

Conclusions RC-time is not constant between health and pulmonary vascular disease. A reduction in RC-time, in the context of PAH, is associated with a decrease in cardiac efficiency. RVOF is lower in the NPH group compared to the PAH group. This implies better cardiac efficiency in the NPH group possibly due to less pulsatile loading of the RV. Haemodynamic assessments which include measures of compliance may be of utility in understanding the progression of right heart failure in PAH.

P172 PULMONARY HYPERTENSION IN IPF: UTILITY OF HRCT

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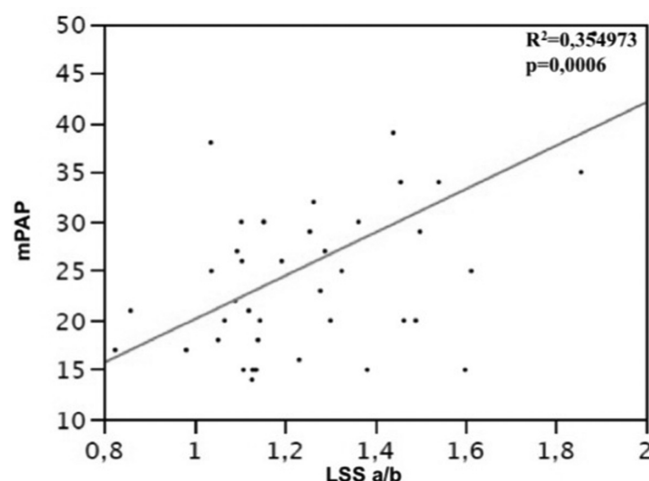
10.1136/thoraxjnl-2014-206260.301

Purpose To evaluate the reliability of HRCT-parameters suggesting Pulmonary Hipertension (PH) in a population of Idiopathic Pulmonary Fibrosis (IPF) patients with or without PH at right-sided-heart-catheterization.

Methods and materials The HRCT scans of 26 patients with IPF, underwent both right-sided-heart-catheterization and echocardiography, were retrospectively, blindly and independently, evaluated by one radiology resident and one experienced-radiologist (with a 10-years-experience in thoracic-radiology).

The diameter and area of Pulmonary Artery (PA), before its bifurcation, the diameter of ascending aorta and the mid antero-posterior-diameter of the thoracic vertebra, on the same CT-section, and the widest short-axis-diameters of four segmental arteries and bronchus, in both upper and lower lobes, were measured. The diameters of left ventricle and inferior vena cava, the presence of emphisema, pericardial effusion and hiatal hernia were also evaluated.

Results 15 out of 29 patients had PH at RHC. The HRCT parameters related to the *mean pulmonary artery pressure* (mPAP) were: the PA-area ($R^2=0.238079$; $p = 0.04$), the ratio of the PA-area to the ascending aorta diameter ($R^2=0.215345$; $p = 0.0524$) and above all the ratio of the diameter of segmental artery to the adjacent bronchus in the left upper lobe ($R^2=0.354973$; $p = 0.0006$).



Abstract P172 Figure 1 Linear regression between mean puhnorary artery pressure measured by right heart catheterization (mPAP) and the ratio of the diameter of segmental artery to the adjacent bronchus of the apicoposterior segment of the left upper lobe

The combination of *systolic pulmonary artery pressure* (sPAP), the PA-area at HRCT and the ratio of the diameter of segmental artery to the adjacent bronchus in the apicoposterior segment of the left upper lobe was strongly correlated to mPAP ($R^2=0.785163$; $p = 0.0001$). The contribution of other echocardiographic-parameters (longitudinal STRAIN and *Time-to-Peak STRAIN values*, TTP) in multivariate regression analysis was not statistically significant, probably because of the small number of patients.

Using the ROC Analysis we found that 931,6 is the *upper limit of normal* (ULN) for the PA-area, with a 86% sensitivity and 61% specificity (0.839 AUC); while 20.34 is the ULN for the ratio of the PA-area to the ascending aorta diameter, with a 100% sensitivity and 50% specificity (0.804 AUC).

Conclusion (S) HRCT remains an useful tool to identify patients with PH, however the combination of HRCT and echocardiography improves accuracy in PH diagnosis.

In the pleural zone

P173 AMBULATORY MANAGEMENT OF SPONTANEOUS PNEUMOTHORAX

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10.1136/thoraxjnl-2014-206260.302

Introduction There is no clear consensus on the management of Spontaneous pneumothorax. BTS recommends insertion of chest drain following failure of initial aspiration in large primary spontaneous pneumothorax (PSP) and in all patients with symptomatic/ large secondary spontaneous pneumothorax (SSP). These patients are usually admitted to hospital following chest drain insertion.

Objective To study the feasibility and safety of early discharge of spontaneous pneumothorax patients requiring chest drain on the ambulatory pathway with a Heimlich valve (pneumostat device).

Methods Patients were initially managed as per BTS guidelines. Patients who had a chest drain inserted were admitted until review by the respiratory team. All PSP patients and some SSP patients with good performance status (WHO scale 0–1) were eligible for the ambulatory pathway. Those with continuing air leak are fitted with a Heimlich valve and discharged home. They were reassessed every two days with a CXR on arrival in the ambulatory care unit. The chest drain was removed once the air leak stopped for at least 24 h.

Results 21 episodes of spontaneous pneumothorax in 18 patients (10 PSP and 8 SSP) were treated on the ambulatory pathway between May'13 and June'14. The healthcare usage of patients on ambulatory pathway is listed in the table. The pneumothorax resolved successfully in 82% (17 episodes). There were three recurrences requiring repeat management on the ambulatory pathway. A total of 10 patients were referred to the surgeon including four with continuing air leak and six due to

Abstract P173 Table 1

	Range	Average
Duration in hospital (days)	0–4	1.62
Duration in community (days)	1–12	3.28
Number of reviews	1–4	1.57

recurrence. Patients with continuing air leak remained in the community until admission for thoracic surgery. Complications included pain in two patients and allergic reaction to the dressing used in one patient. The patient with allergic reaction had accidental dislodgement of chest drain during dressing change necessitating reinsertion of chest drain.

Conclusion It is feasible for most patients with large PSP and many patients with SSP to be managed on an ambulatory care pathway with a Heimlich valve until their pneumothorax heals or is definitively treated.

REFERENCE

- 1 Fanny Voisin *et al.* Ambulatory management of spontaneous pneumothorax with pigtail catheters. <http://dx.doi.org.10.1016/j.annemergmed.2013.12.017>

P174 UTILITY OF NEEDLE ASPIRATION IN PATIENTS WITH PRIMARY SPONTANEOUS PNEUMOTHORAX WITH COMPLETE LUNG COLLAPSE: A RETROSPECTIVE 5-YEAR STUDY

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10.1136/thoraxjnl-2014-206260.303

Introduction Primary spontaneous pneumothorax (PSP) is a common presentation. Despite being known for over 200 years, there is variation in definition criteria and treatment recommendations. Previous studies comparing needle aspiration (NA) with intercostal drain (ICD) for all primary spontaneous pneumothoraces requiring intervention including those with complete lung collapse have shown no difference in immediate success, early failure and recurrence rate. There is no separate treatment algorithm for PSP with complete lung collapse in the current British Thoracic Society pneumothorax guidelines. We aimed to compare NA with ICD as the first intervention in this subgroup.

Methods We conducted a retrospective observational study of 735 consecutive pneumothorax episodes between March 2008 and December 2013. Those with secondary spontaneous pneumothorax, history of trauma and iatrogenic pneumothorax were excluded. Pneumothorax with no visible aerated ipsilateral lung on plain chest radiograph was defined as 'PSP with complete lung collapse'. Patient case records and plain chest radiographs were reviewed. Values of $p < 0.05$ were considered statistically significant.

Results Of the 735 episodes, 233 (32%) were PSP. 61 PSP patients were identified to have complete lung collapse on chest radiograph. 32 patients had NA and 29 ICD as the first intervention. There was no statistically significant difference between the two groups in terms of age, sex, smoking history and symptoms. Compared to the NA group, patients with ICD had significantly better immediate success rate (66% vs. 10%; $p < 0.0001$) and lower rate of recurrence (3% vs. 31%; $p = 0.0064$). Median length of stay was similar in both groups. Almost a third of the patients in both groups required a definitive surgical intervention.

Conclusion Our results suggest significantly better success with ICD as the first intervention in the management of PSP with complete lung collapse and there was no added benefit of NA. We propose a further sub group of PSP with complete lung collapse in which NA should not be attempted.

Abstract P174 Table 1

	NA as first intervention (n = 32)	ICD as first intervention (n = 29)	P value
Median age, years (IQR)	31 (25–39)	32 (26–36)	0.66
Male, n (%)	21 (66%)	22 (76%)	0.41
Right sided, n (%)	19 (59%)	18 (62%)	>0.99
Previous pneumothorax, n (%)	4 (13%)	5 (17%)	0.72
Smoking history			
Current/Ex, n (%)	26 (82%)	21 (75%)	0.54
Never, n (%)	3 (9%)	6 (21%)	0.29
Mean pack years, n (IQR)	9 (5–20)	12.5 (8.5–20)	0.49
Symptoms			
Chest pain, n (%)	26 (81%)	24 (83%)	>0.99
Dyspnoea, n (%)	27 (84%)	28 (97%)	0.20
Cough, n (%)	4 (13%)	8 (28%)	0.20
Median LOS, days (IQR)	6 (4–10)	9 (4–13)	0.19
Successful lung re-expansion, n (%)	3 (10%)	19 (66%)	<0.0001
Need for surgical intervention, n (%)	10 (31%)	10 (34%)	>0.99
Recurrence, n (%)	10 (31%)	1 (3%)	0.0064

Categorical variables shown as n (%), comparisons made with Fisher's exact test; continuous variables shown as median (25th – 75th percentile), comparisons made with Wilcoxon signed rank test.

P175 MEASUREMENT OF AIR LEAK POST-THORACIC SURGERY: IMPLICATIONS FOR MEDICAL MANAGEMENT OF PNEUMOTHORAX

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10.1136/thoraxjnl-2014-206260.304

Introduction Use of digital suction devices post-thoracic surgery is widespread, allowing patients to be more mobile and potentially reducing the time to chest drain removal post-op (in comparison with standard underwater seal).

Spontaneous pneumothorax (SP) is common (5,000/yr in the UK). However, there are no good predictors of outcome for patients with pneumothorax. Measurement of early air leak could potentially predict which patients who will not resolve spontaneously and will require surgery. Post-surgical data may provide an interesting analogy to ongoing air leak in spontaneous pneumothorax. The hypothesis is that reduction in air leak to <50 ml/min within 30 min of attachment can predict air leak over next 48 h and overall drain duration.

Methods Retrospective review of the use of digital suction device (Thopaz, Medela UK) post-op in the Thoracic Surgical department of a tertiary referral centre between May and December 2012. The detailed air leak measurements were assessed against duration of drainage.

Results Operations included 88 lung resections (wedge resections, lobectomies and metastasectomies via VATS and thoracotomy), 28 pleural procedures (VATS pleurodesis +/- bullectomy) and 12 empyema drainage/decortication. Average air leak over the entire duration was significantly different between the groups: 80.6 ml/min, 54.3 ml/min and 304.5 ml/min respectively ($p = 0.01$).

Patients with early reduction of air leak (i.e. reduced to <50 ml/min within the initial 30 mins) were compared to patients