

Comorbid Insomnia and Sleep Apnea (COMISA) – a real problem for psychiatrists, pulmonologists, and primary care physicians

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Abstract

Introduction: Insomnia and obstructive sleep apnea are among the most common sleep-wake disorders. A relatively new category of disorders, studied more thoroughly for only a few years, is the occurrence of symptoms of both obstructive sleep apnea and insomnia in one patient and treating it as a different disease entity. This phenomenon is increasingly referred to as COMISA (Co-morbid insomnia and sleep apnea). The aim of this paper is to: 1) draw attention to this interesting issue, 2) show treatment differences of COMISA from isolated insomnia or obstructive sleep apnea and to help choose better therapy by general practitioners, pulmonologists, and psychiatrists for these patients.

Materials and methods: The literature review was based on a search of articles in Medline, PubMed, and Google Scholar from 2012 to 2023 using the keywords: obstructive sleep apnea; insomnia; cognitive behavioral therapy for insomnia; continuous positive airway pressure; COMISA. The analysis included original studies, meta-analyses, and review articles.

Discussion: The prevalence of both diseases in patients is importantly higher than in the general population. Many patients with COMISA or OSA alone remain undiagnosed. The most common examination of OSA requires a hospital stay to perform polysomnography or polygraphy (2). A lot of people are not willing to go through with the diagnostic process.

Conclusions: It is important that during the standard medical history, doctors take into account the possibility of co-occurrence of these diseases, due to the high risk of not diagnosing them on time.

Keywords: Obstructive sleep apnea, Insomnia, Cognitive behavioral therapy for insomnia, Continuous positive airway pressure, COMISA

Streszczenie

Wstęp: Bezsenność i obturacyjny bezdech senny należą do najczęstszych zaburzeń snu i czuwania. Stosunkowo nową kategorią zaburzeń, dokładniej badaną dopiero od kilku lat, jest występowanie u jednego pacjenta objawów zarówno obturacyjnego bezdechu sennego, jak i bezsenności oraz traktowanie go jako odrębnej jednostki chorobowej. Zjawisko to jest coraz częściej określane jako COMISA (współistniejąca bezsenność i bezdech senny). Celem niniejszej pracy jest: 1) zwrócenie uwagi na to interesujące zagadnienie, 2) wykazanie różnic w leczeniu COMISA od izolowanej bezsenności czy obturacyjnego bezdechu sennego oraz pomoc w wyborze lepszej terapii przez lekarzy rodzinnych, pulmonologów i psychiatrów dla tych pacjentów.

Materiał i metody: Przegląd piśmiennictwa oparto na wyszukiwaniu artykułów w serwisach Medline, PubMed i Google Scholar z lat 2012-2023 za pomocą słów kluczowych: obturacyjny bezdech senny; bezsenność; poznawczo-behawioralna terapia bezsenności; ciągłe dodatnie ciśnienie w drogach oddechowych; COMISA.

Dyskusja: Częstość występowania obu chorób u pacjentów jest istotnie wyższa niż w populacji ogólnej. Wielu pacjentów z samą COMISA lub OSA pozostaje niezdiagnozowanych. Najczęstsze badanie OBS wymaga pobytu w szpitalu w celu wykonania polisomnografii lub poligrafii. Wiele osób nie chce przejść przez proces diagnostyczny. W pracy psychiatrów ważne jest poszukiwanie współwystępowania OBS i bezsenności. OBS powoduje większe pogorszenie subiektywnej i obiektywnej jakości i ilości snu, utrudniając leczenie bezsenności. Pacjenci COMISA częściej stosują leki uspokajające i psychotropowe, co powoduje poważne konsekwencje dla ich zdrowia i uzależnienia.

Wnioski: Istotne jest, aby podczas standardowego wywiadu lekarskiego lekarze brali pod uwagę możliwość współwystępowania

tych chorób, ze względu na duże ryzyko jakie niesie ze sobą nierozpoznanie ich na czas.

Słowa kluczowe: Obturacyjny bezdech senny, Bezsenność, Terapia poznawczo-behawioralna bezsenności, Ciągłe dodatnie ciśnienie w drogach oddechowych, COMISA

1. Introduction

1.1. Insomnia

Insomnia is one of the most common and neglected conditions in which patients experience difficulty in initiating, maintaining, consolidating sleep, or suffer from early morning awakening (1). Insomnia can be short-term or chronic, whereas for chronic one, the symptoms are required to be present at least 3 days per week for a duration of at least 3 months (2). New criteria in ICD-11 include night-time and daytime symptoms, however, the experience of non-restorative sleep was excluded due to its non-specificity (3). Night-time symptoms must be combined with daytime impairments to be regarded as insomnia, like decreased attention, problems in concentration, fatigue, depressed mood, or irritability (4, 5). Additionally, the new ICD-11 created "insomnia disorder - 07" to replace old primary and secondary insomnia categories (6).

The prevalence of insomnia is observed to be at an average of 22.0% (17.0-28.0%) in the general population. Females and the elderly are found to significantly more often suffer from insomnia (7). Nowacki et al. performed a population study published in 2016 to assess the prevalence of insomnia in Poland's general population. Researchers showed that 50.5% of Polish responders suffered from self-reported insomnia (8).

Studies have shown that insomnia predisposes to civilization diseases such as cardiovascular diseases (9), hypertension (10, 11), diabetes type 2 (12), cancer, and mental illness (13). Studies linked insomnia and a higher risk of developing anxiety disorders (14, 15). Some studies showed an increased risk of depression (16, 15), however, not all studies reach the same conclusions (14).

1.2. Obstructive sleep apnea

Another important condition that often goes undiagnosed is obstructive sleep apnea (OSA). OSA is characterized by recurrent episodes of shallow breathing or complete respiratory arrest during sleep while maintaining the work of respiratory muscles (17). The apnea-hypopnea index (AHI) is the number of hypopneas and apneas per hour of sleep. AHI is used to diagnose sleep apnea and determine its severity. OSA is diagnosed with an AHI above 5 in the presence of apnea symptoms or an AHI above 15 regardless of associated symptoms (18). The ICD-11 criteria contain information on night

and day symptoms necessary for OSA diagnosis, in which at least one of the following needs to be present: I) excessive daytime sleepiness, fatigue, or sleep disruption; II) nocturnal respiratory distress or observed apnea/habitual snoring; or III) hypertension, a mood disorder, cognitive dysfunction, coronary artery disease, stroke, congestive heart failure, atrial fibrillation, or type 2 diabetes mellitus (6). Factors that increase the risk of OSA are: I) obesity, central body fat distribution, II) male sex, III) age from 40 to 70 years old, IV) family history of OSA, V) smoking, VI) menopause, VII) craniofacial and upper respiratory tract abnormalities (like e.g. deviated nasal septum) (19, 20, 21).

A systematic review published in 2016 estimated the population prevalence of OSA (≥ 5 AHI) to range from 9% to 38% and it was even higher in older responders reaching 90% in men and 78% in women. AHI from 15 and above was present in 6% to 17% of adults (22). In another research OSA with symptoms of daytime sleepiness was present in 3-18% of men and 1-17% of women (23). Data from Poland are divergent. Pływaczewski et al. estimated the prevalence of obstructive sleep apnea syndrome in Poland at 7.5% based on a group of 676 patients from Warsaw. Researchers also observed four times more frequent occurrences of OSA in men than in women in the study group (24). A Polish study called PURE, using the STOP-BANG questionnaire on 613 adult participants estimated the possibility of a moderate-to-high risk of OSA in Poland at over 50% (25). Kuczynski et al. examined the new incidence of OSA in Poland in the years 2010 - 2019, the morbidity ranged from 390 to 1328 new cases per 100,000 inhabitants per year depending on the province (26).

Patients suffering from OSA could have serious consequences affecting general health when they delay treatment. One of the most common is hypertension, metabolic syndrome, and insulin resistance (27, 28). There are very important links between OSA and heart disease. In a 2017 publication, Javaheri et al. described a complicated mechanism in which OSA intensifies oxidative stress, leads to temporary periods of tissue hypoxia, increased activation of the sympathetic nervous system, intensification of inflammatory processes in the body, and dysfunction of the vascular endothelium. This contributes to the development or aggravation of already existing cardiovascular diseases such as stroke, heart failure,

atrial fibrillation, and coronary heart disease (27). What is extremely important, studies have repeatedly shown that even mildly symptomatic patients with OSA are in the group of increased cardiovascular risk (29,30). Also, the problem of interdependence between the occurrence of OSA and mental illnesses such as depression, anxiety, or insomnia is important and requires further research (31,32).

1.3. Comorbid insomnia and obstructive sleep apnea

The first published paper on the coexistence of insomnia and sleep apnea was written by Guilleminault et al. in 1973 (33). In the following years, very few scientific papers on this subject were created, and only in the last 20 years have scientists started to look more closely at the co-morbidity of OSA and insomnia as a single issue (34). It may seem that OSA and insomnia are too different to be considered a common disease entity. Generally, a person with obstructive sleep apnea is associated with an obese, older man, sleepy during the day, and snoring at night. The stereotypical characterization of a person with insomnia gives us the example of a middle-aged or elderly woman with anxiety disorders and/or not coping with a significant amount of stress. This stereotypical characterization may have also been the reason for little interest in the subject in the past (35, 36). Research conducted in recent years seems to distort this picture. Comorbid insomnia and sleep apnea (COMISA) have become the most common co-occurring sleep disorders (37). They present many challenges for clinicians in diagnostics and treatment (37) as well as lower quality of life for patients (34).

This paper aims to: 1) draw attention to this interesting issue, 2) show treatment differences of COMISA from isolated insomnia or obstructive sleep apnea and help choose better therapy by general practitioners, pulmonologists, and psychiatrists for these patients.

2. Materials and method

The literature review was based on a search of articles in Medline, PubMed, and Google Scholar from 2012 to 2023 using the keywords: obstructive sleep apnea; insomnia; cognitive behavioral therapy for insomnia; continuous positive airway pressure; COMISA. The analysis included original studies, meta-analyses, and review articles.

3. Results

3.1. COMISA – Co-morbid insomnia and obstructive sleep apnea

The growing recognition of the co-occurrence of insomnia disorder and sleep apnea started to change the previous characterization of OSA and insomnia patients being too different for diseases to commonly coexist. In

2018 research OSA patients with or without insomnia did not differ in gender, anthropometric, clinical, or polysomnographic parameters (38). Ye et al. in their article paid special attention to the variance of OSA clinical presentation, including a group with sleep disorders and insomnia. Researchers point out that commonly used indicators such as AHI or Oxygen desaturation index can give similar values in patients with completely different symptoms and severity of the disease, which means that doctors should not rely exclusively on them. According to the researchers, it is also very important to pay special attention to the severity of symptoms and comorbidities, among other insomnia. This gives a more complete picture of the patient's illness (29). The prevalence of comorbid insomnia in patients with sleep apnea is estimated at 39 to 58% (39). Another research found that even 27% to 85% of OSA patients report symptoms of co-morbid insomnia. Additionally, from 17% to 69% of patients suffering from insomnia being treated in sleep disorders clinics fulfill diagnostic criteria for OSA (35). The term COMISA was first used by Sweetman et al. in research from 2017 to describe the existence of co-morbid insomnia and sleep apnea (35).

The prevalence of insomnia in OSA patients and OSA in insomnia patients are importantly higher than in the general population (36). A study from "The Journal of the American Board of Family Medicine" in 2012 concluded that insomnia is a strong predictor for OSA diagnosis (40).

It has been proven that episodes of apnea in OSA appear with different frequencies depending on which stage of sleep the patient is and occur more often in light and rapid eye movement sleep (REM) (41). Patients with insomnia experience an increase in a light sleep at the expense of other sleep stages, especially increased N1 and decreased N3 stage (42). AHI tends to be higher during light sleep (N1, N2) and REM sleep than during deep sleep (N3), which would explain the greater severity of symptoms in patients with COMISA than in patients with OSA alone (42). It has been proven that in patients using CBT-I usually sleep phase N3 is prolonged and N1 is shortened (42, 43). It is possible too that this is one of the reasons why using CBT-I therapy reduces OSA severity in the course of COMISA (42).

3.2. COMISA impact on patients' life

OSA and insomnia have independently large influence on the quality of life and health of patients (44). Scientific research found COMISA patients to have an even greater increase of daytime impairments and reduced productivity of life than OSA or insomnia alone (38, 44, 45). Moreover, they have a larger deterioration of subjective and objective sleep quality and quantity as: difficulty falling asleep, maintaining sleep, frequent or

early morning awakenings, and nonrestorative sleep (46, 47).

Tasbakan et al. (2018), using the World Health Organization Quality of Life Scale short form (WHOQOL-Bref), noted that COMISA patients had significantly lower quality of physical and social life than those suffering from OSA only. The especially affected group was women in which every aspect of the life domain evaluated in WHOQOL-Bref was strongly influenced (38). Björnsdóttir et al. reported that difficulties in initiating and maintaining sleep were correlated with lower quality of life and higher daytime sleepiness in OSA patients, however, were not related to OSA severity (47). In a study conducted in 2012, researchers noted that the coexistence of both diseases reduced the quality of life more than the occurrence of these diseases alone. Nonetheless, the two conditions had no additive effect (48).

Additionally, COMISA has a higher risk for the development of cardiovascular diseases (CVD) compared to OSA and insomnia alone (49). Both diseases have similar effects on the body: atherogenesis, endothelial dysfunction, autonomic dysregulation, increased systemic inflammation, and insulin resistance. In which those mechanisms increase each other impact on health (27, 50, 51).

3.3. Treatment

3.3.1. Insomnia

A frequently used method of treating insomnia is therapy with drugs from the group of benzodiazepines and nonbenzodiazepines referred to colloquially as Z-drugs. The problem with this treatment is the high risk of negative side effects and addiction. Additionally, long-term efficacy is questionable (52). Another pharmaceutical often used by patients is melatonin, but studies investigating this therapy have produced heterogeneous results (52, 53). Interestingly, a study from 2018 found that the form of prolonged-release melatonin was efficient for reducing sleep latency in older patients in comparison to the placebo (54). Because the older population is most exposed to the side effects of benzodiazepines and Z-drugs, this offers potential opportunities to avoid these medications or reduce their doses using melatonin with a much lower likelihood of severe side effects (55). Trazodone is a drug with stronger evidence of its effectiveness, also with a lower probability of side effects than hypnotics. In the Polish publication of Wichniak et al., the authors concluded that trazodone, unlike hypnotic drugs, can prolong the duration of deep sleep and is particularly useful in the treatment of patients with sufficiently long but low-quality sleep (56).

There are a lot of non-pharmacological alternatives to medications in the treatment of insomnia. Usually,

they are safer and sometimes even more effective (43). The basis of insomnia therapy is to ensure proper sleep hygiene education. It contains information on when to stop drinking caffeine, the impact of drinking alcohol and smoking on sleep patterns, falling asleep regularly, avoiding too long naps during the day, managing stress, or ensuring the right amount of physical activity (57).

An important phenomenon that has been discussed in recent years is the blocking of melatonin production in the brain by devices emitting blue light, such as smartphones or computers, and the resulting symptoms of insomnia from using these devices in the evening. In a 2017 randomized controlled trial, subjects who used glasses with amber lenses (which blocked blue light) for 2 hours before bed for a week were associated with a reduction in insomnia symptoms (58). Information on the effectiveness of such therapy in the treatment of insomnia is also provided by the systematic review from 2021 (59). It would seem that administration of melatonin orally to patients before bedtime can give similar results, but studies using such therapy give mixed outcomes (52, 53).

Another insomnia treatment with good therapeutic results is Cognitive behavioral therapy for insomnia (CBT-I). The biggest problem is with the availability of this therapy (43, 60). Nevertheless, studies confirm the effectiveness, some even proving its advantage over pharmacotherapy. What is also important is that CBT-I is not associated with undesirable side effects for patients, unlike sleeping pills (45). CBT-I in some situations should also be considered in patients suffering not only from insomnia but also from obstructive sleep apnea as well (61).

3.3.2. OSA

Very important in OSA therapy are lifestyle changes leading to weight loss, avoiding alcohol consumption before bedtime, or smoking cigarettes. The treatment of choice for moderate to severe OSA is continuous positive airway pressure therapy (CPAP) but adherence to this method is limited (62). This method uses a ventilation assist device. The CPAP machine eliminates the basic cause of obstructive sleep apnea, which is the collapse of the soft tissues of the throat during sleep. The task of the device is to force positive pressure into the patient's airway. Other methods are also used, such as a jaw splint, which holds the jaw forward during sleep but their effectiveness is generally lower than that of CPAP (62, 63).

A systematic review from 2013, which covered 69 studies with 13,900 patients, provides with information on the surgical treatment of OSA in obese patients through bariatric surgery. In 75% of patients, an improvement in the clinical condition was noted, and some patients even managed to achieve remission of the disease. Gastric

bypass surgery turned out to be the most effective way to improve the condition of patients with OSA (64).

Another alternative treatment option for obesity and indirectly OSA is GLP-1 analogs. A study from 2016 showed a decrease in AHI compared to placebo as well as a decrease in body weight, glycosylated hemoglobin, or systolic blood pressure in patients taking 3mg of liraglutide (65).

Pharmacotherapy aimed directly at treating OSA has not had good results on a larger scale. Studies on small groups of patients have shown promising results. A double-blind control trial concept study conducted in 2019 by Taranto-Montemurro et al. using atomoxetine and oxybutynin (drugs with noradrenergic and antimuscarinic effects) at bedtime showed a significant decrease in AHI (66). A study conducted on participants who were prescribed trazodone showed a reduction in the severity of OSA symptoms (67). Similar results were obtained by scientists from Taiwan examining patients with OSA after ischemic stroke (68). Hypnotics such as benzodiazepines and Z-drugs have long been considered contraindicated in OSA because of the potential for exacerbation of symptoms (69). These drugs are sometimes used in patients suffering from insomnia with comorbid but undiagnosed sleep apnea, which can lead to side effects. Studies showed mixed findings in this area. Reports even mention the risk of developing acute respiratory failure (70), but in some other studies patients experienced neutral or even positive effects for OSA symptoms (69,71,72).

3.3.3. COMISA

Studies have shown that COMISA is more difficult to treat than OSA or insomnia alone (37). The main treatment for moderate to severe OSA is CPAP therapy. It is an effective treatment, however, it requires long-term and continuous use, which does not suit many patients (73). The effectiveness and acceptance of CPAP therapy are particularly reduced among patients suffering from comorbid insomnia, for whom the use of the device is an additional inconvenience that makes it difficult to fall and stay asleep (74, 75) but there were exceptions (76). Additionally, there is evidence that insomnia can also reduce the effectiveness of non-CPAP therapies on OSA symptoms in COMISA patients (77) as upper airway surgery, nasal dilator strip therapy, or mandibular advancement splint therapy (36). Another problem is the contraindication to the use of hypnotic drugs used as a standard for the treatment of insomnia in the presence of OSA. Pharmacotherapy in COMISA requires further research. A systematic review from 2015 provided new information on the possibility of using opioid, hypnotic, and sedating medications commonly considered not recommended or even contraindicated in OSA, but often used in insomnia patients. The analysis assessed patients

with OSA who already used CPAP therapy or a mandibular advancement device on a daily basis and additionally received pharmacological treatment or a placebo. No increase in the severity of apnea was demonstrated by the increase in AHI or ODI under the influence of these drugs. Moreover, Eszopiclone 3mg and sodium oxybate 4.5mg showed an improvement in the clinical condition of patients observed by reducing the AHI. The downside of this systematic review is the low quality of the pieces of evidence in most of the included studies and small groups of participants (71). Another study from 2020 evaluating the effect of pharmacological substances on OSA showed a positive effect of Zolpidem in this condition in the form of better sleep efficiency, and total sleep time without an increase in nocturnal hypoxemia or next-day sleepiness (72). Probably the biggest disadvantage of hypnotics in the treatment of both isolated insomnia and COMISA is the rapid addiction of patients to these drugs, the difficulty in discontinuing them, or usually the lack of sustained improvement without constant pharmacotherapy (45).

It has been shown that CBT-I used in the treatment of insomnia can also improve patients' adaptation to the use of CPAP machines at night when used before CPAP therapy which opened up new possibilities in the treatment of COMISA (45, 77, 78). According to an article from 2016, the two most commonly CBT-I recommended therapies are stimulus control therapy and bed period or sleep restriction therapy which contains recommendations such as not napping during the day, restricting bedtime if the patient does not fall asleep in 15 minutes, or maintaining the same wake-up time (45). In the case of COMISA patients, it is important that at the beginning of CBT-I, the symptoms of OSA may temporally worsen (34).

4. Discussion

COMISA is a very interesting and important entity that for many years was overlooked. The prevalence of both diseases in patients is importantly higher than in the general population (35). Many clinicians and health clinics are focused on treating only one of these conditions neglecting the whole picture (34). The increasing number of patients suffering from OSA, insomnia, or COMISA is partly due to the growing number of obese people in the general population (35, 36).

Many patients with COMISA or OSA alone remain undiagnosed. The most common examination of OSA requires a hospital stay to perform polysomnography or polygraphy (2). A lot of people are not willing to go through with the diagnostic process. A relatively new therapy, especially on the Polish market, is home diagnostics polygraphy of OSA. One of the positives of this method is the greater availability of the test which has the potential to increase the detection of sleep apnea in the

general population. The downside is the higher costs that the patient has to bear but at the same time less cost to the health service than polygraphy or polysomnography which requires hospitalization. However, the method is still little known among physicians. It is also important that patients with a high risk of OSA diagnosis, e.g. with a BMI over 40, should first be referred for more thorough hospital diagnostics (79).

4.1. COMISA in Psychiatric care

In the work of psychiatrists, it is important to search for co-morbid OSA and insomnia. OSA causes higher deterioration of subjective and objective sleep quality and quantity making the treatment of insomnia harder (46, 47). COMISA patients have higher use of sedative and psychotropic medications causing serious consequences on their health and addiction (47, 80). They also experience a lower quality of life (38, 44, 45, 47, 48, 80). COMISA has been proven to increase symptoms of depression, anxiety, and stress. By treating COMISA with CBT-I, the level of symptoms can be reduced. In addition, the presence of depression, anxiety, and stress has not been proven to affect CBT-I adherence (32). Moreover, Nguyen et al. showed that 24 months of CPAP treatment in OSA patients can improve insomnia symptoms (22).

Although the use of hypnotics in OSA and COMISA is generally contraindicated, research shows that some medications, such as zolpidem and eszopiclone, may benefit patients, especially if they are already using CPAP. The subject of pharmacology in COMISA certainly requires further research (71,72).

The most effective treatment of insomnia and OSA symptoms in COMISA patients are lifestyle changes such as reduction of body mass, adequate sleep hygiene, and CBT-I (34). Weight reduction achieved through lifestyle changes, the use of GLP-1 analogs, or bariatric surgery significantly improves the symptoms of OSA and insomnia (62, 64, 65). It is important for psychiatrists to diagnose OSA in patients with insomnia if suspicions arise. In the case of COMISA patients at the beginning of CBT-I, the symptoms of OSA may temporally worsen causing an overall reduction of life quality and possible rejection of therapy (34). But in the long term, studies show that this may be an integral element of success in COMISA therapy. (32, 34, 35, 77, 78, 81).

4.2. COMISA in General Practitioner or Pulmonologist care

COMISA rises more difficulties in treatment due to its bidirectional correlation. It is important to screen OSA patients for insomnia due to the increased risk of daytime impairments, and poorer physical and mental health outcomes which can cause an increase in car incidence

(49). In an article by Glidewell et al., the authors conclude that *"Insomnia symptoms provide independent predictive value for identification of OSA in a primary care sample"*. Researchers also note that the strongest predictive value can be applied to women (40).

The majority of researchers suggest first focusing on the treatment of insomnia due to lower acceptance of CPAP and non-CPAP therapies in COMISA patients (36, 74, 75, 77, 8). However, some studies observed no impact on CPAP rejection or on long-term compliance in COMISA patients compared to OSA alone (76, 83).

It is very important in COMISA to use CBT-I in parallel with or before starting CPAP therapy, which gives the greatest improvement in these patients (45). CBT-I was observed to improve insomnia symptoms and increase subsequent use of CPAP, however, self-administered CBT-I materials for COMISA patients show no improvement in insomnia symptoms or CPAP use compared to the control group (84). Doctors should recommend the usage of CBT-I in COMISA patients delivered by psychologists, or trained therapists, who can also provide motivational CPAP support (34, 84).

Family care physicians generally have contact with the largest number of patients during their practice, which makes them an extremely important link in the early diagnosis of insomnia and obstructive sleep apnea. General practitioners and pulmonologists in clinics can use simple methods to screen patients with sleep problems or severe obesity for potential OSA diagnoses. One of the methods with proven effectiveness is to perform the Epworth Sleepiness Scale or STOP-Bang questionnaire with the patient. It takes little time and the high predictive value of this scale has been demonstrated (85). It is also important that in the event of a long wait for hospitalization and a thorough diagnosis of OSA, doctors should inform patients about the possible home polygraphy examination of OSA (79). Additionally, physicians should remember that sleep medication despite a possible increase in the laxity of the throat muscles could have a positive effect on OSA. (69,71,72)

5. Conclusions

The condition referred to as COMISA is still an insufficiently studied phenomenon in the literature. Many patients suffering from OSA and insomnia are treated for only one of these conditions, which is usually incomplete. Many patients with COMISA or OSA alone remain undiagnosed. Due to the high frequency of these diseases, they are becoming a population problem. One of the reasons is the growing number of obese people, especially in developed countries, which contributes to more frequent problems with OSA and insomnia. Another one is the demanding diagnosis of OSA which usually

requires a hospital stay to perform polysomnography or polygraphy. Studies have shown that using scales such as the Epworth Sleepiness Scale and STOP-Bang helps general practitioners and other physicians in the clinics screen patients who have not yet been diagnosed. However, this is only an auxiliary test that will not replace hospital diagnostics. A potentially still developing solution is home polygraphy. It is very important to treat both OSA and insomnia, not only because it makes the risk of developing health consequences lower but it improves the quality of life as well. Doctors should deal with patients diagnosed with OSA as those with a higher risk of insomnia and take into account the possibility of co-occurrence of these diseases during the standard medical interview. As research shows, it is extremely important for maintaining both mental and physical health in these patients. Further research into the interrelationships of these diseases will be crucial in shifting toward more accurate diagnosis and more efficient therapy for COMISA in the future.

Conflict of interest

The authors have declared no conflict of interest.

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