P293 IS OBSTRUCTIVE SLEEP APNOEA A RISK FACTOR FOR CHRONIC KIDNEY DISEASE?

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Background Obstructive sleep apnoea (OSA) is associated with intermittent hypoxaemia which leads to activation of a number of pathways including oxidative stress, sympathetic nervous system, endothelial dysfunction and inflammation. These in turn lead to hypertension and atherosclerosis. There is some evidence that the same process may predispose to renal dysfunction. In this retrospective study, we compared a group people with hypertension and OSA on continuous positive airways pressure therapy (CPAP) with matched control group not known to have OSA.

Method Patients with known OSA and controls matched for age, sex and BMI were selected retrospectively from a hypertension clinic database. The two groups were compared using the following parameters: mean 24-hour systolic blood pressure (SBP, mmHg), mean serum creatinine (micromol/l) and mean urine albumin/creatinine ratio (ACR, mg/mmol).

Results Forty-nine patients were identified with confirmed OSA on CPAP. 6 were excluded due to insufficient data. Of the 43 remaining patients 35 were male, the mean age was 53.5 years and the mean BMI was 34.6 km/m². The mean SBP was 143 in patients versus 135 in controls ($p = 0.04$). The mean serum creatinine was 94.0 in patients versus 93.4 in controls ($p = 0.45$). The mean ACR was 2.50 in patients versus 0.63 in controls ($p = 0.031$).

Conclusion This retrospective case-control study shows a higher prevalence of hypertension and proteinuria in patients with treated OSA when compared with controls matched for age, sex and BMI. OSA in the patients may not have been adequately treated. There may have been undiagnosed OSA in the controls. Patients' higher proteinuria may have been caused by their more severe hypertension. Causation is not proven. However this study raises the possibility that OSA might predispose to chronic kidney disease. A larger, prospective study might confirm this finding and provide information on causation.

P294 FACTORS AFFECTING CPAP COMPLIANCE

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Rationale Due to the nature and sensation of CPAP, not all patients comply with the treatment. Factors such as age, degree of sleepiness, health status, BMI and sleep apnoea severity may influence CPAP adherence. We sought to determine if these and other factors, particularly socioeconomic status, influence CPAP compliance of our patients.

Methods Demographic data (including age, sex, race and BMI), Epworth Sleepiness Score, Oxygen Desaturation Index (ODI; Desaturations/hour >4% SpO₂) and prescribed CPAP were retrospectively collected from all patients who had been issued CPAP between 2009 and 2013. In addition, the Index of Multiple Deprivation (IMD) Score and Rank were retrieved from the

Abstract P294 Table 1 Statistical comparisons between CPAP compliers and non-compliers. A better socioeconomic status is indicated by a lower IMD Score and a higher IMD Rank value. Age is presented as the median (range), sex and race are presented as % dominant trait and all other data are presented as median (IQR)

Demographic	Compliers (n = 287)	Non-Compliers (N=120)	p value
Age (years)	51 (20–84)	52 (24–76)	ns
% Male	80.5	72.5	ns
% Caucasian	82.2	82.5	ns
BMI (kg/m ²)	37.2 (32.2, 42.1)	34.6 (29.9, 40.2)	0.02
Epworth	14 (11, 17)	12 (9, 17)	0.02
ODI	20.9 (16.1, 57.8)	19.9 (10.8, 45.2)	< 0.01
CPAP (cmH ₂ O)	12 (10, 12)	11 (10, 12)	ns
IMD Score	25.2 (15.3, 44.2)	29.2 (17.6, 47.9)	ns
IMD Rank	10527 (3344, 17818)	8695 (2594, 15936)	ns

www.neighbourhood.statistics.gov.uk website. These parameters were then compared between CPAP “compliers” (≥ 4 hrs/night and ≥ 4 nights/week) and “non-compliers” (< 4 hrs/night or < 4 nights/week).

Results We obtained complete data from 407 patients over the four years period. Compliance was achieved in 70.5% of patients. CPAP compliers had significantly worse sleep apnoea (ODI), degree of sleepiness (Epworth) and a higher BMI (Table 1);

Conclusions Our data show a good level of compliance compared to previous reports (Shapiro *et al.* *Sleep Breath* 2010; 14: 323–25) and patient adherence at 12 months is better than previously reported (Bollig. *Respir Care* 2010; 55: 1230–9). Although ODI, Epworth and BMI were significantly higher in the CPAP compliers, the differences were only modest. Among the demographics tested, none seem to have a major influence on CPAP compliance in our cohort of patients.

P295 PATIENTS' PREFERENCE OF ESTABLISHED AND EMERGING TREATMENTS FOR OBSTRUCTIVE SLEEP APNOEA

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Background Obstructive sleep apnoea (OSA) is the most common form of sleep-disordered breathing, and the standard treatment is continuous positive airway pressure (CPAP). Emerging treatments for OSA, including electrical hypoglossal nerve stimulation (HNS) and non-invasive electrical stimulation (nES), are currently being developed. To involve patients in the development of research projects, we evaluated patients' preference for different treatments of OSA using a short survey.

Patients and methods We recorded patients' age, gender, body-mass-index (BMI), Epworth Sleepiness Scale (ESS), Functional Outcomes of Sleep Questionnaire (FOSQ10), severity of OSA, and current treatment. We showed pictures of existing (CPAP, mandibular advancement device (MAD)) and emerging treatments (HNS and nES). We then asked 1) whether they were

interested in further information about HNS/nES, 2) if they would be willing to try HNS/nES, and 3) if they were to choose only one of the four listed treatments, which one would they prefer to use every night.

Results 162 patients completed the survey (81 males, mean age 52 (12) years, BMI 34 (7.3) kg/m², ESS 10.2 (6.0) points, FOSQ10 28.5 (8.1) points). The majority of the respondents (89.5%) had been diagnosed with OSA, with 95.4% of those being treated with CPAP. 91.3% of the respondents were interested in more information and were willing to try HNS/nES. Most respondents preferred the potential use of nES (56.7%), while 21.7% chose HNS, 17.8% CPAP, and 3.8% the MAD. There were no differences in the characteristics of the patients who preferred nES compared to those who preferred other treatments; however, a regression analysis showed that a low ESS score was a predictor of patients choosing nES ($p < 0.05$).

Conclusion Although the CPAP is the established treatment for OSA, most patients would prefer alternatives for long-term treatment. The majority of the respondents were interested in emerging technologies, with less sleepy patients more likely to choose less invasive treatment options.

P296 EFFECTIVENESS OF ADAPTIVE SERVO VENTILATION IN THE TREATMENT OF CENTRAL SLEEP APNEA

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Background Adaptive Servo Ventilation (ASV) was developed to treat Central Sleep Apnea in patients with heart failure, which is usually associated with a low or normal PaCO₂. The aim of ASV is to stabilise rather than increase overall ventilation. Evidence is limited regarding the use of ASV not only in heart failure patients but central sleep apnea of other aetiologies. The current study therefore explored this therapy in a regional sleep centre in the UK.

Method A retrospective review of the outcomes of 42 patients who were treated with ASV between January 2012 and December 2013, either following conventional positive airway pressure (PAP) or as an initial therapy. Measurements included the Apnea Hypopnea Index (AHI), compliance (measured by hours of machine use/night) and subjective sleep quality, pre and post ASV.

Results All patients demonstrated evidence of central sleep apnea with a reduced or normal transcutaneous CO₂ during daytime spontaneous ventilation. Seven patients (16%) met the criteria for complex sleep apnea. 16 (38%) had evidence of heart

Abstract P296 Figure 1 AHI pre and post the use of ASV

failure whilst opioids were in use in six patients (14%). The majority of patients, ($n = 36$, 86%), were on PAP prior to ASV (mean duration 2.4 years), 22 patients (53%) were on Bi-level and 14 (33%) were on CPAP. Six patients (14%) had ASV as an initial therapy. The mean AHI improved from 31.7/h (range 2–84/h) to 5.1/h (Range 0–50/h) with ASV [Figure 1]. Compliance improved from 5.2 h/night to 6.4 h/night with ASV. 22 patients (52%) reported a subjective improvement in their sleep quality using ASV.

Conclusion ASV appeared superior to traditional PAP in improving AHI, compliance and sleep quality for patients with central sleep apnea of various aetiologies.

From hospital to home: NIV in clinical practice

P297 EFFECT OF BTS-RECOMMENDED MEDICAL LEADERSHIP ON THE "DOOR-TO-MASK" TIME OF ACUTE NON-INVASIVE VENTILATION (NIV) SET UPS

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Introduction NIV is now part of standard acute care in the UK. "Door-to-mask" time has been discussed as a performance/quality indicator of acute NIV services [Mandal S *et al.* *Thorax*, 66(4). A117]. We compare the "Door-to-mask" time by analysing the "% of patients receiving NIV within 3 h" of diagnosis of acute hypercapnic respiratory failure (AHRF) at two acute hospitals in central England: Hospital A, which appointed a Lead NIV consultant in 2009–10 as per BTS recommendations and Hospital B without a Lead consultant. Both hospitals are run by the same Trust and on call physiotherapy teams, with comparable acute catchment sizes.

Methods The survey was approved as an audit by the Trust's Clinical Standards Committee. Data was taken from the acute NIV database, maintained continuously since 2004 at Hospital A and since 2009 Hospital B as part of a drive to maintain built-in quality. All acute NIV episodes between 01/10/2010–01/04/2011 (period 1) and 01/10/2012–01/04/2013 (period 2) were included: 458 episodes (27 excluded – incomplete data).

Results In period1, the "% of patients receiving NIV within 3 h" of diagnosis of AHRF were 69.9% at Hospital A and 69.49% at Hospital B. In period2, Hospital A improved to 82% with Hospital B at 71.1%. The most significant improvement, however, was in the reduction of variance around the median "Door-to-mask" time of 1.55 h at Hospital A and 1.83 h at Hospital B on the Probability Density curves, also seen over other periods outside the ones studied.

Conclusions The service at Hospital B did not show any measurable improvement in 'door-to-mask time' between periods1 and 2 but Hospital A did. As there were no significant differences like the demography, work load, frequency of on calls or number/grades of staff between the periods 1 and 2, this improvement could be a reflection on the role of a Lead NIV consultant at Hospital A as per BTS recommendations. Furthermore, reduction of variance around the median "Door-to-mask" time is observed to be a consistent feature of the improvement, which