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Negative Impacts of Excessive Daytime Sleepiness Due to Obstructive Sleep Apnea

Announcer:
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Dr. Shah:
Hi everyone, my name is Neomi Shah, the System Vice Chair of Medicine and Professor of Medicine at the Icahn School of Medicine at Mount Sinai in New York City. And today I'd like to share with you some insights on the Negative Impacts of Excessive Daytime Sleepiness Due to Obstructive Sleep Apnea.

And before we really get into that, I just wanted to sort of set the stage and make sure that we understand what excessive sleepiness is versus normal sleepiness. And really, the main distinguishing feature is that one is a biological drive state, which is normal sleepiness, and excessive sleepiness, which is a symptom of either difficulty in maintaining wakefulness and/or an increased propensity to fall asleep, and more importantly in inappropriate circumstances and in situations that interfere with activities of daily living.

And we know that excessive daytime sleepiness is quite common in obstructive sleep apnea. And it is actually quite prevalent even in individuals that use PAP therapy, as shown in this slide here with 4 hours in red, 5 hours in blue, 6 hours in grey, and even the orange which is 7 hours of CPAP use, there's still prevalent, excessive daytime sleepiness.

So why do patients with obstructive sleep apnea get excessive daytime sleepiness? And we think it's because of neuronal damage in wake-promoting brain regions as shown here in this slide that produced wake-promoting neurotransmitters like dopamine and norepinephrine and orexin. And the intermittent hypoxia and sleep fragmentation may be damaging to these centers.

Of course, it's important that we identify treatable conditions associated with persistent sleepiness in obstructive sleep apnea, the main one really being behaviorally-induced insufficient sleep and inadequate treatment of obstructive sleep apnea, either because of reduced adherence, or because of suboptimal pressure.

And we know that sleepiness is a problem because as this slide shows here, many studies have shown that it's associated with mortality and morbidity, including myocardial disease or myocardial infarction, coronary heart disease, stroke, and all-cause mortality.

We're becoming increasingly interested in the Sleepy Phenotype which is worked on by Diego Mazzotti here, shown in the different phenotypes you see. And the one that I'd like to point out is the one that's the column in bright red, which is excessively sleepy patients or phenotype of OSA, which clearly is associated with increased hazard ratios for in new incidence CHD, for new incidence CBD, and new incident heart failure.

We also know that the economic and societal burden of excessive daytime sleepiness in patients with OSA is quite a lot. And this slide here shows all of the studies that have essentially studied different aspects of this burden, including the cost, humanistic outcomes, motor vehicle, and workplace incidents. And I've summarized that here essentially, which I'd like to just take the next minute to walk through. So the adverse health effects of excessive daytime sleepiness in obstructive sleep apnea really composite increased risk of headaches, that's a very common one we see, depressed mood, anxiety. There's also increasing evidence on impaired cognition,

including decreased cognitive flexibility, executive function, and working memory. Disturbed attention and impaired vigilance is a big one, especially as it relates to the societal burden and include higher rates of motor vehicle accidents and workplace accidents, leading to injury from disability. There's also evidence on decreased quality of life in patients who have excessive sleepiness and OSA, compared to those who do not have sleepiness. And then there is this hypothesized association with excess healthcare utilization and increased healthcare costs, which then lead to loss of productivity as per the population as a whole. And then the economic burden of EDS and OSA is also quite prevalent, including the unrecognized and underappreciated direct and indirect costs.

So in summary, there's quite a lot of evidence that sleepiness is prevalent in individuals with obstructive sleep apnea, even when they use conventional therapies like CPAP, as many as 7 hours per night, and that it is associated with mortality and morbidity. And there is increasing interest in sub-phenotyping OSA patients with a focus on the sleepy phenotype, because we believe that that patient population is at the highest risk of cardiovascular morbidity and mortality. And then, of course, all of the overall burden that I've described in the last two slides on the society as a whole, which really makes us, you know, an important focus for treatment and research on how we can best address sleepiness in obstructive sleep apnea.

Thank you very much for your time and attention.

Announcer:
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