BMC Ear, Nose and Throat Disorders

Study protocol

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Coronary artery bypass grafting and sensorineural hearing loss, a cohort study

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Published: 10 December 2005

BMC Ear, Nose and Throat Disorders 2005, **5**:12 doi:10.1186/1472-6815-5-12

Received: 05 March 2005

Accepted: 10 December 2005

This article is available from: http://www.biomedcentral.com/1472-6815/5/12

Abstract

Background: Sudden sensorineural hearing loss is routinely encountered by the otologist. The etiology is varied and often identifiable. One of the relatively less frequent causes is surgery. Apart from being an established entity with otological surgeries, sensorineural hearing loss has also been known to occur after non-otological procedures under general anesthesia. Commonest amongst these procedures is cardiopulmonary bypass, an association that has long been recognized. However, despite the proposition of diverse hypotheses in the past, the pathophysiology remains unclear.

Methods: The study is a prospective matched cohort study that will be carried out in Aga Khan University Hospital, Karachi, Pakistan. Participants among exposed would include all those patients who would be undergoing coronary artery bypass surgery in the hospital who fall under the criteria for inclusion. Unexposed group would comprise of patients undergoing a non-bypass procedure of similar duration under the same type of anesthesia who meet the selection criteria. Both these groups will undergo audiometric testing at our hospital on three different occasions during the course of this study. Initially before the procedure to test the baseline hearing capacity; then one week after the procedure to assess any changes in hearing ability following the surgery; and finally a third audiogram at six weeks follow-up to assess further changes in any hearing deficits noted during the second phase of testing. Certain variables including the subjects' demographics and those concerning the procedure itself will be noted and used later for risk factors analysis. A detailed past medical and surgical history will also be obtained. Data analysis would include calculation of relative risk and significance of the results, by running the chi-square test. Other statistical tests like Fisher exact test may then be employed to facilitate data interpretation. Continuous scale may then be employed and multivariate linear regression used.

Discussion: This study is planned to obtain a better understanding of the correlation between sudden sensorineural hearing loss and cardiopulmonary bypass. Being the first major cohort trial in this line of investigation, the project is designed to identify the existence of any significant relationship between cardiopulmonary bypass and sensorineural hearing deficit.

Background

Hearing is one of the most significant of human senses. For an individual it is perhaps the most crucial link in communication with the outside world. It's a prerequisite