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OTOACOUSTIC EMISSIONS AND VISUAL EVOKED POTENTIALS- AN EARLY DETECTOR OF  
SPACEFLIGHT ASSOCIATED NEURO- OCULAR SYNDROME

**Abstract**

Space associated neuro-ocular syndrome (SANS) is a topic of emerging concern, owing to its high incidence in long duration spaceflight. While current research focuses on diagnosis of SANS after the Spaceflight is over, very little information is available on detecting SANS on an early basis to alleviate the complications it can lead to. The need of the hour is to integrate non - invasive medical tools like Otoacoustic emissions (OAE) and Visual evoked potentials(VEP's) to check the change in intracranial pressure (ICP) and optic nerve dysfunction and its association with development of SANS.

OAEs are sounds generated by the inner ear (cochlea), and are used as an indicator of cochlear defects or auditory dysfunction. Visual evoked potentials (VEP's) are electrical responses generated by the Visual system when the retina, optic nerve or Visual cortex is stimulated. Data was collected regarding intracranial pressure from the records of previous conventional procedures like Lumbar puncture. A small probe was kept in the ear canal measuring OAEs, which were recorded. Similarly, VEPs were measured through electrodes on scalp and recorded. Intracranial pressure will be charted with respect to change in OAEs and VEPs. The graph will be extrapolated and dangerous levels of change in ICP (associated with Space associated Neuro ocular syndrome), and their corresponding values of OAEs and VEPs will be obtained. Other physiological parameters will be recorded (like Heart rate, BP, edema) for a holistic evaluation of progression to SANS.

**CONCLUSION:**Increased ICP due to fluid shifts in Spaceflight may show variations in OAEs and VEPs, leading to SANS. This will be checked through graphs.

**FUTURE PROSPECTS:**Establishment of OAEs and VEPs as an early diagnostic indicator of SANS will be a ground breaking research. This will help in early administration of medicines like Mannitol to prevent SANS. Further research can involve creation of Microgravity environment to confirm the values of OAEs and VEPs for early medical care in Space.