The role of ultrasound in diagnosing patients with obstructive sleep apnea-hypopnea syndrome and its comorbidities

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Introduction
Obstructive Sleep Apnea-Hypopnea Syndrome (OSAHS) is the most common form of sleep disorder breathing in adult population(1,2,3,4).
• In this pathology the modifications of the superior airway and soft tissue of the neck are present in most cases(1,3).
• These patients are frequently associated with an increased risk of cardiovascular disease(2,3).
• The aim of this study was to prove the importance of ultrasounds (US) examination in patients with OSAHS and its comorbidities.

Methods
• We describe a clinical prospective study.
• In our study we have included 30 patients with OSAHS and 30 subjects without any sleep pathology.
• In this study we have evaluated the anatomical modifications of the superior airway and the soft tissue of the neck with US (Figure1, Movie1), during a period of nine months.

The subjects were undergoing to:
• general clinical examination
• otorhinolaringological examination
• anthropometrical measurements
• polysomnography
• Epworth Sleepiness Scale
• imagistic evaluation (US and CT scan).

US results were compared with computed tomography scan (CT) measurements.

Results
• In this study we have found a significant relationship between the severity of sleep apnea and the lower tongue base, the pharyngeal airway and the soft tissue of the neck.
• Afterwards we have compared the results obtained from US, CT and the anthropometric parameters. In patients with OSAHS we have observed a narrower of pharyngeal airway diameter and a large tongue base(Table1).
• Also, the US dimensions are almost equal to the CT measurements.
• Patients with sever OSAHS also presented comorbidities like arterial hypertension, dyslipidemia, jugular vein flow changes.

Discussion
The US is a good methods for detecting changes of the pharyngeal airspace, with US we can demonstrate airway collapsibility, pharyngeal changes in patients with OSAHS and this can detected the OSAHS severity(2,3,4).

Conclusions
• The US examination is one noninvasive, inexpensive, repeatable and non-irradiating clinical procedure.
• Our study proves that US has an important role in evaluating of anatomical modification on patients with OSAHS.

References

Table1. US and CT parameters obtained in OSAHS and non-OSAHS patients

<table>
<thead>
<tr>
<th>Parameters-mean</th>
<th>Non-OSAHS (n=30)</th>
<th>OSAHS (n=30)</th>
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<tbody>
<tr>
<td></td>
<td>US(mm)</td>
<td>CT(mm)</td>
</tr>
<tr>
<td>pharyngeal airway diameter</td>
<td>53,5 / 50,4</td>
<td>58,5 / 57,6</td>
</tr>
<tr>
<td>tongue base dimension</td>
<td>39,5 / 37,5</td>
<td>44,5 / 45,4</td>
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