Obesity Hypoventilation Syndrome (OHS) and Obstructive Sleep Apnea (OSA): Diagnostic and Therapeutic Challenges

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Abstract

Sleep-related breathing disorders, particularly obstructive sleep apnea (OSA) and sleep-related hypoventilation, represent a serious medical and socioeconomic problem in populations affected by cardiovascular, cerebrovascular, pulmonary, and metabolic diseases. Obesity hypoventilation syndrome (OHS) is characterized by sustained daytime hypercapnia resulting from the failure of compensatory mechanisms responsible for maintaining adequate ventilation in individuals with obesity. OHS involves nocturnal hypoventilation in all patients and concurrent OSA in approximately 90% of patients, with severe OSA present in approximately 70%. The diagnosis of OHS is based on arterial blood gas analysis performed during wakefulness, which may be challenging in institutions outside pulmonary medicine because of limited access to specialized personnel. Sleep-related hypoventilation can be assessed using arterial blood gas analysis or capnography, depending on availability, although both methods have limitations. In patients with OHS, OSA is diagnosed by polysomnography performed in a specialized laboratory or institution, as home respiratory polygraphy is considered insufficiently reliable in this setting. Given the high prevalence of OSA among patients with OHS, continuous positive airway pressure (CPAP) therapy is the primary treatment, whereas bilevel positive airway pressure (BPAP) is reserved for patients who do not tolerate CPAP or in whom CPAP is unsuccessful. CPAP and BPAP pressure titration is performed under supervised conditions in a hospital or specialized sleep laboratory rather than at home. When necessary, supplemental oxygen for the treatment of hypoxemia in OHS should be administered only to patients adequately managed with positive airway pressure therapy, because oxygen therapy alone may worsen both OSA and hypoventilation.

Keywords: obesity hypoventilation syndrome; obstructive sleep apnea; polysomnography; continuous positive airway pressure; bilevel positive airway pressure

2026. Puretić H.
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Sindrom hipoventilacije u pretilih (OHS) i opstruktivna apneja u spavanju (OSA): dijagnostički i terapijski izazovi

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Sažetak

Poremećaji disanja u spavanju, osobito opstruktivna apneja u spavanju (OSA) i hipoventilacija tijekom spavanja, ozbiljan su medicinski i socioekonomski problem u populaciji opterećenoj kardiovaskularnim, cerebrovaskularnim, plućnim i metaboličkim bolestima.Sindrom hipoventilacije u pretilih (OHS) karakteriziran je trajnom dnevnom hiperkapnijom koja nastaje zbog zatajenja kompenzacijskih mehanizama odgovornih za održavanje odgovarajuće ventilacije u osoba s pretilošću. OHS uključuje noćnu hipoventilaciju u svih bolesnika i istodobnu OSA-u u približno 90 % bolesnika, pri čemu je teška OSA prisutna u približno 70 % bolesnika. Dijagnoza OHS-a temelji se na analizi plinova arterijske krvi tijekom budnosti, što može biti izazovno u ustanovama izvan područja pulmologije zbog ograničene dostupnosti specijaliziranog osoblja. Hipoventilacija tijekom spavanja može se procjenjivati analizom plinova arterijske krvi ili kapnografijom, ovisno o dostupnosti pojedine metode, pri čemu obje imaju određena ograničenja. U bolesnika s OHS-om OSA se dijagnosticira polisomnografijom u specijaliziranom laboratoriju ili ustanovi jer se kućna respiracijska poligrafija u takvim okolnostima smatra nedovoljno pouzdanom. S obzirom na visoku učestalost OSA-e u bolesnika s OHS-om, osnovno liječenje uključuje primjenu kontinuiranoga pozitivnog tlaka u dišnim putovima (CPAP), dok je dvorazinski pozitivni tlak u dišnim putovima (BPAP) rezerviran za bolesnike koji ne podnose CPAP ili u kojih liječenje CPAP-om nije uspješno. Titracija tlakova CPAP-a i BPAP-a provodi se u nadziranim uvjetima bolničke ustanove ili specijaliziranog laboratorija, a ne u kućnim uvjetima. Ako je potrebna, dodatna primjena kisika u liječenju hipoksemije kod OHS-a provodi se samo u bolesnika koji su odgovarajuće zbrinuti terapijom pozitivnim tlakom u dišnim putovima jer samostalna oksigenoterapija može pogoršati i OSA-u i hipoventilaciju.

Ključne riječi: sindrom hipoventilacije u pretilih; opstruktivna apneja u spavanju; polisomnografija; kontinuirani pozitivni tlak u dišnim putovima; dvorazinski pozitivni tlak u dišnim putovima

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