Case Report

A Rare Case of Bee Sting-Induced Facial Palsy: Diagnosis, Treatment, and Recovery

Balasubramaniam Arun[1*], Kandhasamy Sasirekha[2], Jayakumar Priya[2], Balasubramanian Ganesan[2]

[1]*Physiotherapy, Government District Headquarters Hospital Erode, Erode, Tamil Nadu, India*
[2]*General Medicine, Government District Headquarters Hospital Erode, Erode, Tamil Nadu, India*

***Corresponding author:** Balasubramaniam Arun. Physiotherapy, Government District Headquarters Hospital Erode, Erode, Tamil Nadu, India. Email: barunmpt@gmail.com. ORCID: https://orcid.org/0000-0002-1173-8209

Cite as: Arun B , Sasirekha K, Priya J, Ganesan B. A Rare Case of Bee Sting-Induced Facial Palsy: Diagnosis, Treatment, and Recovery. Rwanda J Med Health Sci. 2026;9(1): 252-257. https://dx.doi.org/10.4314/rjmhs.v9i1.19.

Abstract

Introduction
Bee stings commonly cause allergic reactions ranging from mild local symptoms to severe systemic manifestations. Neurological complications are rare, and isolated facial nerve palsy is particularly uncommon.
Case presentation
This case report a 25-year-old man who developed right-sided facial paralysis one day after a periauricular bee sting. There were no systemic or central neurological deficits. Multidisciplinary evaluation by neurology and otorhinolaryngology revealed no other otorhinolaryngological or central nervous system pathology. Investigations excluded alternative etiologies. The palsy was attributed to venom-induced inflammatory or ischemic mechanisms. The patient received corticosteroids and physiotherapy. Recovery was monitored using the Sunnybrook Facial Grading System.
Conclusion
Early management with intensive physiotherapy played a critical role in facilitating favourable neurological recovery.
Rwanda J Med Health Sci 2026;9(1):252-257

Keywords: Bee sting, Facial nerve palsy, Neurological complications, Electrical muscle stimulation, Physiotherapy, Corticosteroid therapy, Sunnybrook Facial Grading System, Rare case

Introduction

Bee sting injury is prevalent in India.[1] The bee stings generally result in discomfort, swelling, and itching.[1] Delayed reactions to bee stings can occur up to 10 days after exposure, with symptoms varying based on the affected system. The severity and clinical outcome are influenced by Serum IgE levels. While systemic multiple system organ dysfunctions are well-documented, facial nerve injury due to bee stings are rare.[2] Standard treatments include antihistamines, corticosteroids, adrenaline, and venom immunotherapy. [3] Antihistamines are used to relieve local allergic symptoms such as itching and swelling; corticosteroids help reduce inflammation in more severe reactions; adrenaline (epinephrine) is reserved for life-threatening anaphylaxis; and venom immunotherapy is administered in selected cases to reduce long-term hypersensitivity in individuals with recurrent or severe reactions.[4] This case of facial palsy caused by bee sting envenomation, highlighting this uncommon neurological complication. Furthermore, this report outlines the diagnostic approach, treatment strategy, and clinical outcome of this rare presentation.

Case presentation

A 25-year-old male presented to an emergency department with a complaint of a bee sting sustained that morning. The sting occurred on the right side of his ear while he was cleaning a garbage area near his home. He was administered antihistamines and analgesics via intramuscular injection at a local. The following day, he developed left-sided facial deviation. He presented to the medicine outpatient department (OPD) at Government district headquarters hospital and was noted to have facial deviation and an inability to close his right eye. He reported no facial swelling or pain.

Upon evaluation by the general medicine physician, the patient exhibited no weakness in his upper or lower limbs, no slurring of speech, headaches, or double vision. He denied any recent fever, ear pain or infection, head trauma, falls, or other head injuries. He also had no history of hypertension or diabetes.

On assessment, his blood pressure was 125/80 mmHg, respiratory rate was 16 breaths per minute, SpO2 was 99%, and pulse was 75 beats per minute. An ENT specialist found no abnormalities. His eye examination by ophthalmologist was normal. A neurological assessment revealed normal higher cortical functions and normal muscle strength (5/5) in both upper and lower limbs.

Laboratory investigations revealed values within normal limits. Fasting blood glucose was 80 mg/dL and postprandial blood glucose was 120 mg/dL. Serum electrolytes were within normal ranges. Neurodiagnostic evaluation, including brain computed tomography (CT), electrocardiography (ECG), and electroencephalography (EEG), showed no abnormalities. A systematic differential diagnostic approach was undertaken. In the absence of alternative etiologies and given the close temporal relationship between symptoms onset and the bee sting, the diagnosis of bee sting–induced peripheral facial nerve palsy was considered the most plausible.

Management included oral prednisolone 60 mg daily for the first week, followed by gradual tapering.[5] He was referred to physiotherapy, which included electrical muscle stimulation, facial massage, taping, and facial exercises.[5,6]

The primary physiotherapy approach focused on electrical muscle stimulation (EMS), targeting key facial muscles, such as the frontalis, orbicularis oculi, zygomaticus, orbicularis oris, buccinator, risorius, and masseter.[7] Each muscle received 15 interrupted galvanic contractions per session, administered once daily in three sets (rotations) of five contractions each, with adequate rest intervals between sets. [8]

Facial massage was performed once daily following electrical muscle stimulation (EMS).[9] Each session lasted approximately 10–15 minutes and was applied using talcum powder. Techniques included stroking, effleurage, kneading, circular movements, tapotement, and wringing.[9] No additional repetitions were performed within the same session. Subsequently, kinesiology tape was applied to support the facial muscles, along with proprioceptive neuromuscular facilitation exercises (PNF).[10] PNF exercises include eyebrow elevation and depression in diagonal directions, eyelid opening and closing in diagonal directions, retraction of the mouth angle with upward lip protrusion, mouth opening to the right with head and neck flexion, and with neck extension.[10] The patient was instructed on a home exercise program, which included: 1) raising the eyebrows,2) gently and tightly closing the eyes, 3) smiling, 4) snarling, 5) puckering the lips, 6) blowing air into the cheeks, and 7) mouth opening. These exercises were to be performed for 10-15 minutes three times daily for four weeks as part of the rehabilitation program.[7]

Outcomes were measured using the Sunnybrook Facial Grading System, a sensitive and reliable assessment of facial nerve function.[11] The Sunnybrook facial grading system ranges from 0 to 100. Where the 100 represents normal facial function or full recovery, and the 0 represents total or complete facial paralysis. On the first day of treatment, the patient's score was 6, After 15 days, the score improved to 30, and by the 30th day, it had increased to 85. The patient achieved near-normal facial function following four weeks of treatment and was advised to continue the home exercises for an additional week.

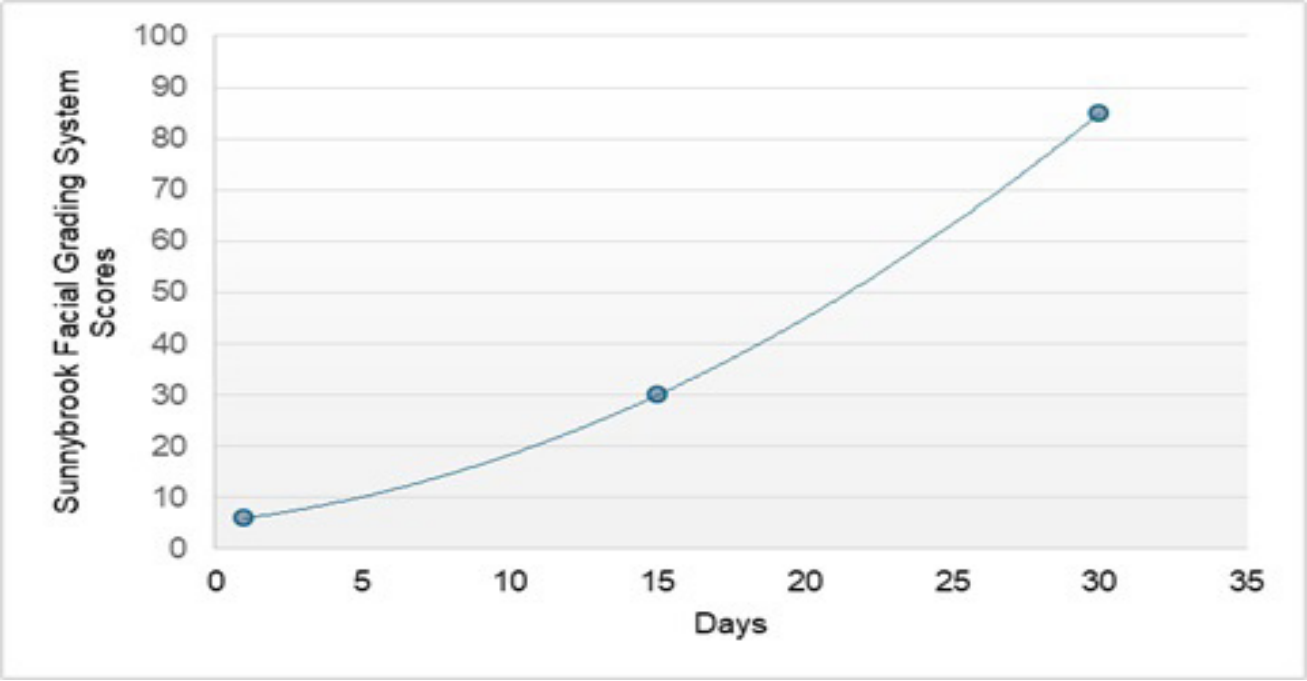

Figure 1. Good Improvement of Facial Palsy as indicated by Progression of Sunnybrook Facial Grading System Scores from Day 1 to Day 30 during the rehabilitation period

Discussion

The majority of envenomation instances are rapid reactions to a bee sting that happens within minutes to hours. However, in rare cases, some individuals may develop delayed symptoms that appear days to weeks later. Acute reactions can range in intensity from minor allergy reactions to potentially fatal anaphylactic shock. According to medical literature, rare and delayed reactions include things like delayed hypersensitivity reactions, neurological symptoms, hepatic dysfunction, serum sickness, and renal problems.[1]

It's still unclear exactly what mechanism causes neurological symptoms to emerge after a bee sting. However, the venom is thought to contain allergenic proteins such as phospholipases, which may activate mast cells and trigger IgE-mediated immune responses.[3,4] Furthermore, venom promotes the synthesis of IgE antibodies, which may cause a variety of neurological symptoms by cross-reacting with myelin. [12]

Prednisolone, a corticosteroid with potent anti-inflammatory properties, is the primary treatment for facial palsy, particularly Bell's palsy.[3] When administered within 72 hours of the onset of symptoms, it reduces nerve swelling and compression and speeds up recovery.[4] Studies have shown that compared to a placebo, prednisolone dramatically improves facial nerve function. [13] Early use of prednisolone enhances recovery rates and reduces complications in facial palsy patients. Steroids reduce the nerve swelling within the facial nerve canal, these drugs lessen the strain on nearby blood vessels. Reducing this pressure improves blood flow to the damaged nerves, which aids in healing and enhanced recovery of the nerve function.[4]

Facial exercises are essential for rehabilitating facial palsy by improving muscle strength, coordination, and neuromuscular control. They help re-educate facial muscles, enhance circulation, and reduce synkinesis. [14] Studies show that structured exercise programs significantly improve facial symmetry and function.[5] Additionally, neuromuscular retraining aids in regaining voluntary muscle control and minimizing abnormal movements.[15] Overall, facial exercises accelerate recovery and prevent long-term complications in facial palsy patients.

Electrical stimulation helps prevent muscle atrophy, improve circulation, and enhance neuromuscular re-education in facial palsy. [6] It promotes nerve activation, muscle strength, facial symmetry, and voluntary contractions while reducing synkinesis. [7,10] However, improper use may cause abnormal co-contractions.[8]

PNF aids neuromuscular re-education through stretching and resistance-based movements, improving muscle coordination, strength, and voluntary control.[10] It helps restore facial symmetry and reduces synkinesis by facilitating proper movement patterns.[7] Combined with conventional physiotherapy, PNF accelerates functional recovery and improves muscle responsiveness.[10]

For the present case, a combination of anti-inflammatory drug (prednisolone), facial exercise, EMS and PNF was used and as a result, within four weeks of treatment the patient recovered fully. Given the limited number of reported cases, further case reports and systematic studies are warranted to elucidate the underlying pathophysiological mechanisms and to develop evidence-based management and rehabilitation protocols for bee sting–induced facial nerve palsy.

Conclusion

This case highlights an exceptionally rare aetiology of peripheral facial nerve palsy following bee sting envenomation and underscores its important clinical implications. It demonstrates that early recognition, exclusion of alternative diagnoses, and a structured multidisciplinary rehabilitation approach can result in favourable functional outcomes even in uncommon presentations. Facial exercises and PNF therapy facilitated neuromuscular re-education, improving muscle coordination and preventing complications such as synkinesis. Additionally, EMS promoted muscle activation and improved facial symmetry.

Patient consent
Consent obtained.

Competing interest
Nil

Funding statement
Not funded

Authors' contributions
SS led the study's conceptualization, conducted data collection, and approved the final manuscript. PJ. contributed to the literature review, clinical analysis, and manuscript editing. GB. handled methodology, data interpretation, and critical revisions. AB supervised the study, managed the case, provided physiotherapy techniques, and drafted the manuscript. All authors actively contributed and approved the final version.

Acknowledgement
We sincerely thank JD Madam, Dr. R. Venkatesh, Hospital Superintendent, and all the dedicated staffs of Government District Headquarters Hospital, Erode, for their unwavering support and cooperation in facilitating this study.

References

1. Masaraddi SK, Desai RJ, Deshpande SH, Patel S. Bee sting leading to stroke: a case report and review of the literature. *BMJ Case Reports CP*. 2021;14(11):e240693. https://doi.org/10.2147/RMHP.S381303
2. Li TJ, Xiang M, Lv X. Analysis of a Case of Facial Nerve Injury Caused by Bee Sting in a Child. *Risk Management and Healthcare Policy*. 2023;16:247-53. https://doi.org/10.2147/RMHP.S381303
3. Izzathunnisa R, Umakanth M, Sundaresan KT, Mayurathan P. Bee sting induced facial nerve palsy. *Journal of the Ceylon College of Physicians*. 2023;54(1). https://doi.org/10.4038/jccp.v54i1.7972
4. Sullivan FM, Swan IR, Donnan PT, Morrison JM, Smith BH, McKinstry B, Davenport RJ, Vale LD, Clarkson JE, Hammersley V, Hayavi S. Early treatment with prednisolone or acyclovir in Bell's palsy. *New England Journal of Medicine*. 2007;357(16):1598-607. https://doi.org/10.1056/NEJMoa072006
5. Uysal SC, Özden F, Özkeskin M. Current physiotherapy approaches in patients with facial Palsy. In G. Bennett & E. Goodall, eds. The Palgrave Encyclopedia of disability. *Cham, Switzerland: Palgrave Macmillan*. 2024:1-11. https://doi.org/10.1007/978-3-031-40858-8_137-1
6. Oliveira C, De Sousa R, Ramos C, Cruz AL. Effect of electrostimulation applied on Bell's palsy—a systematic review. *Open Access Library Journal*. 2022;9(6):e8600. https://doi.org/10.4236/oalib.1108600
7. Alakram P, Puckree T. Effects of electrical stimulation in early Bell's palsy on facial disability index scores. *South African Journal of Physiotherapy*. 2011; 67(2):35-40. https://doi.org/10.4102/sajp.v67i2.44
8. Loyo Li M, Cameron MH, Volk GF. Does electrical stimulation still have a place in the treatment armamentarium for Bell's palsy?. *Expert Review of Neurotherapeutics*. 2024; 2;24(1):1-3. https://doi.org/10.1080/14737175.2023.2295426
9. Tuncay F, Borman P, Taşer B, Ünlü İ, Samim E. Role of electrical stimulation added to conventional therapy in patients with idiopathic facial (Bell) palsy. *Am J Phys Med Rehabil*. 2015 Mar;94(3):222-8. doi: 10.1097/PHM.0000000000000171
10. Dominguez-Defez N, Lopez-Barreiro J, Hernandez-Lucas P, González-Castro A. Proprioceptive Neuromuscular Facilitation and/or Electrical Stimulation in Patients with Peripheral Facial Paralysis: A Systematic Review. *Neurology International*. 2025;17(2):17. https://doi.org/10.3390/neurolint17020017

11. Cabrol C, Elarouti L, Montava AL, Jarze S, Mancini J, Lavieille JP, Barry P, Montava M. Sunnybrook Facial Grading System: intra-rater and inter-rater variabilities. *Otology & Neurotology.* 2021;42(7):1089-94. https://doi.org/10.1097/MAO.0000000000003140
12. Srinath KM, Basava Chethan M, Prem Chand HH, Nandini K. A rare case of bi-facial paralysis caused by bee stings. *Int J Acad Med Pharm.* 2024;6(1):517-519. https://doi.org/10.47009/jamp.2024.6.1.102
13. Engström M, Berg T, Stjernquist-Desatnik A, Axelsson S, Pitkäranta A, Hultcrantz M, et al. Prednisolone and valaciclovir in Bell's palsy: a randomised, double-blind, placebo-controlled, multicentre trial. *Lancet Neurol.* 2008;7(11):993-1000. doi: 10.1016/S1474-4422(08)70221-7. https://doi.org/10.1016/S1474-4422(08)70221-7
14. Khan AJ, Szczepura A, Palmer S, Bark C, Neville C, Thomson D, Martin H, Nduka C. Physical therapy for facial nerve paralysis (Bell's palsy): An updated and extended systematic review of the evidence for facial exercise therapy. *Clinical rehabilitation.* 2022;36(11):1424-49. https://doi.org/10.1177/02692155221110727
15. Beurskens CH, Heymans PG. Mime therapy improves facial symmetry in people with long-term facial nerve paresis: a randomised controlled trial. *Australian Journal of Physiotherapy.* 2006;52(3):177-83. https://doi.org/10.1016/S0004-9514(06)70026-5