第六届北京协和呼吸病学峰会

暨第二届ACCP呼吸与危重症最新进展临床峰会

Proceedings of the 6th Peking Union Conference on Respiratory Medicine
and the Second ACCP-China Annual Conference Series
on Pulmonary and Critical Care in Beijing

论文集

蔡柏蔷 肖 毅 主编

中国协和医科大学出版社

第六届北京协和呼吸病学峰会

暨第二届ACCP呼吸与危重症最新进展临床峰会

论文集

蔡柏蔷　肖　毅　主　编

中国协和医科大学出版社

图书在版编目（CIP）数据

第六届北京协和呼吸病学峰会暨第二届 ACCP 呼吸与危重症最新进展临床峰会论文集 / 蔡柏蔷主编. —北京：中国协和医科大学出版社，2011.4
ISBN 978-7-81136-494-1

Ⅰ. ①第… Ⅱ. ①蔡… Ⅲ. ①呼吸系统疾病：险症-学术会议-文集 Ⅳ. ①R560.597-53

中国版本图书馆 CIP 数据核字（2011）第 048282 号

第六届北京协和呼吸病学峰会
暨第二届 ACCP 呼吸与危重症最新进展临床峰会论文集

主　　编：蔡柏蔷　肖　毅
责任编辑：顾良军

出版发行：中国协和医科大学出版社
（北京东单三条九号　邮编 100730　电话 65260378）
网　　址：www.pumcp.com
经　　销：新华书店总店北京发行所
印　　刷：北京丽源印刷厂

开　　本：889×1194 毫米　1/16 开
印　　张：21.25
字　　数：500 千字
版　　次：2011 年 4 月第一版　2011 年 4 月第一次印刷
印　　数：1—1000
定　　价：68.00 元

ISBN 978-7-81136-494-1/R·494

目 录

会议 PPT

指南和工具解读

综　述

论　著

病例报告

摘　要

会议 PPT

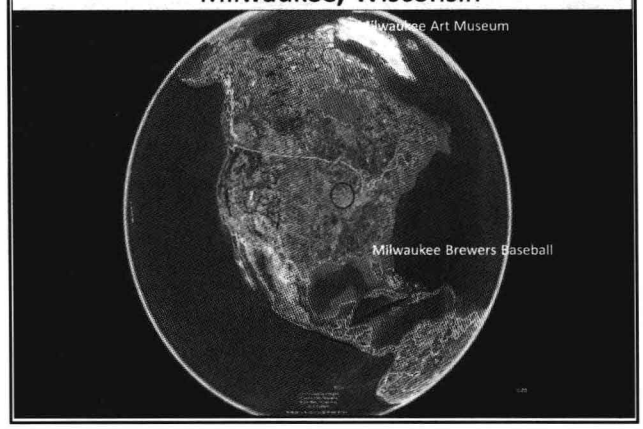
Improving Patient Care Through Education

AMERICAN COLLEGE OF CHEST PHYSICIANS

Mission: To promote the prevention, diagnosis, and treatment of chest diseases through education, communication, and research.

David D. Gutterman, MD, FCCP
ACCP President

Milwaukee, Wisconsin

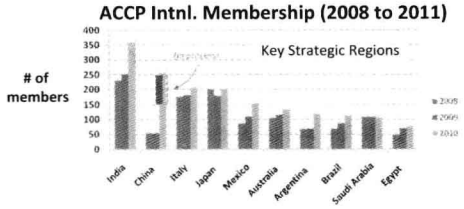


Milwaukee, Wisconsin

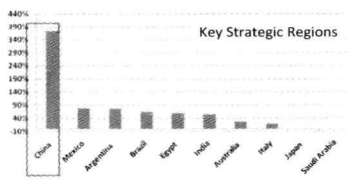
ACCP Overview

- World's largest clinical pulmonary, critical care, and sleep medicine society (more than 18,000 members in 100 countries) founded in 1935
- Members include: physicians, allied health professionals, PhDs
- Many antitobacco initiatives; instrumental in passing the smoking ban on air travel
- Rapidly growing international presence and participation

ACCP Intnl. Membership (2008 to 2011)



% Change in ACCP Intl. Membership (2008 to 2011)



Publications

www.chestpubs.org

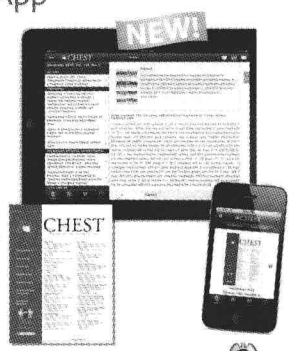
CHEST

- Has one of the highest online readerships of any respiratory or critical care journal in the world
- Print circulation: ~ 20,000
- Online traffic: averaging 450,000 visits per month
- Impact Factor: 6.36; in the top three respiratory journals
- Total citations: 41,623; ranked 2nd of 40 respiratory journals
- International editions: India, China, Italy, Middle East, Greece, and Spain

CHEST Journal App

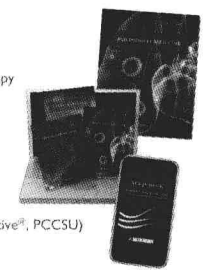
- Full-text articles available for the iPhone®, iPod touch®, and iPad®.
- Search CHEST Journal in the iTunes® store for more information.

Download the App for free.
Access full-text content for free through June 2011.



Continuing Medical Education

- Promote Lifelong Learning
- Focus on Evidence-Based Medicine
  - Antithrombotic and Thrombolytic Therapy
  - Lung Cancer
  - Pulmonary Arterial Hypertension
  - Cough
- Education Courses and Products
  - Simulation courses
  - Online education (A Physician's Perspective®, PCCSU)
  - Board review books
  - ACCP-SEEK®
  - e-Books, iPhone® apps, and CD products
  - Endorsed international courses



ACCP Simulation Program

for Advanced Clinical Education

Featuring hands-on education in a realistic clinical environment

Basic and Advanced Bronchoscopy Skills
February 11-13
Orlando, FL
August 6-7
Chicago, IL

Mechanical Ventilation
February 25-27
Northbrook, IL

Ultrasonography: Fundamentals in Critical Care
April 15-17
Baltimore, MD

Difficult Airway Management
March 18-20
July 22-24
Northbrook, IL

Focused Pleural and Vascular Ultrasound
September 22-23
Chicago, IL

Critical Care Echocardiography
September 24-25
Chicago, IL

Beijing/Shanghai 2012!?

METI

Register now at www.chestnet.org/simulation

Continuing Medical Education

Unique Clinical Education Opportunities

CHEST 2011, Honolulu, Hawaii
October 22 - 26

CHEST 2012, Atlanta, GA
October 20 - 25

ACCP Certificate of Completion Critical Care Ultrasonography Program

NEW!

Program Requirements

Attend ACCP courses and participate in other online courses.

Complete a portfolio.

Pass final test given at CHEST 2011.

Learn More

www.chestnet.org

CHEST 2011 Opportunities

Call for Abstracts

Call for Case Reports

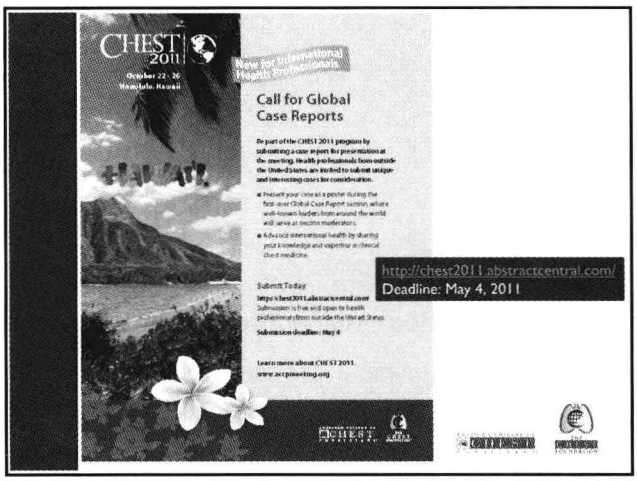
Affiliate Case Reports

NEW! Global Case Reports

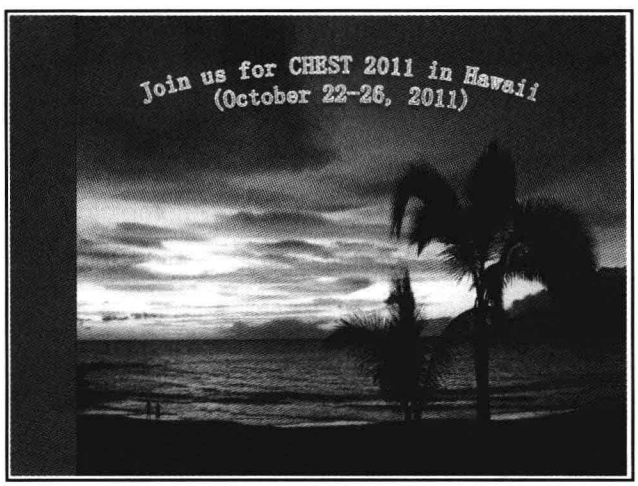
Clinical Case Reports

Submission and Application Deadline: May 4

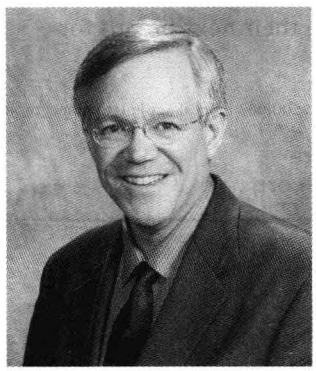
www.chestnet.org


CHEST 2011
October 22 - 26
Honolulu, Hawaii
Call for Global Case Reports
http://chest2011.abstractcentral.com/
Deadline: May 4, 2011
Submit Today
Submission deadline: May 4
Learn more about CHEST 2011
www.accpmeeting.org


ONEBreath
Make The Most Of It
OneBreath inspires people to take care of their lungs and heart and to never take their next breath for granted.
-supports over $500,000 in local and international projects
Learn More
OneBreath.org


Join us for CHEST 2011 in Hawaii
(October 22-26, 2011)

个人简介



David D. Gutterman, MD

Dr. Gutterman is the Northwestern Mutual Professor of Cardiology. He is involved actively in clinical practice, supervises an NIH funded research laboratory, and provides senior administrative oversight of research administration at the Medical College of Wisconsin. He has served in a leadership role in a variety of national and international cardiovascular scientific organizations. He is currently the president of the American College of Chest Physicians, and has served as chair of the American Physiological Society's Cardiovascular Section, and as chair of the American Heart Association Scientific Publishing Committee. Dr. Gutterman is the Senior Associate Dean for Research at the Medical College of Wisconsin. He received an M. D. degree from the University of North Carolina, and completed residency training in internal medicine and fellowship in cardiology at the University of Iowa where he joined the faculty in 1987. Dr. Gutterman was promoted to Professor of Medicine in 1998 prior to moving to the Medical College of Wisconsin.

Dr. Gutterman's investigative interests focus on regulation of human vascular reactivity both at the fundamental and translational research levels. His research efforts span basic and clinical science related to vascular health and disease. His laboratory is one of only 2 worldwide that examines the ability of small blood vessels to control blood flow to the human heart. Dr. Gutterman has also undertaken studies to examine the earliest changes that occur in the development of atherosclerosis (clinical endothelium dysfunction) and has used this technique to examine the beneficial and detrimental roles of various exercise regimens and of dieting on cardiovascular health. Dr. Gutterman had authored more than 100 articles and reviews related to cardiovascular function and pathophysiology.

Peking University Medical College, Beijing

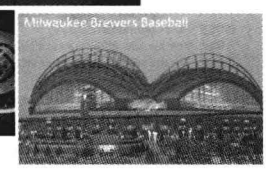
Cardiovascular Complications of Sleep Apnea

David D. Gutterman, MD FCCP
President, American College of Chest Physicians
Northwestern Mutual Professor of Cardiology
Senior Associate Dean for Research
Medical College of Wisconsin
Milwaukee, WI USA

April 2011

Disclosures: None

Milwaukee, Wisconsin



Green Bay Packers
World Football Champions, 2011

Milwaukee, Wisconsin

Milwaukee, Wisconsin

Milwaukee, Wisconsin

Medical College of Wisconsin, Milwaukee

Cardiovascular Disease and Sleep Apnea

Objectives

- Define epidemiology of cardiovascular disease in sleep disordered breathing
- Examine prognosis and management of SDB and CVD

Address the following questions:

1.Which cardiovascular complications are associated with sleep disordered breathing (SDB)? How common are they?
2.Does treating SDB influence cardiovascular disease?
3.What are the clinical practice implications for patient management?

Cardiovascular Disease and Sleep Apnea

Epidemiology

SDB prevalence in US: 15 million adults (24% for men, 9% for women) (in Japan, men=3%, women=0.5%)
1 in 5 has some degree of OSA (AHI>5/hour)
1 in 15 with mod-severe OSA (AHI>15/hour)
only ~15% are referred for evaluation

CSA Prevalence in general population is 0.5-2%, more in older population, diabetes, CHF

CVD Prevalence (MI, angina, CHD) in US =6.5%, with 4% MI

Both SDB and CVD are relatively common occurrances

Association between Sleep Disordered Breathing & Cardiovascular Disease

Cardiovascular conditions associated with SDB

-**Congestive Heart Failure**
- Systolic Dysfunction
-Diastolic Dysfunction
-**Stroke**
-**Hypertension**
- Left Ventricular Hypertrophy
- Pulmonary Arterial Hypertension
-**Arrhythmias**
-Tachyarrhythmias
- Ventricular Tachycardia and Fibrillation; Sudden Cardiac Death
- Atrial Fibrillation
-Bradyarrhythmias

Association between Sleep Disordered Breathing & Cardiovascular Disease

Cardiovascular conditions associated with SDB

Congestive Heart Failure:
- "45/45 rule": SDB is present in 45% of patients with LVEF<45%
- In CHF, most SDB is Central Sleep Apnea/Cheyne-Stokes Respiration, although 11-37% is OSA
- higher frequency of OSA in diastolic dysfunction (~50%)

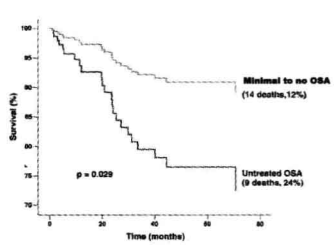
Somers et al. Circulation 2008 *Minoguchi et al. AJRCCM 2007*
Yaggi et al. NEJM 2005 *Shahar et al. AJRCCM 2001*

Does OSA Influence Survival in CHF?

- 164 patients with CHF
- Polysomnography showed OSA or (minimal to no SA)
-baseline cardiovascular characteristics similar in those with OSA/M-NSA
-f/u for 2.9±2.2 years

•Severe OSA associated with higher mortality (8.7 deaths/100 pt-years) than mild or no OSA (4.2)

•CPAP treatment of severe OSA tended to reduce mortality (p=0.07)



- OSA increases mortality in CHF;
- CPAP might reduce mortality

Wang et al. JACC, 2007

Association between Sleep Disordered Breathing & Cardiovascular Disease

Cardiovascular conditions associated with SDB

CHF:
- SDB is present in 45% of patients with LVEF<45%
- In CHF, most SDB is CSA, although 11-37% is OSA
  - rare daytime somnolence
  - male > female prevalence
  - higher frequency of OSA in diastolic dysfunction (~50%)

Stroke:
- In patients with stroke, 17% have OSA, 21% with CSA
- up to 62% of TIAs are associated with SDB
- conversely, 25% of those with moderate OSA have MRI-proven CVA vs. 6% of control group without SDB

Somers et al. Circulation 2008 *Minoguchi et al. AJRCCM 2007*
Yaggi et al. NEJM 2005 *Shahar et al. AJRCCM 2001*

Risk of Stroke or Death in OSA (primary risk)

Observational cohort study of subjects referred for SDB
Control: AHI~2 (n=325)
OSA: AHI~35 (n=697)

After adjusting for other factors, baseline OSA was the ONLY factor that predicted stroke-free survival.

OSA predicts increased risk of CVA or death of any cause (~2X higher), independent of other risk factors

Table 2. Unadjusted and Adjusted Hazard Ratios for the Risk of Stroke or Death from Any Cause.*

Covariable	Unadjusted Hazard Ratio (95% CI)	Adjusted Hazard Ratio (95% CI)
Age (yr)	1.09 (1.06–1.11)	1.08 (1.06–1.11)
Male sex	0.99 (0.62–1.60)	0.78 (0.48–1.28)
Race		
White (reference group)	1.00	1.00
Black	0.96 (0.59–2.38)	0.98 (0.59–2.46)
Other	0.91 (0.41–1.98)	0.94 (0.43–2.05)
Body-mass index	0.93 (0.97–1.02)	0.99 (0.96–1.02)
Current smoker	1.21 (0.90–1.64)	1.46 (0.78–2.98)
Current consumption of alcohol	1.03 (0.86–1.22)	0.94 (0.75–1.18)
Diabetes mellitus	1.58 (1.02–2.59)	1.33 (0.76–2.26)
Atrial fibrillation	1.56 (0.78–3.12)	0.91 (0.45–1.86)
Hyperlipidemia	1.04 (0.64–1.68)	1.01 (0.61–1.66)
Hypertension	1.48 (0.95–2.28)	1.19 (0.75–1.90)
Obstructive sleep apnea–hypopnea	2.24 (1.39–3.56)	1.97 (1.22–3.18)

* Hazard ratios were adjusted for all other covariates in the model. CI denotes confidence interval.

*SDB is independent risk factor for **mortality** after CVA (secondary risk)
*5% increase in total mortality for each unit increase in AHI

Yaggi et al. NEJM 2005　　Parra et al. EurRespir J 2004

Association between Sleep Disordered Breathing & Cardiovascular Disease

Cardiovascular conditions associated with SDB

HTN:
- Among those with SDB, 50% have HTN;
- Similarly, in mainland China, 56.2% of those with SDB have HTN
- conversely 30% of those with HTN have SDB (only 15% are diagnosed).
- In refractory HTN (3 drugs), 83% have OSA
- OSA is an independent risk factor for HTN

Chen, He. Chin J TubercRespir Dis 2007
Somers et al. Circulation 2008
Sorajja et al. CHEST 2008

Do Patients with SDB Develop Hypertension?

Wisconsin Sleep Cohort Study; n=709
8 year follow up for development of HTN
45% women
Avg. age = 45 years
BMI=29
Follow up for 4 years

Worsening SA

TABLE 3. ADJUSTED ODDS RATIOS FOR HYPERTENSION AT A FOLLOW-UP SLEEP STUDY, ACCORDING TO THE APNEA–HYPOPNEA INDEX AT BASE LINE.*

Base Line Apnea–Hypopnea Index	Odds Ratio, Adjusted for Base Line Hypertension Status	Odds Ratio, Adjusted for Base-Line Hypertension Status and Nonmodifiable Risk Factors (Age and Sex)	Odds Ratio, Adjusted for Base-Line Hypertension Status, Nonmodifiable Risk Factors, and Body-Mass Index (BMI) and Waist and Neck Circumference†	Odds Ratio, Adjusted for Base-Line Hypertension Status, Nonmodifiable Risk Factors, Habitus, and Weekly Alcohol and Cigarette Use
	Odds ratio (95% confidence interval)			
0 events/hr‡	1.0	1.0	1.0	1.0
0.1–4.9 events/hr	1.66 (1.18–2.33)	1.65 (1.18–2.34)	1.42 (1.14–1.78)	1.42 (1.13–1.79)
5.0–14.9 events/hr	2.74 (1.82–4.12)	2.71 (1.78–4.14)	2.09 (1.29–3.39)	2.09 (1.29–3.37)
≥15.0 events/hr	4.64 (2.46–8.76)	4.47 (2.37–8.45)	2.89 (1.47–5.69)	2.89 (1.46–5.61)
P for trend§	<0.001	<0.001	0.002	0.002

*Hypertension was defined as a blood pressure of at least 140/90 mm Hg or the use of antihypertensive medications. Data on 593 follow-up sleep studies from 709 participants were analyzed. The odds ratios and confidence intervals were adjusted for the fact that 184 participants completed two follow-up sleep studies. BMI denotes body-mass index.
†This category served as the reference group.
‡P values are for the linear trend of the logistic regression coefficient (log of the odds ratio).

The presence of SDB was predictive of HTN within 4 years, even with mild disease and accounting for several other factors

Peppard et al. NEJM 2000

Link between OSA and Cardiovascular Disease

TABLE 1
UNIVARIATE RELATION OF THE APNEA–HYPOPNEA INDEX (AHI) TO VARIOUS CHARACTERISTICS AND PREVALENT CARDIOVASCULAR DISEASE

Variable (*mean* or %)	AHI Quartile I	II	III	IV	
Quartile range	0–1.3	1.4–4.4	4.5–11.0	>11.0	
Age, yr (mean)	61	63	65	66	
Race, % white	78	79	78	77	
Sex, % female	70	57	49	35	
Body mass index, kg/m² (mean)	25.9	27.7	29.3	30.9	
Smoking status, % never smoked	49	48	44	43	
Total cholesterol, mg/dl (mean)	203	208	207	205	
HDL cholesterol, mg/dl (mean)	54	50	48	46	
Diabetes, %	6	9	11	15	
Self-reported hypertension, %	30	35	42	46	
Systolic blood pressure, mm Hg (mean)	126	130	132	133	
Use of antihypertensive medications, % using	32	36	43	50	
Prevalent cardiovascular disease, *n* (%)	163 (11)	205 (14)	303 (20)	352 (23)	
Prevalent coronary heart disease, n (%)	134 (9)	166 (11)	248 (16)	290 (19)	*
Prevalent heart failure, n (%)	13 (0.9)	22 (1.5)	38 (2.5)	50 (3.3)	*
Prevalent stroke, n (%)	35 (2.3)	47 (3.1)	70 (4.6)	80 (5.3)	*

Definition of abbreviation: HDL = high-density lipoprotein.
*p<0.05 for linear trend

-Sleep Heart Health Study
- 6,424 patients with PSN; association study
- 1023 (16% overall) with self-reported Cardiovascular Disease, stratified by AHI

How about Cardiovascular Mortality?

Shahar et al. Am J RespirCrit Care Med. 2001

OSA as Predictor of Cardiovascular Mortality in CAD

- 69 patients with CAD stratified by OSA +/-
- 5 year follow-up
- No difference in age, gender, BMI, smoking, HTN, DM.

TABLE 4
OUTCOME VARIABLES DURING A 5-yr FOLLOW-UP PERIOD*

Variable	OSA (+) (*n* = 16)	OSA (−) (*n* = 43)	p Values
Myocardial infarction, n (%)	5 (31.3)	8 (18.6)	NS
Stroke, n (%)	1 (6.3)	5 (11.6)	NS
Mortality, n (%)(all cardiovascular)	6 (37.5)	4 (9.3)	0.018

Definition of abbreviation: NS = not significant.
* Comparison of groups by Fisher exact test (two-tailed).

Cardiovascular mortality is 4 fold greater in CAD patients who also have OSA

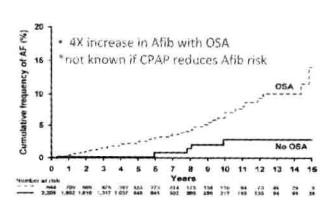
Peker et al. AJRCCM 2000

Association between Sleep Disordered Breathing & Cardiovascular Disease

Cardiovascular conditions associated with SDB

Arrhythmias:
- In patients with Afib, 49% have OSA vs. 33% in a control group presenting to a general cardiology practice (conversely in patients with SA, 20% have atrial fibrillation)
- After cardioversion for Afib., persistent OSA doubles chance of recurrent afib to 80%

- 3542 adults < 65 y.o.
- PSN at baseline
- New onset AF over average of 4.7 years follow-up



Bradley et al. Lancet 2009
Garrigue et al. Circulation 2007
Gami et al. JACC 2007
Caples et al. Prog. Card. Dis. 2009

Association between Sleep Disordered Breathing & Cardiovascular Disease

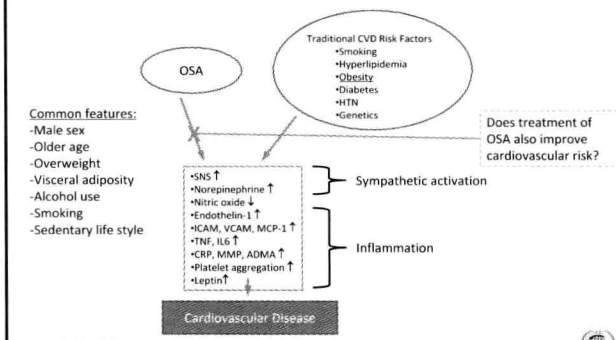
Cardiovascular conditions associated with SDB

Arrhythmias:

- In patients with Afib, 49% have OSA vs 33% control group presenting to a general cardiology practice
  - OSA is risk factor for Afib even correcting for other risk factors (in patients <65 years of age) Association much stronger for CSA
  - nocturnal arrhythmias in 50% of OSA (vs. 10% without): NSVT, 2nd degree AVB, PVC's
  - 59% of patients with pacemakers have SDB (improved with Chronic Resynchronization Therapy [biventricular pacing])
  - It is controversial if there is an increased prevalence of bradyarrhythmias, but when present, they do resolve with treatment of OSA

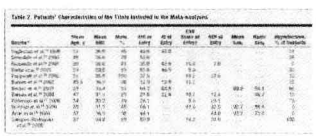
Bradley et al. Lancet 2009 *Gami et al. JACC 2007*
Garrigue et al. Circulation 2007 *Caples et al. Prog. Card. Dis. 2009*

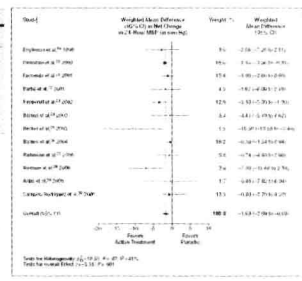
Pathophysiological Link Between OSA and CVD



adapted from: Schulz et al. Deut Arzteblatt 2006

Does Treatment of OSA Improve HTN – a meta-analysis





- Meta-analysis of 12 RCTs
- 572 patients
- 24-hour ambulatory monitoring
- Intervention: CPAP

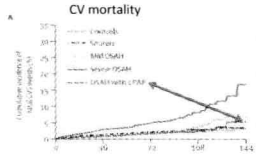
- CPAP reduces 24 hour mean BP, most in those with the worst OSA
- ~0.9 mmHg drop in mBP for every 10 point increase in AHI at entry
- Typical results would predict a reduction in coronary events by 37% and CVA by 56%.

Haentjens et al. Arch. Int. Med. 2007

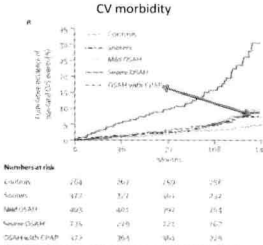
Does Treatment of OSA Reduce Cardiovascular Events?

Observational study of >1600 subjects with graded SDB
Yearly f/u for >10 years
Endpoints: MACE (CV death, Myocardial infarction, Stroke, coronary bypass surgery, coronary stenting)

CV mortality



CV morbidity



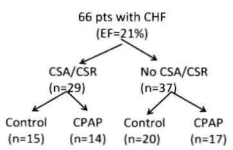
Perspective:
CV event rate/yr

Framingham	3.8±2%
Controls	4.1±3.2%
Severe OSAH	10.8±6.8%

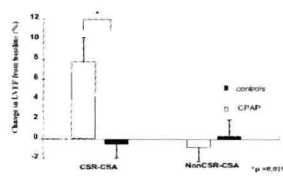
Severe OSAH increased risk of events
fatal: OR: 2.87
nonfatal: OR: 3.17
**CPAP improves CVD event rate and mortality

Marin et al. Lancet, 2005

Does Treatment of CSA Improve Ventricular Function Severe Heart Failure?



-RCT with OSA excluded
-Baseline characteristics of control and CPAP groups were similar except:
- +CSA/CSR group had more:
  - males (100 vs 78%)
  - -ischemic CM (83 vs 49%)
  - -AHI (39 vs 7)



- LVEF evaluated at 3 months
- Mortality/cardiac transplant assessed at 2.2 years

CPAP improves LVEF in patients with CHF and Central Sleep Apnea, but not in CHF patients without CSA

Sin et al. Circulation, 2000

Does Treatment of CSA Improve Survival in Severe Heart Failure?

Survival in CHF with/without CSR/CSA

Figure 2. Transplant-free survival in CHF patients with CSR-CSA was significantly worse than in those without CSR-CSA, independent of the use of CPAP.

Effect of CPAP on survival in CHF with CSR/CSA

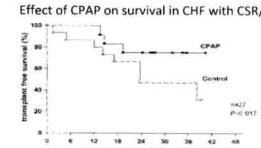


Figure 4. In CHF patients with CSR-CSA, treatment analysis revealed that transplant-free survival was significantly greater in patients randomized to CPAP who complied with therapy than in control subjects.

- CSR/CSA portends a worse survival in CHF which is improved by CPAP
- In patients with CHF but no CSR/CSA, CPAP had no effect on LVEF or survival

- To see a mortality benefit it is critical to reduce AHI to near normal levels

Arzt et al. Circulation 2007

Sin et al. Circulation, 2000

Systemic Benefits of Treating Sleep Apnea

Jean-Louis et al. J Clin Sleep Med 2008

Summary and Recommendations

Sleep Apnea is pathophysiologically and clinically linked to Cardiovascular Diseases including
- stroke
- arrhythmias (Sudden Death, atrial fibrillation, PVC's, NSVT)
- atherosclerosis
- hypertension
- heart failure

A variety of observational studies (although not all) show that treatment of sleep disordered breathing, improves cardiovascular risk factors and reduces major adverse cardiovascular events

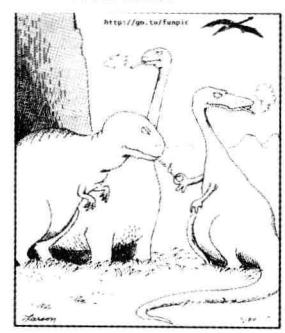
Clinical Implications and Caveats
- Pts. with OSA and HTN should be aggressively treated for risk factors and screening for CAD considered. (43% will have significant disease)
- CPAP for treatment of CSA in CHF is not yet well-established. A successful titration to reduce AHI to near normal values may be necessary to improve mortality.
- Snoring alone does not increase risk of cardiovascular disease.

Summary and Recommendations

- Who should be screened for SDB (high risk groups):
  - CHF, CAD, HTN, atrial fibrillation, if with one of the following:
    - hypersomnolence
    - witnessed apneas
    - obesity
  - nocturnal angina
  - pacemaker patients
  - Sudden Cardiac Death episode during sleep

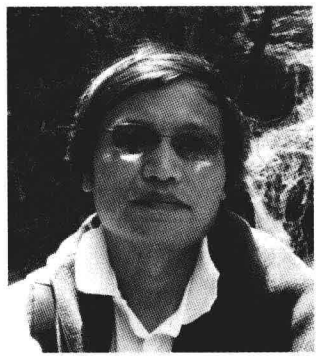
- Patients with OSA and HTN should be considered for treated with CPAP *independent of daytime sleepiness* (the anticipated 2-10 mmHg drop in BP translates to a 10-50% reduction in mortality and serious cardiovascular morbidity, based on pharmacological treatment of HTN) This is based on observational studies and conflicts with several smaller prospective studies.

The End



The Real Reason Dinosaurs Became Extinct

个人简介



Renli Qiao, MD, PhD, FCCP

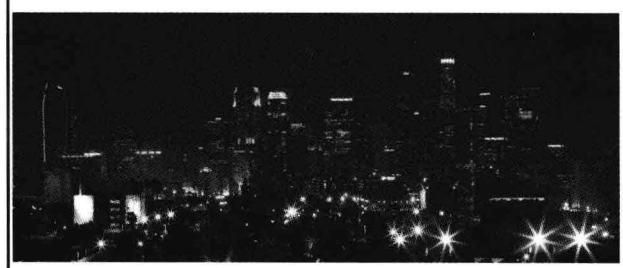
Dr. Renli Qiao is an Associate Professor of Clinical Medicine at Department of Medicine, Keck School of Medicine, University of Southern California in Los Angeles, California, USA. He received his MD in Shanxi Medical College and his PhD in Peking Union Medical College. He is one of the very few with quadruple Board Certifications in Internal Medicine, Pulmonary Diseases, Critical Care and Sleep Medicine. He is a Fellow and a member of Executive Committee of American College of Chest Physicians. His research interest is in pulmonary hypertension and phenotypic transdifferentiation of alveolar epithelial cells. He spends his spare time in Chinese writing and enjoys a wide readership with his series of "As a Doctor in America" which appears regular in an oversea internet-based magazine.

COPD and Pulmonary Hypertension

RenliQiao, MD, PhD, FCCP

Associate Professor of Clinical Medicine
Diplomat,
Pulmonary, Critical Care, Sleep Medicine
Keck School of Medicine
University of Southern California
Los Angeles, CA

CHEST



Night Skyline of Los Angeles

CHEST

Why discuss?

1. Pulmonary hypertension in COPD and ILD. Weitzenblum E et al. SeminRespirCrit Care Med 30:458-470, 2009
2. PHTN in pts with COPD. Barbera JA, Blanco I. Drugs. 1153-71, 2009
3. Rt heart function in COPD. MacNee W. SeminRespirCrit Care Med. 31:295-312, 2010
4. PHTN in COPD. Minai OA et al. Chest. 137:39S-51S, 2010

CHEST

Hypoxic Pulmonary Vasoconstriction

Von Euler, US Liljestrand, G

(1946). "Observations on the pulmonary arterial blood pressure in the cat". *Acta Physiol. Scand.* **12** (301–320)

CHEST

The Early Report of CorPulmonale

WHO. Chronic corpulmonale: a report of an expert committee. WHO Tech Rep Ser. 213:35, 1961

CHEST

Harrison's Principles of Internal Medicine

Corpulmonale, often referred to as *pulmonary heart disease*, is defined as dilation and hypertrophy of the right ventricle (RV) in response to diseases of the pulmonary vasculature and/or lung parenchyma that are sufficient to cause**pulmonary hypertension**.

CHEST

Harrison's Principles of Internal Medicine

Many of the signs that are encountered in corpulmonale are also present in HF patients with a depressed EF, including:

1. tachypnea
2. **elevated JVD, hepatomegaly**
3. **peripheral edema.**

CHEST

The Natural History of COPD

COPD

⬇

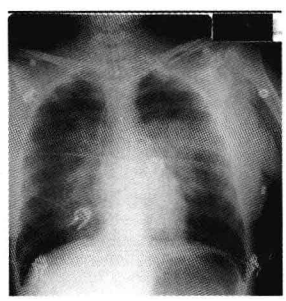
Pulmonary Hypertension

⬇

CorPulmonale
(RHF, peripheral edema)

CHEST

Pulmonary Arterial Catheterization



CHEST

Pulmonary HTN in COPD

- In COPD pts (120) evaluated for LVRS
- FEV1 = 27% predicted
- **In 91%, mean PAP > 20 mmHg**
- In 5%, PAP > 35 mmHg
- Poor correlation between PFT and PAP
- PAP correlated with occlusion pressure (air trapping vs LV dysfuntion)

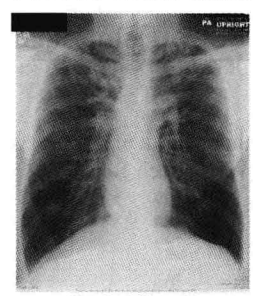
Scharf SM et al, AJRCCM 166:314-22, 2002

CHEST

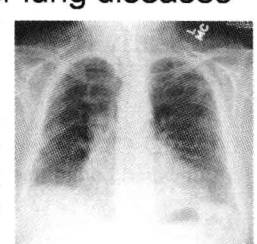
Why should a mild PHTN cause RHF in COPD?

CHEST

PHTN from other lung diseases



Cystic Fibrosis



Idiopathic Pulmonary Fibrosis

CHEST