in the lower airways of patients with COPD, healthy non-smokers and smokers.

Methods Bronchial wash samples were collected from patients with COPD (GOLD 1–3; n = 18), healthy non-smokers (HV; n = 11) and healthy smokers (HS; n = 8). Samples were processed using the Illumina MiSeq platform. The Shannon-Wiener Index (SW) of diversity, lung obstruction (FEV1/FVC ratio) and obesity were assessed using the Illumina MiSeq platform. The Shannon-Wiener Index (SW) of diversity was significantly lower in COPD samples compared to samples from HV and HS (p = 0.009 and p = 0.033, respectively). There was no difference in taxa richness between samples was related. Principal component analysis (PCA) was performed to assess the effect specific taxa had within each cohort. Characteristics of each cohort are shown in Table 1.

Results There was no difference in taxa richness between cohorts (range: 69–71; p = 0.954). Diversity (SW Index) was significantly lower in COPD samples compared to samples from HV and HS (p = 0.009 and p = 0.033, respectively). There was no significant difference between HV and HS (p = 0.186). The FEV1/FVC ratio was significantly lower for COPD compared to HV (p = 9*10^-6) and HS (p = 2*10^-6), respectively. NMDS analysis showed that communities belonging to either of the healthy groups were more similar to each other than they were to samples belonging to the COPD group. PCA analysis showed that members of Streptococcus sp. and Haemophilus sp. had the largest effect on the variance explained in COPD. In HS, Haemophilus sp., Fusobacterium sp., Actinomyces sp., Prevotella sp. and Veillonella sp. had the largest effect on the variance explained, while in HV Neisseria sp., Porphyromonas sp., Actinomyces sp., Atopobium sp., Prevotella and Veillonella sp. had the largest effect on the variance explained.

Conclusions The study demonstrates that microbial communities in the lower airways of patients with COPD are significantly different from that seen in healthy comparison groups. Patients with COPD had lower microbial diversity than either of the healthy comparison groups, higher relative abundance of members of Streptococcus sp. and lower relative abundance of a number of key anaerobes.

The leading cause of COPD in developed nations is exposure to tobacco smoke. COPD is characterised by acute periods of exacerbation, which are often bacterial in aetiology. The direct effect of cigarette smoke on bacteria present in the COPD lung, and how this may drive disease progression, has not been determined. This preliminary study aimed to determine the effect of cigarette smoke extract (CSE) on the growth and antibiotic susceptibility of COPD bacterial lung pathogens.

Methods CSE was prepared as described previously. Briefly, smoke from one, two, three or four cigarettes was bubbled through 100 ml growth medium. Bacterial type strains (Pseudomonas aeruginosa, Moraxella catarrhalis, Streptococcus pneumoniae, Prevotella spp and Haemophilus influenzae) were inoculated into growth medium +/- CSE and incubated either aerobically or anaerobically (Prevotella spp). Total viable counts (TVC cfu/ml) were estimated from 0–48 hrs (aerobes) and 0–72 hrs (Prevotella spp). Changes in minimum inhibitory concentration (MIC) of antibiotics used in the treatment of respiratory infections were determined by E-Test®, in bacterial cultures exposed daily to CSE over 12 days.

Results The growth of P. aeruginosa, S. pneumoniae and H. influenzae were not completely inhibited by any concentration of CSE; however a reduction in growth rate at higher concentrations was observed. M. catarrhalis growth was completely inhibited by two cigarettes/100 ml growth medium. No difference in growth was observed between Prevotella spp +/- CSE. A marked increase in P. aeruginosa resistance to tetracycline and doxycycline was observed after repeated CSE exposure: resistance to tetracycline and doxycycline increased from 24 to >256 µg/ml, and 48–>256 µg/ml, respectively.

Conclusions The growth of principal bacteria isolated from COPD patients were not affected by concentrations of CSE utilised in this study, but changes in the susceptibility of P. aeruginosa to tetracyclines was observed. This increase in resistance may be mediated by efflux pump up-regulation, and may lead to cross-resistance with other antibiotics. Work currently underway aims to determine whether CSE induces other key phenotypic changes (virulence factor expression and/or biofilm production) which might enhance the pathogenicity of these bacteria in the presence of CSE and result in poorer outcomes for patients with COPD.

Sleep disordered breathing – assessment and treatment

RESULTS OF A NATIONAL SURVEY OF PRE-OPERATIVE SCREENING FOR OBSTRUCTIVE SLEEP APNOEA

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Introduction and objectives There is currently no UK guidance (from BTS, BSS or RCA) regarding screening for obstructive sleep apnoea in the pre-operative setting. Evidence suggests that undiagnosed OSA is associated with increased post-operative complications but no trials have examined whether screening the UK’s general surgical population is justifiable. We sought to examine current UK practice and opinion in this regard.

Methods A postal survey was sent to all 180 UK sleep service providers asking whether they had a hospital policy for pre-operative screening for OSA and what this consisted of. If there was no policy they were asked how pre-operative patients with suspected OSA were identified. Further details regarding diagnostic confirmation and opinion regarding practice were sought.

Results We received 84 replies. There is a spectrum of current practice amongst respondents. There were 31 centres (37%) with a policy for screening for OSA. Of these, 42% screened all patients with a questionnaire e.g. STOP BANG, 23% screened only patients undergoing certain operations, 13% screened patients with high BMI only. Of those with a policy who
estimated the number of referred patients, 60% saw more than >5 per month. Of centres with no policy only 26% estimated that they received >5 referrals per month. Without a policy 72% of referrals came from clinical suspicion alone.

Overall 96% of respondents felt that all patients at high risk of OSA should be screened for OSA. 56 respondents thought it would be ethical to randomise identified cases of OSA to a potential trial of peri-operative CPAP or no CPAP, compared with 40 who did not.

Conclusions There is no established UK standard practice for screening for OSA pre-operatively, despite a majority opinion amongst questionnaire responders that high risk patients should be. There would be cost implications if National pre-operative OSA screening was implemented and there therefore needs to be clear evidence based benefit before proceeding.

Methods

150 untreated OSAS patients (males-131) were randomised to either the repeatability (n = 50) or incentive arm (n = 100). All performed a simulator run, after initial acclimatisation. In the repeatability arm, patients performed the simulator run on two separate occasions with no knowledge of the results. In the incentive arm, patients performed the simulator run on two separate occasions but just prior to the second run were told about their performance and offered a prize if they could improve their performance by 10%.

SDLP in epoch 3 and “veer” reaction time (Veer-RT) were the co-primary outcome variables. Classification of patients into “pass”, “fail” and “indeterminate” were the secondary outcome variables. Results were analysed using paired and unpaired T tests with the level of significance set at p < 0.05.

Results 137 patients (repeatability arm-48, incentive arm-89) completed the trial. The median duration between the two simulator runs was 13 days (range, 5–53). SDLP in epoch 3 and Veer-RT were repeatable (P = 0.54, Δ SDLP 0.01 and P = 0.37, Δ Veer-RT 0.13) respectively. There was no effect of an incentive on SDLP in epoch 3 (P=0.18) and Veer-RT (P=0.57). There was no difference in the simulator outcome between the two runs [pass (P = 0.70), indeterminate (0.06), fail (P = 0.16)].

Conclusions SDLP and Veer-RT are consistent between runs on the MiniUoLDS and this is not affected by a simple incentive. Advanced office PC based simulators may be helpful when advising patients with OSAS about driving.