

Effect of obesity and erect/supine posture on lateral cephalometry: relationship to sleep-disordered breathing.

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Craniofacial and upper airway anatomy, obesity and posture may all play a role in compromising upper airway patency in patients with the sleep apnoea/hypopnoea syndrome. The aim of this study was to investigate the relationship between obesity, facial structure and severity of sleep-disordered breathing using lateral cephalometric measurements and to assess the effect of body posture on cephalometric measurements of upper airway calibre variables in obese and non-obese subjects. Lateral cephalometry was carried out in erect and supine postures in 73 awake male subjects randomly selected from patients referred for polysomnography who had a wide range of apnoea/hypopnoea frequencies (1-131 events x h sleep(-1)). Subjects were divided into non-obese (body mass index (BMI) < 30 kg x m(-2); n=42) and obese (BMI > or = 30 kg x m(-2); n=31) groups. Significant but weak correlations were found between apnoea/hypopnoea index (AHI) and measurements reflecting upper airway dimensions: uvular protrusion-posterior pharyngeal wall ($r=-0.26$, $p<0.05$) and hyoid-posterior pharyngeal wall ($r=0.26$, $p<0.05$). Multiple regression using both upper airway dimensions improved the correlation to AHI ($r=0.34$, $p=0.01$). Obese subjects had greater hyoid-posterior pharyngeal wall distances than non-obese subjects, both erect (42+/-5 versus 39+/-4 mm, respectively (mean+/-SD) $p<0.01$) and supine (43+/-5 versus 40+/-4 mm, $p<0.05$). Skeletal craniofacial structure was similar in obese and non-obese subjects. In conclusion, measurements reflecting upper airway size were correlated with the severity of sleep-disordered breathing. Differences in upper airway size measurements between obese and non-obese subjects were independent of bony craniofacial structure.

PMID: 10065688 [PubMed - indexed for MEDLINE]