Clinical

## Heated humidification reduces inflammation from CPAP treatment

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By Victoria Stern

NEW YORK (Reuters Health) - Greek researchers have an answer for sleep apnea patients who won't use continuous positive airway pressure (CPAP) because of its unpleasant side effects.

In a randomized crossover trial, they confirmed "that although CPAP can cause inflammation in OSA patients, heated humidification can help alleviate it," lead investigator Dr. Ioannis Koutsourelakis from the Medical School of Athens University told Reuters Health in an interview.

Although CPAP is the standard of care for moderate to severe obstructive sleep apnea (OSA), it can also cause undesirable side effects in 40 to 60% of patients, Dr. Koutsourelakis said. These side effects, which include congestion, dryness, rhinorrhea and nasal inflammation, can compromise compliance with CPAP therapy.

Dr. Koutsourelakis and his colleagues aren't saying that heated humidification should be routinely used with CPAP, however. "If a patient presents with symptoms after initiating CPAP therapy, then it's wise to use heated humidification to alleviate the symptoms," he said. "However, not all patients have side effects from CPAP and additional therapy requires additional money and labor for the patients."

Heated humidification is often used to treat nasal symptoms during CPAP, but until now no study has determined how effective it is.

As reported online July 1 in the European Respiratory Journal, Dr. Koutsourelakis and his colleagues randomized 20 OSA patients with nasal symptoms from CPAP to receive either 3 weeks of heated humidification or 3 weeks of sham-heated humidification along with their CPAP. After the first 3 weeks, subjects in each group switched to the opposite treatment for 3 weeks.

At baseline and after each treatment phase, the researchers measured nasal symptom score (calculated on a five-point scale), nasal resistance, levels of interleukin-6, interleukin-12 and tumor necrosis factor-alpha in nasal lavage, and inflammatory markers in nasal biopsy specimens.

They found that CPAP treatment can indeed increase nasal inflammation, but heated humidification treatments reduced the nasal score in both groups compared to sham-heated humidification (2.30 vs. 3.40, $p < 0.001$).

In contrast, sham treatment (air passed through a heating unit that wasn't turned on, with no water in the chamber) increased nasal inflammation in OSA patients who had already experienced a reduction in symptoms from heated humidification in the first 3 weeks, bringing it back to baseline.

Nasal resistance in the supine position decreased after heated humidification but not sham-heated humidification ($p < 0.001$).

All cytokine levels (interleukin-6, interleukin-12 and tumor necrosis factor-a) decreased after heated humidification in both groups, whereas sham-humidification had no effect on cytokine levels.

The pathology studies showed that heated humidification was also associated with a significant decrease in inflammation and fibrosis.

Dr. Koutsourelakis suggests that perhaps anti-inflammatory drugs could also benefit OSA patients who experience side effects from CPAP therapy. "Comparing the efficacy of anti-inflammatory drugs and heated humidification in these patients would be an attractive study to do in the future," he said.

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