

Abstract S93 Table 1 Studies assessing treatment response or survival using serial serum mesothelins during treatment

Author (year)	Treatment (no. of patients)	Outcome measure	Results
Hooper (2015)	P/C- 58 BSC- 15	Mod RECIST CT OS	Falling serum mesothelin following chemotherapy associated with longer time to progression ($p < 0.001$) and OS ($p = 0.031$).
Hassan (2014)	P/C & immuno-toxin- 20	Mod RECIST CT	Fall in serum mesothelin correlated with radiological response with 70% accuracy ($p = 0.003$).
Franko (2012)	G/C- 56, P/C- 9 EPP- 1, BSC- 4	Mod RECIST CT	Significantly lower mean serum mesothelin in partial response or stable disease compared to progressive disease ($p = 0.001$).
Hollevoet (2011)	P/C- 57 EPP-5	Mod RECIST CT	Partial response to chemotherapy correlated with a 34% fall in mesothelin ($p = 0.010$) compared to a 54% rise in progressive disease ($p < 0.001$).
Creaney, (2011)	Chemo- 61, Tri- 8, BSC- 25	Mod RECIST CT OS	Falling mesothelin was associated with better OS (19 months) compared to static (13 months) or rising levels (15 months). ($p = 0.001$).
Wheatley-Price (2010)	Chemo- 21, EPP-8, BSC- 13	Mod RECIST CT	Relative change in serum mesothelin from baseline ($> 10\%$) significantly associated with disease progression ($p < 0.001$).

P- pemetrexed C- cisplatin G- gemcitabine, Chemo- chemotherapy (not specified), BSC- best supportive care, EPP- extra-pleural pneumonectomy, Tri- trimodality. Mod RECIST CT- Modified Response Evaluation Criteria In Solid Tumors CT, OS- Overall survival.

Introduction and objectives Malignant pleural effusion (MPE) is a rapidly rising healthcare burden and critically hampers the patients' survival and quality of life. Current treatments aim to symptoms' palliation and talc pleurodesis remains a standard therapeutic modality. There is relatively little high quality research data in prediction of patients' survival and successful pleurodesis. Therefore prognostic and therapeutic biomarkers are desperately needed.

Aim To identify and validate novel prognostic and therapeutic biomarkers in MPE.

Methods Clinical data and pleural fluids from MPE patients, prior to treatment have been prospectively collected for TIME2 trial. According to the trial database patients have been classified in two different groups: survival cohort (poor, $n = 20$ /good, $n = 14$) and treatment outcome cohort (success, $n = 15$ /failure, $n = 11$). Pleural fluids on enrolment were assessed with mass spectrometry profiling after depletion of the 12 most abundant proteins. Full protein profile analysed with R software and ELISA technique was performed for the validation of the results. Pathway analysis on samples performed with Ingenuity Pathway Analysis software.

Results With the use of mass spectrometry we identified 1,154 proteins in the pleural fluid, 167 of which were statistically significant (two tailed T-Test, $p < 0.05$) between survival groups and 97 of which were statistically significant (two tailed T-Test, $p < 0.05$) between the pleurodesis groups. Analysis of the data (cross validated by 3 independent core bioinformatic groups) identified 10 survival and 3 pleurodesis biomarkers that were differentially expressed in the favourable prognosis and treatment

success group respectively. Exploration of the mass spectrometry data identified pathways that were upregulated on patients with favourable survival that could be used for targeted therapies.

Conclusions Based on unique database survival and therapeutic biomarkers were identified that can potentially stratify patients' management. The results are currently validated on a different retrospective dataset (TIME1 trial) and with a prospective clinical trial (SIMPLE study).

S95

AMBULATORY MANAGEMENT OF PNEUMOTHORAX: IS THERE A NEED FOR A DEDICATED PLEURAL TEAM-LED SERVICE?

A Fawzi, N Maddekar, S Khan, S Bikkalla, W Osman, U Maqsood, M Haris. *Royal Stoke University Hospital, Stoke-on-Trent, UK*

10.1136/thoraxjnl-2016-209333.101

Introduction Small, asymptomatic pneumothoraces may be managed as outpatients. Several studies show that small-bore catheters and Heimlich valves may be used in the treatment of pneumothoraces. A systematic review of the literature¹ showed successful outpatient management of pneumothorax. Despite good evidence to support ambulatory approach, there has been slow development of this service across the UK. We wished to assess the number of potential primary spontaneous pneumothorax patients that could be managed as outpatients in a large teaching hospital.

Methods Hospital attendances of pneumothorax at a large teaching hospital between 2012–2015 were reviewed. Type of

pneumothorax was characterised: primary spontaneous (PSP), secondary spontaneous (SSP), iatrogenic (IP) and traumatic/post-operative. The data for PSP was then correlated against the data retrieved from the systematic review of outpatient pneumothorax management.¹

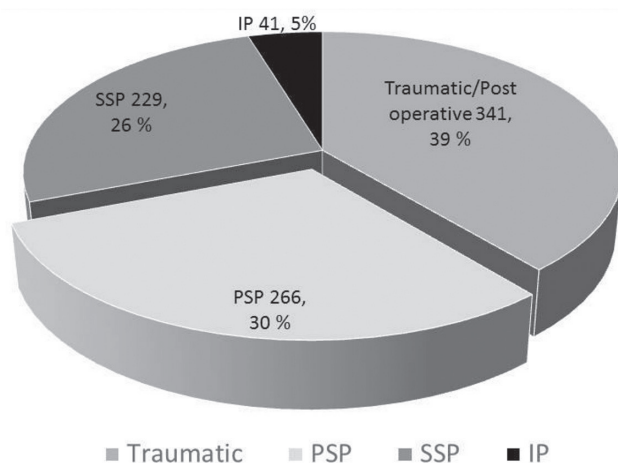
Results Total number of pneumothorax episodes were 877; PSP 266, SSP 229, IP 41 and traumatic/post-operative 341. Average length of stay (LOS) for all episodes of pneumothorax was 12.39 days. LOS for PSP was 6.9 days. Total number of hospital admissions for PSP (266/3 =) 88.7 patients/year. Extrapolated from systematic review¹: Successful outpatient PSP management (88.7*78% =) 77.1 patients/year. Potential bed days saved for PSP: (77.1*6.9 =) 532 beds/year.

Conclusions Studies show both spontaneous and iatrogenic pneumothorax may be managed safely as outpatients. Dedicated pleural services will result in correct stratification of patients requiring appropriate interventions. Ambulatory chest drains could be used and inserted by professionals trained in their use.

Advantages to patients: reduced need for hospital admission, greater patient autonomy, improved patient experience, no need to carry chest drain bottle, reduced likelihood of accidental dislodgement of chest drain, reduced time to discharge.

Advantages to trust: admission avoidance, early discharge, reduced costs, reduced complications from chest drain insertions, reduced hospital associated complications, optimised patient care with increased patient satisfaction.

Although we would not advocate the use of ambulatory pneumothorax devices in trauma patients, there is scope to establish whether they can be used post procedural (e.g. pneumothorax following pacemaker insertion).



Abstract S95 Figure 1

REFERENCE

- 1 Brims FJ, Maskell NA. Ambulatory treatment in the management of pneumothorax: a systematic review of the literature. *Thorax* 2013;**68**(7):664–9.

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COMPARATIVE OUTCOMES OF OUTPATIENT MANAGEMENT OF PRIMARY AND SECONDARY SPONTANEOUS PNEUMOTHORAX

FA Khan, RV Reddy, M Naem, Y Vali, I Masih, N Siddique. *Kettering General Hospital, Northamptonshire, UK*

10.1136/thoraxjnl-2016-209333.102

Introduction To compare the effectiveness of ambulatory management of primary (PSP) and selected secondary spontaneous pneumothoraces (SSP)

Methods Large PSP and selected SSP patients (WHO performance score 0–1) aged between 16–80 presenting between May 2013 and January 2016, were deemed eligible for the ambulatory pathway. They were reassessed every two days with a chest x-ray in the ambulatory care unit. The patients with Pneumostat™ valve (Atrium Medical Corporation) were taught to check for air-leak every day. Patient outcomes and complications were recorded. Patients with tension, iatrogenic or traumatic pneumothorax were excluded from the study.

Primary outcome measure

Success rate at day 5 defined as sustained complete re-expansion of lung with no air leak.

Secondary Outcome measures

Number of days spent with the chest drain in situ.

Complications like drain falling out, drain blockage, Infection
Number of patients requiring surgical treatment due to persisting air leak.

Results A total of 110 patients were reviewed with spontaneous pneumothorax, of which 54 were managed on the ambulatory pathway. (Table 1) The pneumothorax resolved successfully in 77% of the primaries pneumothoraces and 67% of the secondaries, with an overall resolution of 72%. In the PSP, five patients (16.7%) went on to have surgery due to non-resolution. Of the 24 SSP, eight (33.3%) patients went on to have surgery due to non-resolution. Complications other than pain were minimal. The mean duration of drainage was 3.8 days in PSP and 5.9 days in SSP. This compares well with the median drainage of 6–8 days for inpatient management of PSP (BTS guidelines).¹

Abstract S96 Table 1 Results

	PSP	SSP
Total number of patients	37	75
No. Eligible for Ambulatory pathway	37	41
No. treated on ambulatory pathway	30	24
Average age (range)	29.7	59.7
Sex (M:F)	25:5	16:8
Size of pneumothorax (L:S)	All large	23:1
Resolution at day 5	23 (76.7%)	16 (66.7%)
No. Requiring surgery due to non-resolution	5 (16.7%)	8 (33.3%)
Average Length of hospital stay (days)	0.6 (0–3)	1.08 (0–6)
Average duration of outpatient follow-up (range in days)	3.2 (1–11)	4.79 (1–14)
Number of reviews (range)	1.57 (0–5)	1.75 (1–4)

Conclusion The success rate was 72% for all spontaneous pneumothorax patients managed almost exclusively as outpatients, which compares well with the 78% suggested in the meta-analysis by Brimms and Maskell.² This study confirms that the use of chest drain with one-way valves in the ambulatory management of primary and selected secondary spontaneous pneumothoraces is safe with very few complications. This procedure clearly decreases the number of hospitalisation days and is thus cost saving.

REFERENCES

- 1 McDuff A. BTS pleural disease guidelines. *Thorax* 2010;**65**(Suppl II):ii1–ii76.
- 2 Brims FJ, Maskell NA. Ambulatory treatment in the management of pneumothorax: a systematic review of the literature. *Thorax* 2013;**68**(7):664–9.

Correction

Fawzi A, Maddekar N, Khan S, *et al.* S95 Ambulatory management of pneumothorax: is there a need for a dedicated pleural team-led service? *Thorax* 2016;71:A55–A56 doi:10.1136/thoraxjnl-2016-209333.101

There are 2 corrections to this abstract:

1. Two authors, Ganaie B and Iqbal M, were omitted from the original publication and has now been included, due to this the author list order has been updated. The corrected author list of this abstract should be as follows:

Fawzi A, Maddekar N, Ganaie B, Bikmalla S, Osman W, Maqsood U, Khan S, Iqbal M, Haris M.

2. Corrections have been made to the ‘Methods’ and ‘Results’ section of this abstract. The changes are in **bold**.

Methods

Hospital attendances of pneumothorax at a large teaching hospital between **2008–2015** were reviewed. Type of pneumothorax was characterised: primary spontaneous (PSP), secondary spontaneous (SSP), iatrogenic (IP) and traumatic/post-operative. The data for PSP was then correlated against the data retrieved from the systematic review of outpatient pneumothorax management.¹

Results

Total number of pneumothorax episodes were 877; PSP 266, SSP 229, IP 41 and traumatic/post-operative 341. Average length of stay (LOS) for all episodes of pneumothorax was 12.39 days. LOS for PSP was 6.9 days. **Total number of hospital admissions for PSP 266/7=38 patients/year. Extrapolated from systematic review 1: Successful outpatient PSP management 38×78%=29.64 patients/year. Potential bed days saved for PSP (29.64×6.9)=204 /year.**

Thorax 2017;**72**:262. doi:10.1136/thoraxjnl-2016-209333.101corr1

