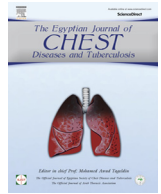


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Obstructive sleep apnea in pregnancy. Is it a new syndrome in obstetrics?

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ABSTRACT

Background: Sleep disordered breathing (SDB) is a frequent disorder and its severity superimposes on pregnancy progresses. The exact prevalence or incidence of such disorder in pregnant women is still unknown.

Objectives: To assess the incidence and severity of OSA in pregnant women and to discover the risk factors for OSA during pregnancy.

Methods: A total of 30 pregnant women and 30 age matched controls completed Epworth Sleepiness Scale and Stop-Bang questionnaire. SDB diagnosis was based on polysomnography.

Results: The incidence of OSA among our studied pregnant women was 36.7% and 53.3% of pregnant women were snorers. They demonstrated significantly higher AHI (4.38 ± 4.45) and ODI (3.72 ± 4.03). There was a significant positive correlation between gestational age and ESS, BMI, AHI and ODI, as they are of their highest levels among cases in the third trimester. Binary logistic regression analysis showed that gestational age and body mass index were independent risk factors with odds ratio (2.23 & 4.99) and 95% CI (1.05–5.32 & 1.75–33.28) respectively while the neck circumference and ESS were considered as dependent risk factors.

Conclusion: Pregnancy is a risk condition for OSA which aggravated by neck circumference and base line BMI. The susceptibility and severity increase by increasing gestational age.

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Introduction

Obstructive sleep apnea (OSA) is caused by repetitive obstruction of the upper airway during sleep, resulting in hypopnea (decreased airflow) or apnea (complete airflow cessation). Person with OSA may experience loud snoring, oxygen desaturation, frequent arousal and interruption of the sleep [1].

The prevalence of OSA is very variable according to different population groups being studied. The prevalence of OSA had been estimated to be 14% of men and 5% in women, in population based study utilizing an AHI cut off of ≥ 5 events/h combined with clinical symptoms to define OSA [2].

Several alternations in maternal physiology can affect breathing in pregnant women during sleep. Sleep quality is often poor. Sleep disruption due to leg cramp, low back pain, urinary frequency, or responsibilities related to child care. Total sleep time and day time sleepiness increase during the first trimester, meanwhile, sleep time diminished with increase in complain of nocturnal arousal increase in third trimester [1].

Hormonal changes of increased estrogen result in hyperaemia, upper airway narrowing and increase progesterone increase in respiratory drive, along with other physiologic changes of sleep (decreases FRC and respiratory system compliance) Predispose to alternation of sleep in pregnancy. Meanwhile snoring is more frequent in pregnant women and sleep related breathing disorders May get worse during pregnancy [3].

Polysomnography study had shown an increase in sleep latency, an increase in amount of stage 1 sleep and decrease in rapid eye movement sleep and delta sleep, and also increase in number of a wakening [4].

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Although several restrictive lung factors similar to those associated with obesity are present in pregnancy, arterial oxygen saturation remains normal in pregnant women during sleep. Most sleep difficulty related to maintaining rather than initiating sleep. After child birth most parameters of sleep quality and architecture return to pre-pregnancy value, with possible exception of REM sleep [4].

Subjects and methods

A prospective cohort study was conducted on 30 pregnant cases recruited from Gynecology & Obstetric Department at Menoufia University Hospital, and 30 subjects as a control which are age matched with cases. Sleep questionnaire data were obtained from all subjects and they underwent complete diagnostic PSG evaluation in the Sleep disorders unit of Chest Department, Menoufia University hospital during the period from June 2015 to March 2017. This study was approved by the research ethics committee and a written consent was obtained from patients before the beginning of this work. There are no specific guidelines for screen-

ing pregnant women for SDB because the data are limited in this population.

Pregnant women with comorbid conditions, including chronic lung diseases, congestive heart failure, endocrinal, metabolic, hepatic, renal or neurological disorders and musculoskeletal deformities, also pregnant women with morbid obesity were excluded from our study.

On the day of the study and before electrode application the studied population completed a sleep questionnaires involved the list of their sleep-related symptoms, anthropometric measurements (height, weight & neck circumference), sleep habits, a list of their medications, STOP-BANG Questionnaire & lastly the Epworth sleepiness scale [5].

Stop-BANG Questionnaire is OSA screening tool. It is characterized by its feasibility and high sensitivity for OSA detection.

Epworth sleepiness scale is self-reported Questionnaire involved eight questions to assess the propensity for day time sleepiness or dozing.

Comprehensive antenatal care evaluation for pregnant cases: thorough gynecological history and physical examination that included the respiratory, cardiovascular, neurological and repro-

Table 1
Comparison between pregnant and non-pregnant females regarding all the studied parameters.

	Case N = 30	Controls N = 30	Test	P value
<i>Age (years):</i>			<i>t</i> -test	
X ± SD	30.4 ± 8.07	31.47 ± 6.96	0.55	0.59
Median	30.5	31.5		
Range	13–48	20–47		
<i>Gestational age (weeks):</i>				
X ± SD	23.03 ± 8.88			
Median	20			
Range	10–39			
<i>ESS (0–24):</i>			<i>U</i>	
X ± SD	7.0 ± 4.89	4.03 ± 2.52	2.32	0.02
Median	6	4		
Range	0–20	0–10		
<i>Stop-Bang [n (%]):</i>			<i>FE</i>	
<3	23 (76.7)	30 (100)	7.93	0.01
>3	7 (23.3)	0 (0.0)		
<i>BMI (kg/m²):</i>			<i>t</i> -test	
X ± SD	30.83 ± 6.43	26.77 ± 2.43	3.24	0.003
Median	29.5	27		
Range	22–44	22–32		
<i>Neck circumference (cm):</i>			<i>t</i> -test	
X ± SD	31.63 ± 6.45	26.23 ± 5.83	3.40	0.001
Median	33	23.5		
Range	20–39	20–36		
<i>AHI:</i>			<i>U</i>	
X ± SD	4.38 ± 4.45	1.77 ± 1.23	2.01	0.04
Median	2.5	1.5		
Range	0–15	0–4		
<i>Oxygen desaturation index:</i>			<i>U</i>	
X ± SD	3.72 ± 4.03	2.27 ± 1.11	2.30	0.02
Median	2.5	1.5		
Range	0–14.3	0–5		
<i>Flow limitation index:</i>			<i>U</i>	
X ± SD	9.48 ± 6.08	5.85 ± 4.28	2.49	0.01
Median	10	5.6		
Range	0–25	0–15.9		
<i>Snoring index:</i>				
X ± SD	8.19 ± 6.87	1.08 ± 1.75	4.56	<0.001
Median	8.3	0.0		
Range	0–32.9	0–7		
<i>% of Sleeping time in supine position:</i>				
X ± SD	48.91 ± 22.89	50.1 ± 33.94	0.04	0.97
Median	48.35	40		
Range	3–99	3–100		

FE = Fisher's Exact test, U = Mann Whitney U test.

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