

associated with this subgroup, to enable further understanding of why patients with non-draining effusion may have poor prognosis.

**Methods** Baseline demographics and pleural fluid (PF) characteristics of patients enrolled in TIME3 were compared to patients enrolled in TIME2,<sup>2</sup> a randomised controlled trial of indwelling pleural catheter versus chest drain and pleurodesis for patients with recurrent MPE. Demographic characteristics compared were: age, sex, histological type of cancer and ECOG performance status (PS). Pleural fluid characteristics compared were: total protein, glucose, cytology (positive or negative), pH, lactate dehydrogenase (LDH) and presence of septations on ultrasound. These characteristics were compared using t test for linear variables and chi squared for categorical variables.

**Results** The median survival was 58 days (IQR 27–123) in TIME3 versus 187 days (IQR 48–358) in TIME2. Patients with non-draining effusions had a significantly higher PF LDH (mean 1900 (SD 3100) versus 660 (SD 840),  $p < 0.001$ ) and CRP (mean 117 (SD 80) versus 62 (SD 55),  $p < 0.001$ ). Patients in TIME3 were on average 4 years older (mean 71 years in TIME3 versus 67 in TIME2,  $p = 0.01$ ) and less likely to be cytology positive (24% versus 51%,  $p = 0.021$ ).

**Conclusion** Non draining MPEs have a higher LDH than those without. There was a large difference in mortality between groups, but despite this no identifiable differences in baseline ECOG, PS or tumour type, despite these variables being associated with a poor prognosis in unselected cohorts of patients with MPE.<sup>1</sup> We postulate that survival in MPE may be associated with septations and the intrapleural inflammatory milieu. Further study of the association between PF LDH, septations and survival is warranted.

## REFERENCES

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Abstract P234 Table 1

Variable	TIME2	TIME3	Difference (p)
Number of patients	106	71	-
Mean age (years) (SD)	67 (11)	71 (9.4)	0.013
Male:female (% male)	46:60 (43)	41:30 (58)	0.06
Median time to death (days) (IQR)	187 (48–358)	58 (27–123)	
Type of cancer (%)			
- breast	27 (25)	12 (17)	0.47
- lung	25 (24)	22 (31)	
- mesothelioma	11 (10)	9 (13)	
- other	43 (41)	28 (39)	
ECOG PS 0–2:3–4 (% 0–2)	60:46 (57)	42:29 (59)	0.11
Bloods			
White cell count	9.8 (5.4)	11.0 (5.4)	0.15
CRP	62 (55)	117 (80)	<0.001
Pleural fluid characteristics:			
- Cytology positive: negative (% positive)	54:48 (51)	17:34 (24)	0.021
- pH (SD)	7.4 (0.24)	7.4 (0.34)	1.0
- mean glucose (mmol/L) (SD)	5.4 (2.8)	4.6 (3.6)	0.13
- LDH (U/L) (SD)	660 (840)	1900 (3100)	<0.001
- Total protein (g/dL) (SD)	43 (8.1)	41 (10)	0.18
Septated on ultrasound (yes:no)	Not recorded	59:7	-

## P235 ASSESSMENT OF DIAPHRAGM MOTION IN PATIENTS WITH UNILATERAL OR ASYMMETRICAL PLEURAL EFFUSIONS

<sup>1</sup>MG Aldik, <sup>1</sup>A Sibly, <sup>2</sup>L Telisinghe, <sup>1</sup>C Daneshvar. <sup>1</sup>Department of Respiratory Medicine, Plymouth Hospitals NHS Trust, Plymouth, UK; <sup>2</sup>Department of Clinical Research, Faculty of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, London, UK

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**Introduction** The diaphragm is the most important respiratory muscle. In patients with pleural effusions, abnormal diaphragm shape and movement on inspiration may be observed. We aimed to explore the possible significance of these findings in a our pleural service.

**Methods** Between August 2015 and June 2016, all patients with an index thoracic ultrasound scan reporting a unilateral or significantly asymmetrical bilateral pleural effusion were retrospectively assessed. Patients were examined in the upright position by an RCR level 1 trained physician. A routine standardised reporting form was used to record dimensions, echogenic properties, the presence of septations, pleural nodularity and diaphragm nodularity, shape and movement. Pleural fluid characteristics and final diagnoses were assessed.

**Results** Of 491 patients assessed, 259 met the inclusion criteria. Thoracentesis was performed in 70%, with exudative defined by Light's criteria being met in 121 (47%). A diagnosis was established in 84% of cases with the commonest aetiology being malignancy (32%). The median [interquartile range] size of the pleural effusions was 8 [5–10] cm in medial depth and 3 [2–4] rib spaces in height, with 118 (46%) being echogenic. Diaphragm assessment revealed that paradoxical movement of the diaphragm was observed in 56 (22% [95% CI 16.6%–26.6%]) of patients while 11 (4.3% [95% CI 1.8%–6.7%]) had an inverted diaphragm. Patients with paradoxical diaphragm movement had larger effusions (median depth 11 cm versus 7 cm;  $p < 0.001$ ) and a higher proportion of effusions of malignant aetiology (45% versus 11%;  $p < 0.001$ ) when compared with individuals with normal diaphragm movement. In multivariate analysis, adjusting for age, gender, effusion depth and height and diaphragm shape, effusions of malignant aetiology were associated with an increased odds of paradoxical diaphragm movement (adjusted odds ratio 4.47 (95% CI 1.83–10.95;  $p < 0.001$ ).

**Conclusion** Paradoxical diaphragm movement in the context of a unilateral or asymmetrical pleural effusion is frequently observed, is independently associated with malignant pleural effusions and may be a useful point of care clinical sign.

## P236 A SYSTEMATIC REVIEW OF INTERVENTIONS TO IMPROVE HEALTH RELATED QUALITY OF LIFE IN MALIGNANT PLEURAL EFFUSION

<sup>1</sup>P Sivakumar, <sup>2</sup>A Saigal, <sup>2</sup>L Ahmed. <sup>1</sup>St Thomas' Hospital, London, UK; <sup>2</sup>Whittington Hospital, London, UK

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**Introduction** Malignant pleural effusion (MPE) Results in breathlessness and impairment of health related quality of life (HRQOL). Despite this there is a lack of consensus on the ideal treatment strategy to improve HRQOL.<sup>1</sup>