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THE EFFECTS OF AGING ON RESPIRATORY CILIARY FUNCTION

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The elderly appear to be more susceptible than other age groups in contracting lower respiratory tract infections. Whilst this could be multi-factorial in aetiology including the concomitance of respiratory diseases, gastro-oesophageal reflux, swallowing difficulties, and immobility etc. There has never been any studies on the effects of aging on ciliary beat function. Cilia are present on the surface of respiratory cells and beat continuously to maintain the sterility of the respiratory tract. Ciliary dysfunction could lead to recurrent lower respiratory tract infections which is frequently seen in the elderly. We have therefore performed a systematic study to evaluate ciliary function in volunteers who are in good health or steady state disease state who were free from respiratory or nasal symptoms. Altogether 87 subjects (mean age±SD 50.2±23.3, range 11-94 years) were recruited. Respiratory cilia were obtained from the inferior turbinate of subject and re-suspended in medium 199 prior to measurement of ciliary beat frequency (CBF) using a photometric methods as described previously. The mean CBF for the entire group was 13.1±1.7 Hz (range 9.5 - 17 Hz). Ciliary beat frequency was found to negatively correlate with age ($r=0.46$, $p=0.0001$) but bore no correlation with gender. We conclude that ciliary beating becomes slowing with aging and this could explain, for the first time, the susceptibility of the elderly to respiratory infections. Our results could lead to future clinical and basic studies.