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Case Report

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Resolution of Severe Neonatal Brain Injury Following Biophoton Generator Exposure: A Case Report

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ABSTRACT

Background: Neonatal hypoxic-ischemic encephalopathy (HIE) due to perinatal hypoxia carries high risk of permanent neurological injury. Therapeutic hypothermia offers partial protection; complementary regenerative therapies are needed.

Case Presentation: We report an infant with confirmed severe brain injury due to birth trauma resulting in two skull fractures and a hematoma. Despite standard management, neurological recovery was minimal over two weeks. A biophoton generator device emitting non-heating photons (500–1000 nm) was introduced adjunctively, with daily exposure over several months. Within days, the infant showed improvement in sleep, soothability, and alertness. Follow-up showed sustained normalization of neurological function.

Conclusion: This case illustrates a striking association between biophoton exposure and neurological recovery in a neonate with severe brain injury. Though causality cannot be confirmed from a single case, the result supports further controlled investigation of biophoton generator exposure in neonatal neuroprotection.

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Introduction

Neonatal hypoxic-ischemic encephalopathy (HIE) is a critical cause of neonatal mortality and long-term morbidity worldwide [1]. Standard interventions such as therapeutic hypothermia reduce injury but do not guarantee full recovery, especially in severe cases [2].

Biophoton therapy (a form of photobiomodulation (PBM)) or non-thermal light in visible to near-infrared wavelengths, have been proposed as a neuroprotective/regenerative modality. Mechanistic studies show photon absorption by mitochondrial chromophores (e.g., cytochrome-c oxidase) may enhance ATP synthesis, modulate nitric oxide, and reduce oxidative stress. Preclinical models of ischemic brain injury have demonstrated functional improvements with PBM.

To date, clinical use in neonates is not established. We present a case of severe neonatal brain injury with remarkably rapid neurological improvement following adjunctive biophoton generator exposure.

Case Presentation

Clinical History & Initial Management

- An infant sustained perinatal hypoxia/ischemia and manifested signs of severe brain injury: two skull fractures, a hematoma, and suspected brain damage and developmental delays.
- Therapeutic hypothermia, standard NICU supportive care, and monitoring were instituted.
- Over the first 9 days, neurological function improved but concerns for lasting neurological damage and developmental delays remained.

Intervention with Biophoton Generator

- Upon returning home from the hospital, the infant's mother introduced a biophoton generator (Tesla BioHealing Inc.) positioned adjacent to the infant's resting area.
- The device emitted continuous non-heating photons in the 500-1000 nm range.
- Exposure regimen: The device was placed near the infant 24 hours per day (in the living room during the day and by the bassinet at night) during his first 6 months of life.
- Neurological status was monitored for reflexes, sleeping, feeding, motor responsiveness, and alertness at well-baby visits.

Observed Outcomes

- Within several days, the infant demonstrated significant improvements in sleep, soothability, and alertness compared to baseline.
- Over the next two years of this baby's life, the neurologic improvement continued beyond expectations from baseline trajectory.
- No adverse effects were noted during or after biophoton exposure.
- After two years of observation, the child has no sign of birth trauma and is reaching the CDC milestones for a normal 30-month-old baby.

Discussion

This case suggests that adjunctive biophoton exposure may promote neurological recovery in neonatal brain injury. Potential mechanisms include mitochondrial restoration, reduction in oxidative stress and inflammation and stimulation of neurogenesis and repair processes [3-7]. Clinical studies of transcranial photobiomodulation in adults with stroke have shown promising signals and research in other neurological conditions such as depression further supports mitochondrial targeting [8,9].

The observed rapid improvement following initiation of biophoton generator exposure is striking, though we must interpret cautiously.

Mechanistic Rationale

- **Mitochondrial Support:** Photon absorption by cytochrome-c oxidase and related mitochondrial chromophores can stimulate electron transport, ATP production, and mitochondrial biogenesis.
- **Neuroprotection:** Photobiomodulation (PBM) has been shown to reduce oxidative stress, inflammation, and apoptosis in ischemic brain models.
- **Regenerative Potential:** PBM may enhance neurogenesis, synaptogenesis, and plasticity, potentially accelerating repair processes.

Limitations & Considerations

- As a single case report, causality cannot be established. Spontaneous recovery or unmeasured confounders might contribute.
- Absence of a control or sham condition limits interpretability.
- Safety in neonates (especially with immature skin, skull, and cerebral vasculature) must be assessed carefully in future work.

Conclusions

The remarkable neurological recovery observed in this neonate following biophoton exposure provides an intriguing suggestion of efficacy. While definitive conclusions cannot be drawn from a single case, the outcome warrants further rigorous, controlled clinical investigation of biophoton generators in neonatal brain injury.

Declarations

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