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Bilateral Senso-Neural Hearing Loss (SNHL), Type a After Anal Fistula Incision under Spinal Anesthesia

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Abstract: Post-operative hearing loss is a very poorly understood complication in the medical field in general and in the Anesthesiology practice more specifically. This has been observed past three decades and yet, it still is a mystery and unresolved medical condition. Senso-neural hearing loss (SNHL) results in temporary deafness as a side-effect of a puncture during spinal (subarachnoid) anesthesia. Although it is also observed after general anesthesia, but the numbers are much less. In the present study, we report a case of 48 year old man who underwent a surgery for anal fistula incision with spinal anesthesia and complained about the hearing inability in both the ears (bilateral SNHL) started few hours after the surgery. His symptoms improved over a few days' time with a conservative approach (rest, hydration and increased caffeine intake). There have been other reports on permanent type of hearing loss. Even though in a majority of cases, the patients recover, considering the threats from the minority, we believe that it is the responsibility of the medical staff to be aware of the patients' condition before undertaking such surgeries and anesthesia.

Keywords: Senso-neural hearing loss; Spinal anesthesia; bilateral senso-neural hearing loss; anal fistula incision.

INTRODUCTION

Sudden senso-neural hearing loss (SNHL) after spinal or general anesthesia, higher for post spinal, is a very rare medical condition and biggest concern to the anesthesiologists and neurologists [1].

Bilateral is rare and worse than unilateral where the cochlear duct of both the ears are affected possibly due to the loss of cerebrospinal fluid. Symptoms like dizziness, headache, and fullness in the ears, pain in the neck, nausea, vertigo and tinnitus are observed. Later two are seen to be associated with the permanent disability in hearing. Usually the symptoms are reversible and the patient recovers spontaneously in few days. Although, Michel *et al.* observed a case where a patient suffered from permanent high-frequency hearing loss after undergoing spinal anesthesia for the removal of metal splint in his right leg [2]. SNHL has seen to be independent of the type of surgery too. Here, we report a case where the patient suffers from bilateral SNHL after spinal anesthesia for anal fistula incision, which is completely non-associated with SNHL type complications.

CASE REPORT

A 48 year old healthy male underwent Anal Fistula Incision under spinal anesthesia with regular weight based dosage. He also received a local anesthetic infilteration for upper trunk lipoma excision in usual recommended dosages for similar cases. But, it was an uneventful spinal procedure and surgery. Although, the patient tolerated both the short procedures and recovered well for couple of hours prior to discharge. He was released on the same day from the surgery center.

After being discharged, he started to experience gradual onset of headache, neck rigidity, mild to moderate dizziness and progression of impaired hearing over the following 48 hours. However, there was no history of fever, nausea, vomiting, and loss of consciousness, tinnitus, or convulsions.

Later on, the patient went to the Emergency Room first and was referred to the ENT clinic at which he was clinically evaluated and had audio-gram, tympano-gram studies which was suggestive of bilateral moderate Senso-Neural Hearing Loss (SNHL), type A. He was also requested to consult the anesthesia experts in addition to the CT temporal bone study and to pay a follow up visit a week later.

Patient was then seen by the anesthesia team and he was thoroughly examined for any history of the symptoms and the present physical condition. The team focused more on the unexpected complications which arose pertaining to the neuro-axial anesthesia and the related signs and symptoms. Their findings were not

consistent with the common adverse events or known complications (Post Dural Puncture Headache, PDPH) given the associated complaints and the time-frame in which the patient showed up. Nevertheless, he was assured and recommended to hydrate well and consider the high caffeine containing drinks and was advised to report immediately to ED if his condition worsened or persisted beyond 3-5 days.

CT scan showed no evidence of vestibule enlargement, or any other abnormal findings and the official report was normal. His symptoms improved in the following days and were satisfied after complete resolution of his complaints.

Table-1: Time of events that took place post-surgery till the patient's recovery

Time	Event
Day 1	48 year old male undergoes surgery for anal fistula incision after weight based dosage of spinal anesthesia.
Day 1	Patient is discharged
Day 1	After being discharged, patient experiences sudden onset of headache, neck rigidity, mild to moderate dizziness, impaired hearing
Day 3	Patient goes to ED and then ENT for diagnosis
Day 3	Patient is evaluated by the anesthesia team after being referred by ENT clinic.
Day 3	Patient is recommended to increase the water and caffeine intake
Few days later	Symptoms improve and patient recovers.

DISCUSSION

Here, we report occurrence of bilateral SNHL after operating for anal fistula incision. The patient started showing the symptoms on the same day of surgery which persisted for 48 hours. The doctors found these adverse effects to be surprising. They precisely noted that development of transient or permanent hearing loss after spinal anesthesia is very rare and controversial.

There have been many mechanisms hypothesized to answer this effect [3]. First reason is the leakage of cerebrospinal fluid through the cochlear aqueduct [2]. This could be dependent on the size and type of the needle used to deliver the dose [4]. Another reason for hearing loss can be an anatomical abnormality of the cochlear aqueduct leading to higher CSF flow [2]. However, few authors did not find any relation of cochlear duct anomaly with hearing loss after spinal anesthesia [5].

Walter *et al*. studied the hearing pattern using pure tone audiometry and tympanic membrane displacement pre- and post-operation after both general and spinal anesthesia. They found that the low frequency hearing loss was associated with the intra-operative intra-vascular volume replacement. Interestingly, they also discovered that hearing threshold was worse in patients after spinal than general anesthesia. It is safe to claim that hearing loss is not only thus associated with CSF leakage but intra-operative fluid replacement could also be a major contributor [1].

Another study has reported unilateral deafness after spinal [6]. She complained of a headache and hearing loss four days after the surgery during which, she was given a Patient Control Analgesia (PCA) pump- ropavacaine. Doctors believed that the complication could have been due to its overdose. So, it was withdrawn and the patient recovered five days later. They also suspected loss of cerebrospinal fluid a potential cause for hearing impairment.

Severity and frequency of unilateral deafness could be related to age affecting younger more [7]. Another important checkpoint is the time taken for recovery. Although the hearing loss is claimed to be temporary, and is expected to recover completely within 5-15 days of complain, but it can also last for up to seven months to two years. Also, the complaints are usually reported in low frequency range but can also occur in high frequency range [8, 9]. Sadly, there are reports about the cases where patients have suffered from permanent hearing damage in high frequency range.

In our case, the patient recovered from hydration combined with increased caffeine. The other treatment strategies include hydration, cochlear vasodilators, systemic steroids, epidural blood patches, plasma expanders and carbogen inhalers. However, results may vary depending on the patient's sustenance and severity of the complication. As a treatment option, hyperbaric oxygen therapy also brought in recovery well for a patient, as reported by Vilhena *et al.* after a few days of treatment [10].

However, we might need to look into the potential relation between lithotomy position and SNHL's occurrence rate or severity of its presentations.

CONCLUSION

SNHL is a rare complication, been observed for decades now and yet there is no proper method to avoid it's build up. It, thus, becomes really important to understand the proper mechanism and practice anesthesia accordingly.

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