



Case Vignette: OSA and Transgender Therapy

Presenting Complaints

A 35-year-old transgender man, L.A. (assigned female at birth) presented to the primary care clinic for his annual physical visit. His partner also accompanied him. They wanted to discuss his snoring and excessive daytime sleepiness. He recently started testosterone therapy.

Past History

L.A.'s medical history includes obesity. Psychiatric history also includes previous diagnoses of major depressive disorder and unspecified anxiety disorder. Five years previously, he underwent an in-lab overnight PSG for concerns about excessive daytime sleepiness, nocturnal arousals, and snoring, which demonstrated AHI of 1.4 events/h, REM AHI of 3.1 events/h, NREM AHI of 1 events/h, and oxygen saturation nadir of 93%. Since all parameters were within normal limits, he was recommended to eat right, exercise regularly and avoid alcohol. Information on oropharyngeal exercises was also provided.

His surgical history was significant for a total hysterectomy and bilateral salpingo-oophorectomy for pelvic pain approximately 1 month ago.

L.A. has been using transdermal testosterone 4 mg daily for 2 years now. He was not using any medications suspected of influencing sleep-disordered breathing.

Physical Exam

An overall healthy looking individual. He had increased facial and body hair, increased oiliness of skin, increased muscle. A feminine subcutaneous distribution of fat and broad hips was still apparent. A deepening of the voice, and cessation of menses had also occurred.

Blood investigations were unremarkable. His serum testosterone level was appropriately elevated with treatment, in the 500–600 ng/dL range. The uterus was surgically absent, and no pelvic or abdominal masses were palpable.

- BMI - 31 kg/m²
- Neck circumference- 38.5 cm
- Blood pressure (BP) - 135/93 mm Hg.
- Glasgow Coma Scale score was 11/15 [E4V1M6].



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Testing

His physician then administered the [STOP BANG questionnaire](#).

[The STOP-Bang questionnaire is a quick and easy screening tool with eight dichotomous (yes/no) items to assist in triaging patients with suspected OSA. It consists of 4 self-reportable (STOP: snoring, tiredness, observed apnea, and high blood pressure) and 4 demographic (Bang: body mass index [BMI; calculated as weight in kilograms divided by height in meters squared], age, neck circumference, and gender) items.]

Do you snore loudly? Louder than talking or loud enough to be heard through closed doors	No 0	Yes +1
Do you often feel tired, fatigued, or sleepy during the daytime?	No 0	Yes +1
Has anyone observed you stop breathing during sleep?	No 0	Yes +1
Do you have (or are you being treated for) high blood pressure?	No 0	Yes +1
Objective measures:		
BMI	≤35 kg/m ²	0
	>35 kg/m ²	+1
Age	≤50 years	0
	>50 years	+1
Neck circumference	≤40 cm 0	>40 cm +1
Gender	Female 0	Male +1
4 points STOP-BANG	Intermediate Risk for moderate to severe OSA	

Figure 1. Results of STOP-Bang Questionnaire

The patient had responded with a “yes” to 3 out of the 4 STOP questions. Being a male, he has a total score of 4, consistent with a moderate to severe risk for OSA. A PSG study was offered, which he agreed to at that time.



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Test results:

The PSG demonstrated an AHI of 14.4 events/h (REM AHI of 37.8 events/h, NREM AHI of 7.2 events/h), and oxygen saturation nadir of 91%.

Discussion of Treatment Plan

The post-testosterone treatment PSG demonstrated a relatively high REM AHI/low NREM AHI pattern that has been seen in females. A Continuous Positive Airway Pressure (CPAP) treatment trial was initiated. L.A. also continued on testosterone therapy.

Outcome of Case

After 4-5 weeks of treatment with CPAP, L.A. experienced a resolution of his excessive daytime sleepiness and snoring. Daytime functioning also significantly improved after CPAP treatment. During the 4-month follow up, 3 CPAP titrations showed that OSA events and OSA related REM interruption almost disappeared.

Teaching Points

Gender reassignment involves healthcare professionals from multiple disciplines including primary care, psychology, psychiatry, social services, endocrinology, and surgery, according to the wishes of an individual patient. Hormonal therapy in gender reassignment is often referred to as 'cross-sex hormone therapy', where estrogens are prescribed for trans women and testosterone for trans men. Transgender patients might avoid seeking care due to previous negative experiences or a fear of being judged. It is very important to create a safe environment where the patients feel comfortable. Transgender people historically report that the largest barrier to care is a lack of knowledgeable providers resulting in an inability to access appropriate and culturally sensitive care.

The mechanism of OSA due to testosterone has been reported to be secondary to increased collapsibility of the airway. Although the exact mechanism of OSA remains controversial, testosterone-induced sleep apnea is an obvious occurrence.

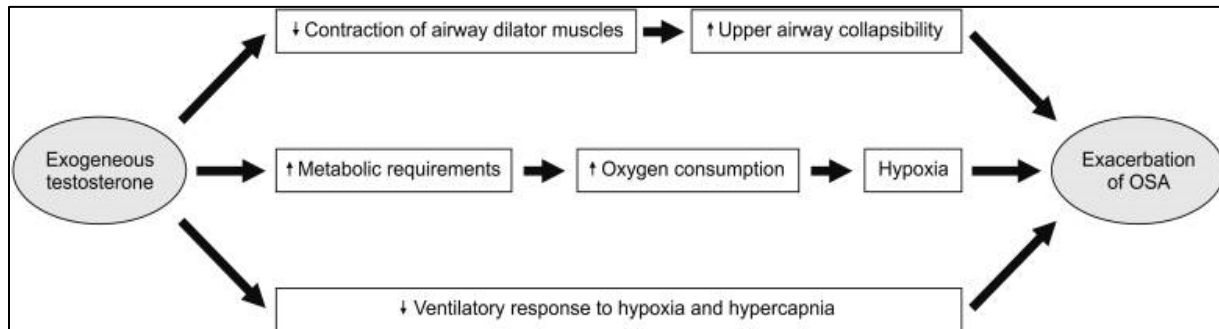


Figure 2. Plausible Mechanisms by which Testosterone Therapy Worsens OSA

Original source: Kim SD, Cho KS. Obstructive Sleep Apnea and Testosterone Deficiency. *World J Mens Health*. 2019 Jan;37 (1):12-18. Copyright © 2019 Korean Society for Sexual Medicine and Andrology. This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0>)

This case highlights that as the use of hormone treatment for gender dysphoria becomes more common, the effects of these treatments should be considered when weighing the benefits and risks of the treatments. L.A. had a bilateral oophorectomy about 1 month before his second PSG. A lack of estrogen and progesterone may have contributed to his OSA, in addition to the use of exogenous testosterone. Additionally, the sudden surgical menopause experienced by this patient may have increased his risk of OSA, as opposed to natural menopause.

Primary care physicians play a key role in the care of transgender patients. This includes counselling or appropriate referral but also, in some cases, the initiation and maintenance prescription of hormone therapy. Given the common use of testosterone in gender-reaffirming therapy, the risk of developing OSA in these patients should be considered, and the patients counseled on this possible adverse reaction(s).

Adapted from: Robertson BD, Lerner BS, Collen JF, Smith PR. *The Effects of Transgender Hormone Therapy on Sleep and Breathing: A Case Series*. *J Clin Sleep Med*. 2019 Oct 15;15(10):1529-1533. doi: 10.5664/jcsm.7992. PMID: 31596219; PMCID: PMC6778344.

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Additional Reading

- Zucker KJ. [Epidemiology of gender dysphoria and transgender identity](#). Sex Health. 017;14(5):404–411.
- James SE, Herman JL, Rankin S, Keisling M, Mottet L, Anafi, M. The Report of the 2015 U.S. Transgender Survey. Washington, DC: National Center for Transgender Equality; 2016.
- Joseph A, Cliffe C, Hillyard M, Majeed A. [Gender identity and the management of the transgender patient: a guide for non-specialists](#). J R Soc Med. 2017 Apr;110(4):144-152. doi: 10.1177/0141076817696054. Epub 2017 Apr 6. PMID: 28382847; PMCID: PMC5407520.
- Barrett-Connor E., Dam T., Stone K., Harrison S., Redline S., Orwoll E., et al. (2008) [The association of testosterone levels with overall sleep quality, sleep architecture, and sleep-disordered breathing](#). J Clin Endocrinol Metab 93: 2602–2609
- Payne K, Lipshultz LI, Hotaling JM, Pastuszak AW. Obstructive Sleep Apnea and Testosterone Therapy. Sex Med Rev. 2021 Apr;9(2):296-303. Epub 2020 Jul 5. PMID: 32636155.
- Han M. Hanafy, MD, [Testosterone Therapy and Obstructive Sleep Apnea: Is There a Real Connection?](#) The Journal of Sexual Medicine, Volume 4, Issue 5, September 2007, Pages 1241–1246
- Kim SD, Cho KS. [Obstructive Sleep Apnea and Testosterone Deficiency](#). World J Mens Health. 2019 Jan;37(1):12-18. doi: 10.5534/wjmh.180017. Epub 2018 May 16. PMID: 29774669; PMCID: PMC6305865.
- Stern, J.C. (2023). Case 3. Testosterone and Gender: Not What You Think. In: Rodriguez, A.J. (eds) Sleepless and Sleepy . Springer, Cham. https://doi.org/10.1007/978-3-031-18374-4_3