Abstract P224 Table 1

Species	Site	Immunosuppressed	Antibiotics	Time from symptom onset to treatment initiation	Intended Duration	Actual Treatment Duration	Complications	Surgical Intervention	Outcome
M chelonae	Skin (pacemaker wound)	No	Clarithromycin + doxycycline	5 months	6 months	6 months	Doxycycline stopped after 5 months (nausea)	Pacemaker removed	Cure
M chelonae	Skin (insulin injection sites)	Tacrolimus	Clarithromycin Clarithromycin, moxifloxacin, rifampicin	3 months Recurrence after 2 months	3 months 1 year	3 months 7 months	Recurrence in same site 2 months after first course. Treated for further 7 months with additional antibiotics.	No	Recurrence Cure after second course
M chelonae	Skin (post tattoo)	No	Clarithromycin	4 months	3 months	5 months	None	No	Cure
M fortuitum	Skin (post IM depot)	No	Nil	N/a	N/a	N/a	None	Incision and drainage	Cure
M fortuitum	Vascular graft	No	IV Meropenem (6 weeks) Doxycycline + ciprofloxacin (6 weeks)	3 months	3 months	3 months	None	Graft removed	Cure
M fortuitum	Skin (surgical wound)	No	Ciprofloxacin + clarithromycin (1 month) Clarithromycin + doxycycline (7 months)	5 months	6 months	8 months	Ciprofloxacin stopped (raised LFTs) switched to doxycycline	No	Cure
M kansasii	Paraortic graft collection	No	Rifampicin + ethambutol	1 month	18 months	18 months	Nil	No	Cure
M abscessus	Skin (post cosmetic surgery)	No	Amikacin, imipenem, clarithromycin Clofazimine + tigecycline added after 2 months due to persistent NTM growth Amikacin switched to minocycycline at 6 months	6 weeks	6 months	10 months	Tigecycline stopped after 1 month (haematemasis) Required multiple surgical debridements due to complex soft tissue abscesses	Debridement of abscesses	Cure
M intracellulare	Lymph node	No	R/H/Z/E 2 months R/H/E 7 months R/E 9 months	6 weeks	6 months	18 months	Isoniazid stopped at 9 months (neuropsychiatric effects)	No	Cure
M marinum	Skin (post steroid injection)	No	R/E azithromycin	4 weeks	6 months	4 months	Nil	No	Cure
M marinum	Skin (post-trauma)	Anti-TNF for Crohn's disease	R/E clarithromycin (with additional IV amikacin for first 6 weeks)	6 weeks	6 months	6 months	Ethambutol switched to doxycycline at 3 months (ocular toxicity	No	Cure

Objective To assess treatment and outcome of SSI-NTM cases presenting to a London teaching hospital from January 2013 – December 2017.

Methods All positive NTM cultures from January 2013 to December 2017 from a large London teaching hospital were examined retrospectively. Case notes were reviewed for site of infection, species identification, time to initiate treatment, treatment duration, antibiotic choice, co-existing immunosuppression, complications and recurrence. All HIV, paediatric and pulmonary NTM cases were excluded.

Results 239 patients with NTM were identified. 15 were SSI-NTM (6%). 4 patients were excluded as three have not completed treatment and one was a post-mortem finding (n=11). Details of these 11 cases are shown in the table 1. *M. chelonae* and *M. fortuitum* were the most frequently identified (n=6). Treatment duration for *M. Marinum, fortuitum and chelonae* ranged from 3 to 8 months, and for *M. abscessus, intracellularae and kansasii* 10 to 18 months. One case was cured with surgical debridement alone. Mean delay was 78 days from symptom onset to treatment initiation. Ten (90%) cases had complete cure with no recurrence.

Conclusions SSI–NTM is under recognised and can present late, potentially following previous multiple attempts of standard antibacterial therapy. It should be considered particularly in cases of immunosuppression, non-healing surgical wounds, injection sites, vascular grafts and cosmetic procedures. Our data suggests that SSI–NTM can be successfully managed with combination antibiotics leading to complete resolution. Clarithromycin may be considered as a single agent for *M. chelonae*. Surgical debridement and removal of foreign bodies may also aid recovery and limit treatment duration. Further research is needed to guide optimal treatment regimen and duration, as management of these complex cases will become increasingly relevant to the TB and respiratory physician.

REFERENCE

1. Misch E, *et al*. Skin and soft tissue infections due to non tuberculous mycobacteria. *Current Infectious Disease Reports* 2018;**20**:6.

An update in lung physiology

P225 EFFECTS OF SYSTEMIC DEHYDRATION AND SUBSEQUENT SYSTEMIC OR LOCAL REHYDRATION ON LUNG FUNCTION IN HEALTHY INDIVIDUALS

[1]H Marshall, [1]LM Romer, [2]JH Hull, [1]OR Gibson, [1]P Kippelen. *[1]Brunel University London, Uxbridge, UK; [2]Royal Brompton Hospital, London, UK*

10.1136/thorax-2018-212555.382

Introduction Water transport and local hydration of the airways play a critical role in the lungs, with dysfunction of airway water balance commonly associated with disease states such as cystic fibrosis and exercise-induced bronchoconstriction. The bronchial circulation, which arises from the systemic circulation, is the main supplier of water to the airways; however, limited and contradictory information is currently available on the effects of systemic dehydration on lung function.

Aim To clarify the impact of systemic dehydration on lung function in healthy individuals and to determine the role of local hydration status on any observed changes.

Methods Seven healthy young adults participated in a randomised crossover study that involved spirometry and body plethysmography at baseline (euhydration), after 28 hour of fluid restriction (systemic dehydration), and

Abstract P225 Table 1 Mean (±SD) lung function values recorded in 7 healthy individuals in a hydrated, dehydrated and rehydrated state with two modes or rehydration (oral and nebuliser)

	Euhydrated	Dehydrated	Rehydrated
FEV_1 (litres)			
Oral	3.97±0.79	3.99±0.88	3.99±0.79
Nebuliser	4.07±0.73	4.00±0.77	4.05±0.81
FVC (litres)			
Oral	5.11±1.27	4.99±1.32*	5.09±1.31
Nebuliser	5.20±1.23	5.08±1.22*	5.13±1.29
FEV_1/FVC (%)			
Oral	78.9±7.0	81.3±7.9	79.6±7.3
Nebuliser	79.3±6.7	79.8±6.5	80.3±7.1
RV (litres)			
Oral	2.10±0.60	2.21±0.63	2.09±0.57
Nebuliser	2.13±0.63†	2.31±0.60†	2.32±0.71†
TLC (litres)			
Oral	5.36±1.21	5.47±1.09	5.44±1.21
Nebuliser	5.53±1.31†	5.54±1.16†	5.62±1.29†
RV/TLC (%)			
Oral	39.0±5.9	40.1±6.2*$	38.3±5.8
Nebuliser	38.4±6.8	41.6±6.2*$	41.0±6.4
FRC (litres)			
Oral	3.98±1.22	4.03±1.32	3.84±1.19
Nebuliser	3.81±1.20	4.04±1.12*	4.01±1.24

FEV_1: forced expiratory volume in one second; FVC: forced vital capacity; RV: residual volume; TLC: total lung capacity; FRC: functional residual capacity. *significant difference versus hydrated ($p<0.05$), $significant difference versus rehydrated ($p<0.05$), †significant difference versus oral ($p<0.05$)

after 1 hour of systemic (oral fluid intake) or local (ultrasonic nebulisation of isotonic saline) rehydration (rehydrated). Hydration status was quantified *via* changes in body mass and plasma osmolality. Repeated-measures ANOVA were conducted.

Results Fluid restriction induced mild dehydration, with an average body mass loss of 2.5%±0.6% ($p=0.001$) and an increase in plasma osmolality from 292±2 to 298±1 $mOsm \cdot kg^{-1}$ ($p<0.001$). These changes were at least partly reversed by systemic, but not local rehydration ($p<0.05$). Lung function data are presented in table 1. Forced vital capacity (FVC) decreased by 122±64 ml following dehydration ($p=0.003$) and returned to baseline post-rehydration, with no difference between modes of rehydration. Neither total lung capacity (TLC) nor residual volume (RV) were affected significantly by hydration status ($p>0.05$); however, RV/TLC increased by 2.1%±2.5% following dehydration ($p=0.010$), with this change reversed by both modes of rehydration. Functional residual capacity (FRC) increased post-dehydration by 143±161 ml, but the difference reached significance only on one study day (nebuliser day: $p=0.014$).

Conclusions Subtle alterations in lung volumes occur following mild dehydration in healthy individuals. That local rehydration reversed the lung function changes as effectively as systemic rehydration confirms that airway water loss contributes to the observed impairments. Assessment of hydration status may be an important consideration in the management of patients with lung diseases.

P226 TEMPORAL TRENDS IN CARDIOPULMONARY EXERCISE TESTING (CPET) SERVICE UTILISATION

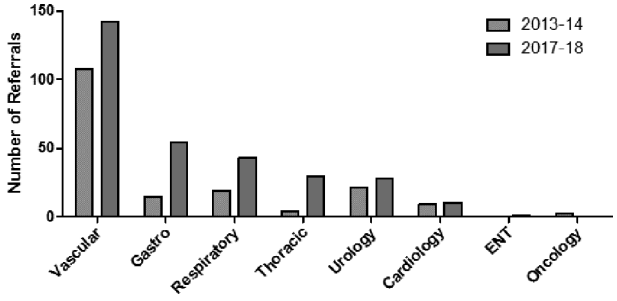
MO Thomas, S Webber, VC Moore, R Mukherjee. *University Hospitals Birmingham, Birmingham, UK*

10.1136/thorax-2018-212555.383

Introduction CPET is used as a preoperative screening tool to assess fitness; as a disease monitoring tool to determine functional limitation and treatment response; or as a diagnostic tool to identify the cause of breathlessness or exercise intolerance. A previous audit had identified that the service at Birmingham Heartlands Hospital was underutilised for diagnostic purposes.

Methods We conducted a retrospective analysis of CPET referrals between 01/07/2017 and 31/05/2018, and compared with those of 01/07/2013 to 31/05/2014. The source of referral and clinical indication were recorded and presented.

Results Total referrals for CPET were 307 in 2017–2018 compared to 178 in 2013–2014 (see figure 1) indicating a 72.5% increase. The majority of referrals were for surgical disciplines rather than medical disciplines in both time periods (253 vs 54 in 2017–2018; 150 vs 28 in 2013–2014); the proportion of tests for diagnostic purposes has remained the same (17.5% in 2017–2018 vs 16% in 2013–2014). Vascular surgery was the largest source of referrals in both time periods (46.3% in 2017–2018; 61% in 2013–2014). CPET referrals from thoracic surgery and gastrointestinal (upper GI and colorectal) surgery have increased proportionally (9.4% and 17.5% respectively in 2017–2018; 2.2% and 5.6% in 2013–2014).



Abstract P226 Figure 1 CPET service utilisation

Discussion CPET offers a unique assessment tool for the investigation of patients with unexplained dyspnoea and can pre-empt invasive, expensive, and potentially unnecessary assessment without definitive diagnosis (Thing *et al. Thorax* 2011;66(4):A144). The CPET service has experienced large increase in the number of referrals since 2013. Vascular surgery remains the primary source of referral, but the service has seen an increase in referrals from thoracic, upper GI and colorectal surgery. However, there has been no proportional increase in the use of CPET for diagnostic purposes. The service is evidently growing, but more awareness needs to be raised to increase the utilisation of CPET in diagnosing the cause of breathlessness.