From Acute Injury to "Phantom Deafness"
A New Naming System for SSHL

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The current vocabulary for Sudden Sensorineural Hearing Loss (SSNHL) struggles to capture its diverse presentations and underlying mechanisms. This paper argues for a naming system based around stages that differentiate between primary and secondary SSHL, encouraging treatment that moves beyond a one size fits all approach to address the underlying issues.

A. Primary SSHL

SSHL Stage 1 - Acute Injury (Physical Deafness)

Cause: Inner ear damage (hair cells, nerve) from trauma, infection, virus, inflammation, vascular issues etc.
Symptoms: Sudden hearing loss in one ear.
Medical Treatments: Oral & intratympanic steroids, HBOT etc as prescribed by doctor.
Supplementary treatment: Rest. Do not plug the affected ear. Plasticity-preventing interventions need to be investigated.

Stage 2 - Recovery Phase

Changes: Physical damage begins to heal with or without treatment.
Treatment: Continued monitoring, potential additional steroid courses.
Supplementary treatment: CIST to avoid progression to stage 4.

Stage 3 - Plateau/Chronic Hearing Loss.

Definition: No further audiogram improvement for ≥3 months.
Symptoms: Persistent hearing loss, stable audiogram.
Treatment: Nothing or hearing aids or cochlear implants.

This is the general timeline for SSHL.
This paper proposes an extended timeline as follows:

B. Secondary SSHL

Secondary SSHL is characterised by neurological maladaptation following SSHL Stage1. After a prolonged period (typically exceeding 72 hours) in the acute or recovery stages of primary SSHL, the brain undergoes compensatory rewiring as a protective mechanism. This rewiring, even if the physical damage in the ear heals, can disrupt auditory processing. Rewiring can occur in either the brainstem (lower auditory processing) or the auditory cortex (higher-level interpretation).

Symptoms: Impaired frequency discrimination, speech recognition difficulties, distorted music perception, tinnitus, abnormal sound responses (irritation, flinching), directional hearing problems, noise sensitivity, fluctuating audiogram

Stage 4 - Physical Deafness Plus Neural Reorganisation

Onset: After 72 hours of SSHL (Stages 1-3) the brain may rewire itself for protection.
Mechanism: Even with physical hearing improvement, brain misinterprets or blocks auditory signals.
Symptoms: As above - frequency, music, and speech processing issues and abnormal sound responses.
Treatment: Follow doctor's treatment.
Supplementary treatment: CIST therapy, Auditory retraining.

Stage 5 - “Phantom” deafness

Even after physical recovery, "learned" neurological hearing loss can persist. Brain retraining is crucial to help the brain re-hear.

Symptoms: as above - frequency, music, and speech processing issues and abnormal sound responses.
Medical Treatment: Currently none
Supplementary Treatment: CIST therapy. Listening to familiar sounds so that the brain can re-learn.

C. Neurological SSHL

Some SSHL cases may not have physical damage they go straight to a neurological impairment. These brain-related cases (stroke, inflammation) require immediate medical attention like steroids and scans to address the underlying condition. Brain retraining, similar to Stage 4 above, may supplement treatment later to help the brain relearn hearing.

Possible Progressions

Stage 1, 2.
Outcome: Physical damage heals (through time or treatment), hearing returns to normal.
Symptoms: None.

Stage 1, 3.
Outcome: Physical damage remains partially or fully, requiring hearing aids.
Symptoms: Reduced hearing but no brain rewiring issues.

Stage 1, 3, 4.
Outcome: Physical damage persists and brain rewiring worsens symptoms.
Symptoms: Sensitivity, pain, tinnitus, hearing loss.
Treatment: Focus on brain retraining to adapt to the permanent hearing loss.
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Stage 1, 2, 4, 5.
Outcome: Physical damage heals, but "learned" hearing problems remain.
Symptoms: Sound perception, direction and discrimination issues, discomfort, fluctuating audiogram indicating inconsistent hearing levels.
Treatment: Focus on intensive brain retraining (e.g. CIST) to help the brain relearn.

Further Reading

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