Study of Sleep Disorders in Resistant Hypertensive Patients on Hemodialysis

Thesis

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In Internal Medicine

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دراسة إضطرابات النوم عند مرضى ارتفاع ضغط الدم الغير مستجيب للعلاج و المنتظمون على الاستصفاء الدموى

رسالة

توطئة للحصول علي درجة الماجستير

في الأمراض الباطنية

مقدمة من

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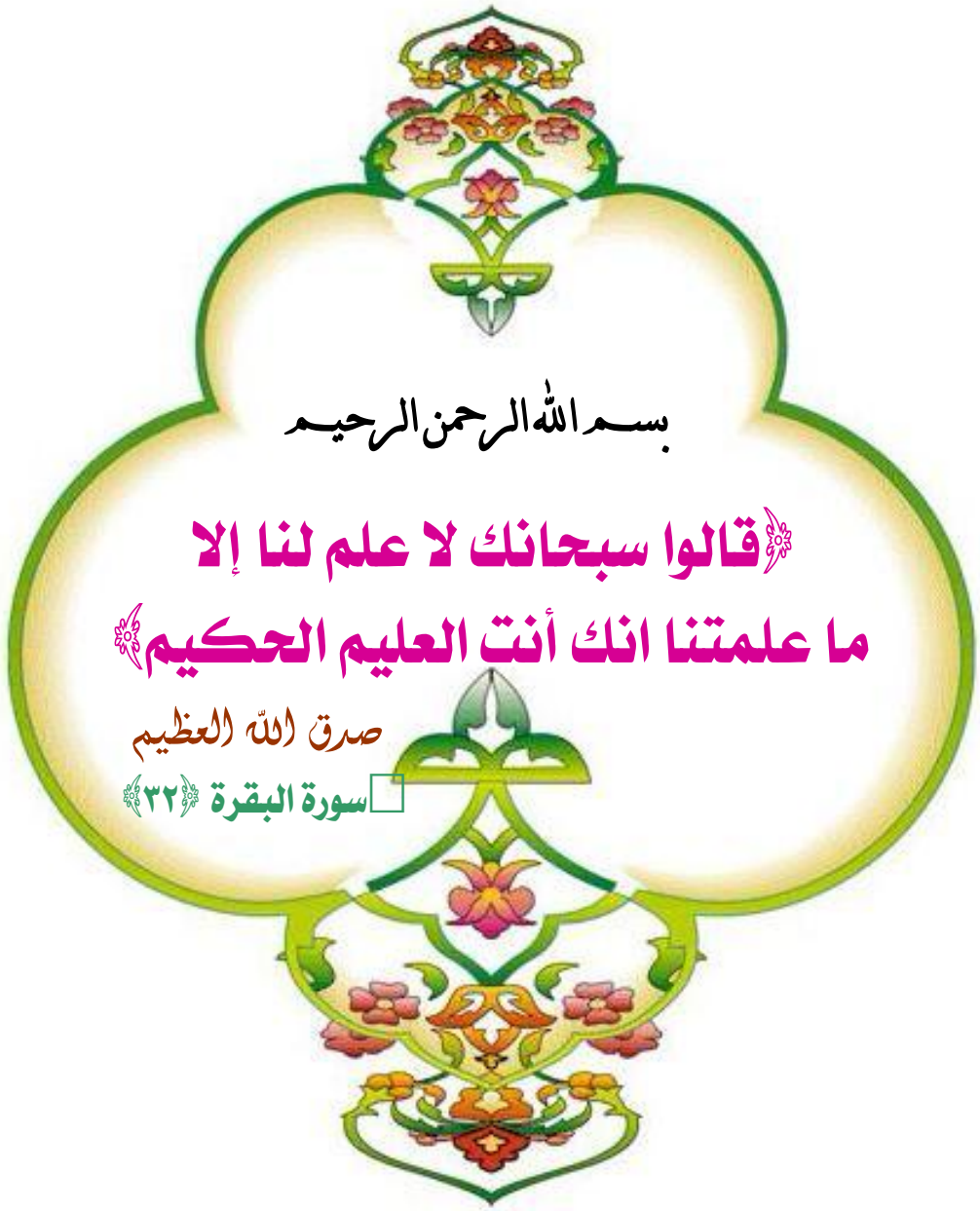

بسم الله الرحمن الرحيم

﴿قالوا سبحانك لا علم لنا إلا
ما علمتنا انك أنت العليم الحكيم﴾

صدق الله العظيم

سورة البقرة ﴿٣٢﴾

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Protocol

Sleep is an essential biological process, a periodical state of quiescence in which there is minimal processing of sensory information and no interaction with the environment. However, sleep is more than the absence of being awake; it is a homeostatically regulated process ***(Kotronoulas et al., 2009).***

Sleep plays an important role in workers lives, allowing them to relax, restore, and revitalize their bodies, minds, and emotions every 24 hours. Sleep repairs the physical body to improve and maintain general health, consolidate learning and memory, and recharge the psychological batteries to maintain emotional balance and well-being ***(Ohlaman et al., 2009).***

The average sleep duration of adults is approximately 7 hours. National Sleep Foundation found the average sleep duration on work days in 44%of people to be shorter than this. Different studies indicate that too short a sleep duration is associated with a number of negative health outcomes, including higher risk for hypertension and cardiovascular disease ***(Portaluppi et al., 2009)***.

Patients with common medical disorders often complain to their physician about sleep problems, and these patients are often referred to sleep specialists for evaluation and diagnosis. Poor quality sleep or insufficient sleep are associated with

fatigue, malaise, and sleepiness. Quality of life is impaired, and subjective symptoms due to the underlying disease seem worse to the patient. If the quality of sleep is improved, subjective symptoms related to the disease may improve ***(Parish, 2009).***

The International Classification of sleep disorders, second edition (ICSD-2) subdivides sleep disorders into eight major criteria: insomnia, sleep-related breathing disorders, hypersomnias of central origin, circadian rhythm disorders, parasomnias, sleep-related movement disorders, isolated symptoms and other sleep disorders ***(Panossian et al., 2009).***

Obstructive sleep apnea (OSA)**,** is the most common form of sleep-disordered breathing ***(Hoffmann et al., 2004).***

High blood pressure and Obstructive sleep apnea (OSA) are closely related, and the latter is considered to induce hypertension, the primary underlying mechanism is sympathetic activation triggered by apneic episodes, this type of hypertension is difficult to treat ***(Sharabi et al., 2004).***

Resistant hypertension is blood pressure above goal despite adherence to combination of at least three antihypertensive medications of different classes, optimally dosed and including usually a diuritc ***(Viera et al., 2009).***

The recent National Kidney Foundation guidelines suggest that Predialysis and Postdialysis BP should be <140/90 and <130/90 mmHg Respectively ***(Agarwal, 2006).***

In hemodialysis patients uncontrolled hypertention average predialysis BP ≥ 160/90 mmHg ***(Rahman et al., 1999).***

Resistant hypertension is a common medical problem. It carries a significantly increased risk of endorgan damage and cardiovascular events compared with more easily controlled hypertension, the etiology of resistant hypertension is almost always multifactorial. Secondary causes of hypertension, such as obstructive sleep apnea (OSA) require investigations and effective treatment if present ***(Pisoni et al., 2009).***

Treatment of Obstructive sleep apnea with continous positive airway pressure has an effect on hypertension control and risk reduction of cardiovascular diseases ***(Das et al., 2009).***

Hypertension is a well-known cause of renal impairment and, impaired renal function is a well-known cause of hypertension; therefore the two conditions constitute a vicious circle resulting in the progressive worsening of each. This relationship is very prominent in end-stage renal disease ***(Portaluppi et al., 2009)***.

Patients with end stage renal diseases (ESRD) have a considerable symptom burden, among which sleep-related

symptoms are highly prevalent. Sleep disorders, such as restless legs, periodic limb movements and sleep apnea, and sleep complaints such as insomnia and daytime sleepiness are very common in ESRD patients despite treatment with 3-times-a-week conventional hemodialysis. If untreated, they are likely to impair quality of life and may alter cardiovascular outcomes in this patient population ***(Hanly, 2009).***

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List of Abbreviations

Abb.	Meaning
ABPM	Ambulatory BP monitoring
ACE	Angiotensin converting enzyme
AHI	Apnea-hypopnea index
BMI	Body Mass Index
BP	Blood pressure
CBT	Cognitive behavioral therapy
CKD	Chronic kidney disease
CNS	Central nervous system
CPAP	Cotinous positive airway pressure
CRF	Chronic renal failure
CRSD	CIRCADIAN RHYTHM SLEEP DISORDERS
CVD	Cardiovascular disease
DSM-IV-TR	*Diagnostic Statistical Manual of Mental Disorders, Fourth Edition, Text Revision*
EDS	Excessive day time sleepness
EEG	Electroencephalogram
EMG	Electromyogram
EOG	Electrooculogram
ESKD	End stage kidney disease
ESRD	End stage renal diseases
ESS	The Epworth Sleepiness Scale
FDA	The Food and Drug Administration

List of Abbreviations

Abb.	Meaning
fMRI	Functional magnetic resonance imaging
HD	Hemodialysis
HTN	Hypertension
ICSD-2	The International Classification of sleep disorders, second edition
IL-1	Interleukin 1
KLS	Kleine–Levin syndrome
MSLT	The Multiple Sleep Latency Test
NAT	N-Acetyltransferases
NHD	Nocturnal hemodialysis
NICE	National Institute for Health and Clinical Excellence
NREM	Non–rapid eye movement
NSAIDs	Non-steroidal anti-inflammatory drugs
OSA	Obstructive sleep apnea
OSAS	Obstructive sleep apnea syndrome
PLMS	Periodic limb movement syndrome
PSG	Polysomnogram
PSQI	Pittsuburg sleep quality index
PTH	Parathyroid hormone
QoL	Quality of life
RAAS	Rennin-angiotensin-aldosterone system
RDI	Respiratory desaturation index
REM	Rapid eye movement
RERAS	Respiratory Effort-Related Arousals

List of Abbreviations

Abb.	Meaning
RH	Resistant hypertension
RLS	Restless leg Syndrome
SA	Sleep apnoea
SaO2	Normal oxygen saturation
SAS	Sleep apnea syndrome
SDB	Sleep disordered breathing
SOREMP	Sleep-onset REM period
STN	Subthalamic nucleus
TNF	Tumor necrosis factor