ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #476S

1. a. Full Title: The Association of Sleep Disordered Breathing with Upper Airway Dimensions Obtained by Magnetic Resonance Imaging.
   b. Abbreviated Title: SDB and airway size

2. Writing Group:

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3. Timeline:


4. Rationale:

   External neck circumference is associated with sleep disordered breathing, even after correcting for body mass index and daytime sleepiness (Davies 1992). Measurement of the soft palate and tongue size by cephalometry (Strelzow 1988), or estimation of the size of the distal pharynx obtained by an acoustic reflection technique add to these predictors of the respiratory disturbance index (Katz 1990). It is likely that both abnormal craniofacial bony structure and abnormal oropharyngeal fat deposits due to generalized obesity make the oropharynx more susceptible to occlusion during sleep (Fleetham 1992). Magnetic resonance imaging (MRI) is an ideal technique to assess oropharyngeal fat distribution, but motion artifacts due to breathing and swallowing may interfere in some cases. MRI studies of small groups of patients with severe sleep apnea have demonstrated excess fat deposition in the soft palate, tongue, and lateral pharyngeal wall in patients with severe sleep apnea, when compared to controls (Horner 1989, Schwab 1993).
5. Main Hypothesis:

Baseline RDI will be significantly and independently correlated with oropharyngeal fat distribution, as measured by MRI of the neck, even after correcting for generalized obesity and external neck size.

6. Data (variables, time window, source, inclusions/exclusions):

Brain MRI scans were obtained from most participants of the Cardiovascular Health Study during the Year 6 exam. Investigators from the MRI Reading Center (at Johns Hopkins) estimate that about one-third of these scans also included the neck. The images are stored in a database, so that individual scans may be recalled, and measurements made using graphics workstations (Manolio 1994). The subset of CHS participants enrolled in the SHH Study, who also had brain MRI scans, which also included the neck area without substantial motion artifact, will be eligible for this analysis. Data collected by SHHS for this analysis will include RDI scores, age, gender, race, height, weight, and neck size.