

BILATERAL SUDDEN SENSORINEURAL HEARING LOSS (SSHL) WITH HYPOKALEMIC PERIODIC PARALYSIS (HPP)

Sudden hearing loss is a medical emergency for which definitive diagnosis and treatment is still largely unknown. SSHL generally refers to hearing loss of sensorineural origin. SSHL is defined as 30 dB or more sensorineural hearing loss over at least three contiguous audiometric frequencies occurring within 3 days or less. The incidence of SSHL is estimated to be 5-20 per 100000 persons.^{2,11} The highest incidence occurs between 50-60 years of age, and the lowest incidence is between 20-30 years of age, but average age of onset is usually between 40 and 50 years, and of the patients suffering from SSHL, 4-10% are bilateral.⁴ SSHL has several possible etiologies, including circulatory, autoimmune, membrane rupture, trauma, tumor and viral origins.^{1,5,6,11 and 3}

Hypokalemic periodic paralysis is one of the channelopathies. Onset of disease may be at any time from early childhood to the third decade of life.¹¹ The incidence is rare, and only one or two new patients are seen each year in any of the large neurological centers in the United States. Males are affected two or three times as frequently as females.⁷ During an episode of HPP the serum potassium usually falls. How the reduced calcium channel function relates to hypokalemia-induced attacks of muscle weakness is not known. In this paper a case of SSHL with HPP is presented.

A 32 year old female was admitted to Shafa Hospital Neurology Ward due to paralysis of all extremities from 12 hours ago, but respiration, eye movements and sphincters were spared. In paraclinical examinations serum potassium level was 2.5 mEq/L, but other laboratory find-

ings were normal. The electrocardiogram showed a tall U wave. After administering oral potassium chloride the paralysis gradually disappeared and electrocardiogram reverted to normal. This attack with SSHL had also occurred one year ago. Associated with muscle paralysis, hearing had been lost, and reverted to normal gradually after several months. The type of hearing loss was sensorineural. Table I shows the rate of hearing loss after hypokalemic periodic paralysis.

SSHL is a broad term used to describe a patient's symptoms of sudden loss of hearing in one or both ears when the onset of the patient's symptoms developed within a very short time period. Diagnosis of SSHL is believed to be the result of more systemic problems. Unfortunately with exclusive etiology possibilities, the etiology is frequently unknown.^{10,9} In this case hypokalemic periodic paralysis is present too, and hypokalemia may be the etiology of SSHL in this case, especially as the sensorineural hearing loss is bilateral.

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REFERENCES

1. Belal A Jr: Pathology of vascular sensorineural hearing impairment. *Laryngoscope* 90: 1831-1839, 1980.

Table I. Rate of hearing loss after hypokalemic periodic paralysis.

Freq. Time	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	EAR
2 weeks	45dB	50dB	60dB	60dB	60dB	60dB	Right
6 weeks	30dB	30dB	40dB	55dB	55dB	55dB	Right
18 weeks	20dB	27dB	40dB	45dB	40dB	40dB	Right
1 year	10dB	10dB	15dB	25dB	25dB	25dB	Right
2 weeks	40dB	40dB	50dB	55dB	55dB	50dB	Left
6 weeks	30dB	33dB	35dB	40dB	45dB	50dB	Left
18 weeks	20dB	30dB	25dB	30dB	35dB	35dB	Left
1 year	10dB	10dB	15dB	20dB	25dB	25dB	Left

Bilateral Sudden Sensorineural Hearing Loss in HPP

2. Fettermann BL, Saunders JE, Luxford WM: Prognosis and treatment of sudden sensorineural hearing loss. *AJO* 17: 529-539, 1996.
3. Byl FM: Sudden hearing loss: eight years experience and suggested prognostic table. *Laryngoscope* 94: 647-661, 1984.
4. Campbell KCRA, Klemmens JJ: Sudden hearing loss and autoimmune inner ear disease. *Journal of the American Academy of Audiology* 110: 361-367, 2000.
5. Byl FM: Seventy-six cases of presumed sudden hearing loss occurring in 1973: prognosis and incidence. *Laryngoscope* 87: 817-825, 1977.
6. Loughran S: Management of sudden sensorineural hearing loss: A consultant survey. *JLO* 114: 837-839, 2000.
7. Rowland LP: *Merritt's Textbook of Neurology*, 10th ed., Lea & Febriger, pp. 750, 2000.
8. Victor M, Ropper AH: *Adam's and Victor's Principles of Neurology*, 7th ed., Mc-Graw-Hill, p. 1560, 2001.
9. Mattox DE, Simmons FB: Natural history of sudden sensorineural hearing loss. *Annals of Otology, Rhinology and Laryngology* 86: 463-80, 1977.
10. McCabe BF: Autoimmune sudden sensorineural hearing loss. *Annals of Otology, Rhinology and Laryngology* 88: 585-589, 1979.
11. Tucci DL, Farmer JSC Jr, Kitch RD, Witsell DL: Treatment of SSHL with systemic steroid and acyclovir. *Otology and Neurotology* 23: 301-303, 2002.