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Obstructive sleep apnea and cephalometric roentgenograms. The role of anatomic upper airway abnormalities in the definition of abnormal breathing during sleep.

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In a six-month period, 157 obstructive sleep apnea syndrome (OSAS) patients seen consecutively in clinic had standardized cephalometric roentgenograms and underwent polygraphic monitoring during sleep. Different variables, including cephalometric landmarks, body mass index (BMI), and polygraphic results (particularly degree of O_2 saturation and number of abnormal breathing events), were statistically analyzed. As a rule, OSAS patients had upper airway anatomic abnormalities and an elevated BMI: massive obesity was associated with less anatomic abnormality, less nocturnal sleep disruption, and longer total sleep time (TST). Patients having a high respiratory disturbance index (RDI) were more likely to have upper airway anatomic abnormalities; they slept for a shorter time and had increased stage 1 non-rapid eye movement (NREM) sleep but decreased stage 3 and 4 and REM sleep. Long mandibular plane to hyoid bone (MP-H) distance and width of the posterior airway space (PAS) (space behind the base of the tongue) were statistically significant predictors of elevated RDI. The cephalometric variables were much less useful for predicting frequency of O_2 saturation drops below 80 percent. The patient population can be subdivided into (a) patients with clear anatomic abnormalities and low BMI, (b) patients with morbid obesity with few abnormal cephalometric measurements, and (c) patients who have variably increased BMI and abnormal cephalometric measurements. This is the largest group. We concluded that standardized cephalometric roentgenograms can be useful in determining the appropriate treatment for OSAS patients.