APNEIC: an easy-to-use screening tool for obstructive sleep apnea

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Identifying patients who are likely to have obstructive sleep apnea (OSA) is vital. As overnight polysomnography, the criterion standard diagnostic test, is expensive and limited in its availability, many people with OSA, perhaps as many as 93%, remain undiagnosed.[1] Effective screening in primary care settings could increase the number of OSA patients identified, who can then be offered continuous positive airway pressure—an intervention that might reduce morbidity and mortality.

I searched the literature and put together the results of the 2 studies that employed findings practical to the primary care setting and that used polysomnography to diagnose OSA.[2,3] From these studies, I came up with the mnemonic APNEIC, which can be used to recall the 6 attributes of OSA observed in clinical practice: *A*ge older than 50 years; *P*harynx grade III or IV; *N*eck circumference greater than 35 cm; *E*xcessive weight (body mass index >27 kg/m²); *I*ncisors forward (ie, overbite); and *C*ricomental distance less than 1.5 cm (**Box 1**). Materials required include a tape measure, a ruler, and a scale.

Box 1. The APNEIC mnemonic for OSA

Age > 50 y
Pharynx grade III or IV
Neck circumference > 35 cm
Excessive weight (BMI > 27 kg/m²)
Incisors forward (ie, overbite)
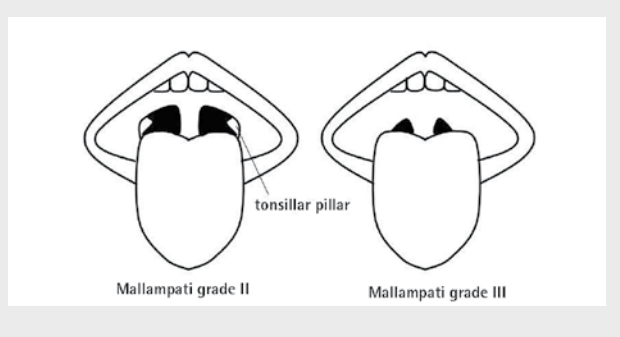**C**ricomental distance < 1.5 cm

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BMI—body mass index, OSA—obstructive sleep apnea.

Taking the measurements

The Mallampati pharynx grade is obtained by asking patients to open their mouths and stick out their tongues as much as possible. If the pillars of the tonsils are visible then the pharyngeal grade is less than III (**Figure 1**). Avoid asking patients to say "ah" and do not use tongue depressors, as these maneuvers will cause an underestimation of the pharyngeal grade. Neck circumference is measured at the level of the cricothyroid membrane.

The presence of an overbite is determined by asking patients to close their mouths normally then retract the lips (ie, "Show me your teeth while keeping them clenched"). If the upper teeth are in front of the lower teeth, an overbite is present. The cricomental space is measured by putting a straight edge (eg, a ruler)

Figure 1. Grades II and III of the Mallampati pharyngeal grading system. *A grade of III or IV applies if the pillars of the tonsils are not seen.*

between the cricoid cartilage and the inner chin, while the patient holds his or her head in the neutral position. This cricomental distance is then bisected and the perpendicular distance to the skin of the neck is measured (**Figure 2**).[3] Using a thick instrument such as a tongue

Figure 2. The cricomental space is the distance between the neck and the bisection of a line from the chin to the cricoid membrane when the head is in a neutral position
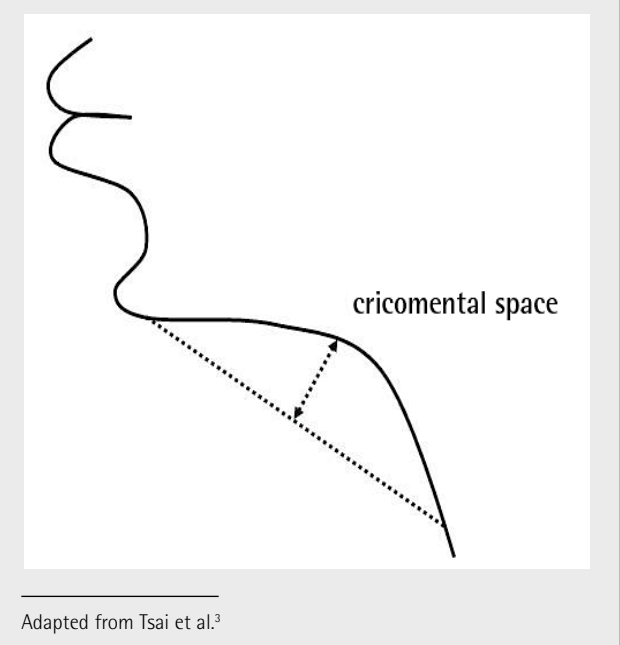
Adapted from Tsai et al.[3]

depressor should be avoided, as it might cause a slight underestimation of the cricomental distance.

If the cricomental distance is greater than 1.5 cm, OSA is very unlikely; in one study, the negative predictive value was 100%.[3] If the cricomental distance is less than 1.5 cm, then the other 5 factors should be considered—the more of them that are positive, the more likely a diagnosis of OSA. Tsai et al demonstrated that having a cricomental distance of less than 1.5 cm, a pharyngeal grade of III or IV, and an overbite prompted a positive predictive value of 95% for OSA.[3]

Alternative screening tools

The Berlin questionnaire[4] and the STOP questionnaire[5] are other screening tools for OSA, which are based on historical attributes (history of loud snoring, history of daytime somnolence, etc); both questionnaires have positive predictive values of approximately 50% and negative predictive values of approximately 70%. The STOP questionnaire, which involves questions about snoring, daytime tiredness, observed apnea, and high blood pressure, is a sensitive screening tool.[5] It can therefore be combined with the clinical attributes described above and can be remembered using the mnemonic STOP APNEIC. ❧

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References
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