who developed a sudden severe periorbital reaction and a neurological episode following revision ACL reconstruction surgery. Initially thought to be unrelated, the combination of angioedema and generalized seizure prompted an extensive differential diagnosis spanning anesthetic complications, metabolic causes, and even rare immune responses.

Eventually, the most significant factor leading to all these events was identified as an unexpected allergy to adhesives. This case highlights the importance of gathering a comprehensive allergy history, including sensitivities to over-the-counter and cosmetic products, since even routine procedures can lead to unanticipated postoperative events.

INTRODUCTION

Perioperative neurological symptoms may arise from a wide variety of etiologies, including anesthetic-related causes, surgical causes, vascular causes, infectious or inflammatory causes, metabolic causes, medication-related causes, and allergic or hypersensitivity reactions.

However, immune-mediated hypersensitivity reactions, though rare, can sometimes present with dermatological and neurological features.

These presentations can lead to serious post-operative complications and delay diagnosis and management.

Unrecognized allergic reactions to non-drug related elements such as adhesives used in surgical tapes, drapes, or monitoring equipment can have systemic consequences Adhesive-related hypersensitivity reactions can present in diverse forms ranging from localized skin irritation, peeling, erythema to angioedema and even systemic manifestations.

In rare instances, these reactions can coincide with neurological symptoms, further confounding the diagnosis. Conversion disorder, although a diagnosis of exclusion, may also present with unexplained neurological symptoms adding complexity to postoperative evaluation. [1,2]

Here we report a rare case of adhesive hypersensitivity that initially looked like a serious anesthetic and neurological complications and caused a constellation of diagnostic dilemmas. This case highlights the importance of incorporating questions about over-the-counter and cosmetic product sensitivities during pre-anesthetic evaluation.

CASE PRESENTATION

A 44-year-old hypertensive female, blood pressure controlled on tablet Telmisartan 5 mg daily, was scheduled for revision anterior cruciate ligament (ACL) reconstruction. Her surgical history included an ACL repair in 2011 (uneventful). Routine preoperative investigations, including ECG and 2D echocardiography, were normal. She was classified as ASA II and refused any allergies during her pre-anesthetic checkup.

As per the plan, Spinal anesthesia was attempted but

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was abandoned after two vasovagal episodes, which were treated with intravenous atropine 0.6 mg. After the patient was hemodynamically stable conscious oriented, general anesthesia was then administered to proceed with surgery. An epidural catheter was placed in the left lateral position upon the surgeon's request, and 8 ml of isobaric 0.25% levobupivacaine was administered before extubation for pain management.

At approximately 4:00 PM, immediately before extubation, the removal of eye padding and adhesive tapes revealed pronounced bilateral periorbital erythema, with skin peeling and edema. Extubation proceeded smoothly after treating her for suspicious hypersensitivity to eye tapes, using an injection of Hydrocortisone 100 mg and Pheniramine 22.75 mg intravenously. The patient was observed in the recovery room until 6:00 PM, during which time no further symptoms were noted, eyesight remain unaffected, and no change in vitals. She was then shifted to the ward.

At 7:00 PM, the patient had a generalized tonic-clonic seizure. the seizure lasted about 3 minutes. The stroke code was activated. Scans including a CT brain and MRI brain, both excluded any bleeding or cerebrovascular accident, and hence she was transferred to the intensive care unit (ICU) for further management and observation. Postictally, she remained drowsy and demonstrated bilateral upper limb weakness (MRC grade 3/5), with preserved lower limb strength.

MRI brain and spine were unremarkable. Serum electrolytes, glucose, coagulation profile, and EEG were within normal limits. CRP was mildly elevated. Lumbar puncture was deferred by the Neurology team. No epidural top-ups were given. She was managed only on intravenous Analgesics and was started on antiepileptics injection Levetiracetam 500mg twice daily. The patient's neurological deficits improved gradually, and she achieved full recovery by postoperative day (POD) 3.

During postoperative counseling, the patient reported a history of hypersensitivity to adhesive bindi's (a decorative dot mark on the forehead, worn by Indian women) and disclosed that she only used a specific hypoallergenic brand, which had not been mentioned during her PAC as she found it unnecessary to disclose.

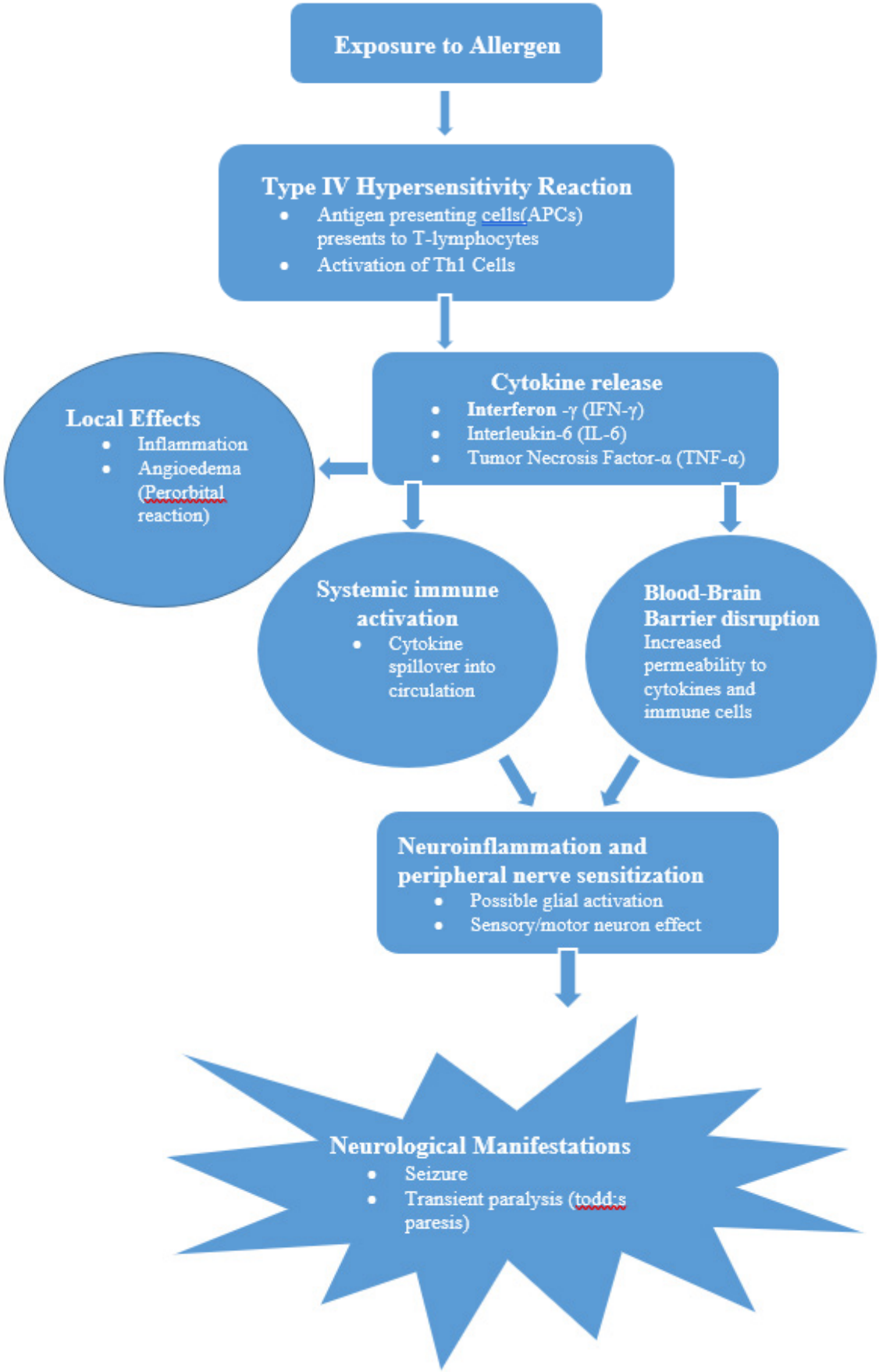
She was discharged on postoperative day 5 after she made a full recovery.

Figure 1. Severe periorbital reaction after eye padding and eye tapes were removed.

Differential Diagnoses Considered:

- Todd's paresis following a seizure, although the bilateral and upper-limb-specific distribution with prolonged duration made it less likely [3].
- Neurotoxicity from local anesthetic or inadvertent high epidural block ruled out due to normal hemodynamics and sparing of lower limbs [4].
- Cerebral ischemia from transient hypoperfusion due to vasovagal episodes neuroimaging was normal.
- Conversion disorder, especially due to isolated neurological symptoms without structural correlates. However, this diagnosis was also set aside as symptoms resolved with antihistaminic and supportive therapy [1,5].
- Allergic angioedema and systemic hypersensitivity reaction to surgical adhesive tape.

Figure 2:


Exposure to Allergen
Type IV Hypersensitivity Reaction
Antigen presenting cells(APCs) presents to T-lymphocytes
Activation of Th1 Cells
Cytokine release
Interferon -γ (IFN-γ)
Interleukin-6 (IL-6)
Tumor Necrosis Factor-α (TNF-α)
Local Effects
Inflammation
Angioedema (Perorbital reaction)
Systemic immune activation
Cytokine spillover into circulation
Blood-Brain Barrier disruption
Increased permeability to cytokines and immune cells
Neuroinflammation and peripheral nerve sensitization
Possible glial activation
Sensory/motor neuron effect
Neurological Manifestations
Seizure
Transient paralysis (todd:s paresis)

DISCUSSION

This case illustrates a rare yet important scenario that involves an adhesive allergy manifested with both dermatological and neurological features. Most of the adhesive reactions typically lead to localized irritation or contact dermatitis. However, systemic presentation due to mast cell degeneration and cytokine release can resemble central nervous system disorders[6]. The immunological hypersensitivity reactions may trigger a cascade of events involving peripheral nerve sensitization or blood-brain barrier modulation, potentially leading to more alarming secondary neurological manifestations.[7]

The presence of periorbital reaction concurrent with upper limb weakness poses a diagnostic dilemma.

While Todd's paresis could present postictally, the involvement of the bilateral upper limbs in isolation without loss of lower limb power and a more extended recovery time pointed towards a more systemic cause rather than a pure neurologic one. [3]

Another critical consideration was local anesthetic systemic toxicity (LAST), which presents with seizures and neurologic symptoms, however, the patient with stable hemodynamics, no cardiovascular compromise, and received a low dose of levobupivacaine, making LAST an unlikely explanation.[4]

Conversion disorder was briefly entertained given the lack of neuroimaging abnormalities and non-dermatomal weakness. However, this diagnosis is typically reserved after ruling out all organic causes. In this case, the patient improved after antihistamine therapy, but the concurrent dermatological reaction and later admission of prior adhesive allergy strongly favored a hypersensitivity-medicated pathology. [1,2,5]

This case reinforces the importance of detailed allergy history during pre-anesthetic evaluation. Patients often omit to mention nondrug allergies, especially those to cosmetics, cultural items like bindi, sindoor, or household adhesives. Because they may not perceive them as medically relevant.

Literature suggests that perioperative allergic reactions to adhesives are underreported and lack of awareness among healthcare providers may contribute to diagnostic delay. [6-8]

A high index of suspicion, awareness of atypical allergy presentations, and proactive history-taking can reduce diagnostic errors, prevent morbidity and facilitate early intervention with enhanced patient outcome.

Table :

Differential Diagnosis	Rationale	Ruled Out Based On
Todd's paresis	Considered due to transient weakness pattern	Unlikely due to bilateral upper limb involvement and prolonged duration
Local anesthetic neurotoxicity	Considered due to timing and proximity to epidural	Ruled out due to normal hemodynamics and lower limb sparing
Cerebral ischemia	Suspected due to potential transient hypoperfusion	Normal neuroimaging findings
Conversion disorder	Considered due to isolated neurological deficits with no anatomical lesion	Ruled out as symptoms resolved with antihistamines and supportive therapy
Allergic angioedema/systemic hypersensitivity to adhesive	Final diagnosis based on symptom resolution and pattern of swelling	Supported by timing and treatment response

CONCLUSIONS

- Hypersensitivity reactions occurring perioperatively may present as neurological complication.
- Any dermatological manifestation may indicate an impending systemic allergic reaction.
- A comprehensive PAC should explicitly incorporate the history of nondrug, cosmetic, and adhesive allergies.
- Timely identification and suitable supportive care can facilitate full recovery.

Patient Consent

Written informed consent was obtained from the patient for publication of this case and accompanying images.

Ethics Statement

This case complies with institutional and international ethical standards, including the Declaration of Helsinki.

Conflicts of Interest

None declared.

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Author Contributions
All authors were involved in patient management, conceptualization, manuscript drafting, and final approval.

REFERENCES

1. Stone J, LaFrance WC Jr, Levenson JL, Sharpe M. Issues for DSM-5: Conversion disorder. Am J Psychiatry. 2010;167(6):626–627.

2. Edwards MJ, Bhatia KP. Functional (psychogenic) movement disorders: merging mind and brain. Lancet Neurol. 2012;11(3):250–260.

3. Chang T, Ma X, Wu X, et al. Prolonged Todd's Paralysis: A Systematic Review. Seizure. 2020;79:44–48.

4. Gitman M, Barrington MJ. Local Anesthetic Systemic Toxicity: A Review of Recent Case Reports and Registries. Reg Anesth Pain Med. 2018;43(2):124–130.

5. Kanaan RAA, Armstrong D, Wessely SC. The function of 'functional': a mixed methods investigation. J Neurol Neurosurg Psychiatry. 2012;83(3):248–250.

6. Garvey LH, Dewachter P, Mertes PM. Perioperative Anaphylaxis: New Developments. Curr Opin Anaesthesiol. 2019;32(3):348–355.

7. Garvey LH. Perioperative Allergic Reactions: Epidemiology, Mechanisms, and Diagnosis. Acta Anaesthesiol Scand. 2020;64(4):491–499.

8. Gurnaney H, Maxwell LG, Kraemer FW. Perioperative angioedema and muscle weakness: a case report. Paediatr Anaesth. 2022;32(11):1213–1217.