

Hyperbaric Oxygen Therapy to Enhance Functional Recovery in Bell's Palsy: a Case Series

Debprasad Dutta¹, Franklin Binoy Jestin², Aiswarya Radhakrishnan¹, Amritha Suresh¹, Srikant Venkatakrishnan^{2*}

¹ Integrated Research on Neuroscience (IRoN) Unit, Mazumdar Shaw Center for Translational Research (MSCTR), Mazumdar Shaw Medical Foundation (MSMF), Bangalore-560099, INDIA

² Narayana Institute of Neuroscience (NIN), Narayana Health (NH), Bangalore-560099, INDIA

INTRODUCTION & AIM

Bell's palsy is the most common diagnosis for facial nerve (VII cranial nerve) paralysis affecting 20-30/100,000 persons annually. Though the cause is generally idiopathic, evidence suggests that herpes simplex virus (HSV) reactivation at the geniculate ganglion may trigger inflammation and swelling of the facial nerve. Around one-third of patients experience incomplete recovery, leading to long-term complications such as synkinesis and facial asymmetry. This study aims to measure the efficacy of hyperbaric oxygen therapy (HBOT) as an adjunct treatment alongside corticosteroids in enhancing recovery outcomes in patients with moderate to severe Bell's palsy.

METHOD

The case series included four patients (n=4) with moderate to severe Bell's palsy, each initially assessed using the House-Brackmann (HB) scale. Polytherapy regimen involved corticosteroids (Prednisolone 60mg daily for 5 days, followed by tapering) and antiviral medications (Valacyclovir 1g three times daily for 5-7 days), combined with daily HBOT sessions at 2.0 to 2.5 ATA for 90 minutes. Vital signs were monitored throughout treatment.

Table 1. Clinicodemographic characteristics of 4 patients with Bell's palsy

Patients	Age/Sex	Diagnosis	Occupation	Neurological Examination Features	HB score
Case 1	36/M	Bell's palsy	IT worker	Right-sided facial weakness with moderate dysfunction	4
Case 2	22/F	Bell's palsy	Student	Left-sided facial weakness with moderate dysfunction	4
Case 3	40/M	Bell's palsy	Factory worker	Right-sided facial weakness with mild dysfunction	3
Case 4	38/F	Bell's palsy	Home-maker	Left-sided facial weakness with severe dysfunction	5

CONCLUSION

This case series garners evidence for multimodal therapy of corticosteroids, antivirals and HBOT appears promising in accelerating recovery from Bell's palsy. Despite positive outcomes, it is important to note the smaller sample size and lack of controls to compare the effects of HBOT as monotherapy warrants testing our hypothesis of the neuro-regenerative power of HBOT. Additionally, the long-term follow-up outcomes of these patients were not assessed in this case series, which leaves questions about the temporal stability of the observed improvements.

FUTURE WORK

Large multicentric controlled clinical trials on more diverse populations could establish HBOT as a standard adjunct therapy in clinical practice. Longitudinal cohort studies and mechanistic preclinical projects can further ascertain the neural amelioration capacity of HBOT and prognostic perks.

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RESULTS & DISCUSSION

Results:

Facial motor function improved in 4 patients following (HBOT + corticosteroids + antiviral) combo therapy as reflected through their HB scores. The average improvement across 4 patients was 1.5 HB grades, with greater benefit observed in the patient with a higher initial score. The patients progressed from severe/moderate to moderate/mild facial muscle dysfunction within 4-11 days of treatment.

Discussion:

Salient findings suggest combining HBOT with conventional treatments can markedly enhance recovery from Bell's palsy. The most notable improvement was in the patient with severe initial dysfunction (HB score of 5), signifying that HBOT might be specifically beneficial in severe facial palsy.

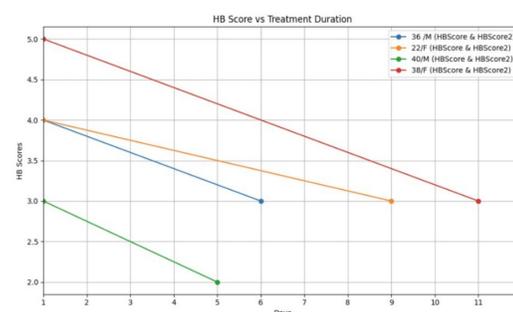


Figure 1. Contrastive manifestation of House-Brackmann (HB) scores in patients before and after HBOT adjunct therapy

Table 2. House-Brackmann (HB) Facial Nerve Grading System

HB Score	Description
1	Normal
2	Slight weakness
3	Moderate weakness
4	Moderate to severe weakness
5	Severe weakness
6	Total paralysis

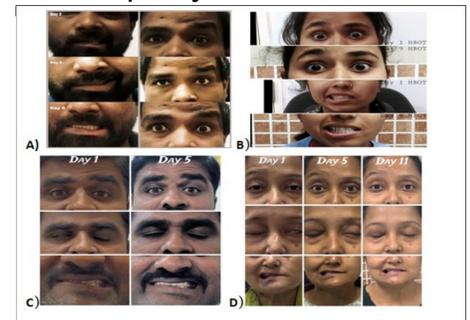


Figure 2. Progression of facial recovery in the 4 patients with facial paralysis, showing improvement in House-Brackmann (HB) scores over time: A) The 36-year-old male patient, showed improvement in facial nerve function, moving from an HB scale score of 4 to 3 over the course of 6 days of treatment. B) The 22-year-old female patient, showed improvement in facial nerve function, moving from an HB scale score of 4 to 3 over the course of 9 days of treatment. C) The 40-year-old male patient, showed improvement in facial nerve function, moving from an HB scale score of 3 to 2 over the course of 5 days of treatment. D) The 38-year-old female patient, showed improvement in facial nerve function, moving from an HB scale score of 5-3 over the course of 11 days of treatment.

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PRESENTING AUTHOR'S CONTACT

Email of D Dutta: debprasad.neuro@gmail.com / debprasad@ms-mf.org
ORCID: <https://orcid.org/0000-0001-5698-3067>