

WS19.1 Mediastinal lymphadenopathy: A prognostic tool in adult patients with cystic fibrosis

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Objectives: Mediastinal lymph node progression and its implications on lung function of cystic fibrosis patients are not extensively described. The present study analyzes these aspects in an adult population.

Methods: The presence of lymphadenopathy and the lung functional indices were retrospectively recorded in patients who underwent chest CT scan, for usual disease progression control. The same indices were recorded again in patients for whom chest CT scan was repeated.

Results: A total of 154 patients underwent a chest CT: 83 (38%) patients showed mediastinal lymphadenopathy. A second chest CT scan was performed for 80 individuals out of 154: 61 (76%) had lymphadenopathy (42 confirmed previous finding; 19 new cases; 6 turned negative).

No difference in lung function data was observed in patients with and without lymph nodes at the time of the first CT: FEV1 = 68% IQR 47.5–85.5% vs. 64% IQR 53.5–83.0 p=0.94; FVC = 80.7% IQR 67.5–95% Vs 83% IQR 72.5–91.0%, p=0.89. At follow up, values of FVC% were significantly lower in patients with lymph nodes at the first CT: 71.0% IQR 55.25–88.75% vs 84.0% IQR 80.0–100.5%, p=0.035. The annual lung function decline was greater for patients with lymphadenopathy in comparison with patients without this finding; FVC: -3.28% (IQR -5.25, -1.24) vs. -0.33% (IQR -2.7, -1.62) p=0.006; FEV1: -2.8% (IQR -4.5; -2.8) vs. -1.29% (IQR -2.57, 0.48) p=0.02.

Conclusion: Mediastinal lymphadenopathy becomes more frequent as the disease progresses and it is associated with a more rapid functional decline; this finding might be a useful tool in the research of a prognostic score in the adult patients with cystic fibrosis.

WS19.2 Sinus pathogens in children with cystic fibrosis: Do they relate to lower respiratory tract pathogens and is eradication successful?

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Paranasal sinuses are an ideal environment for bacterial growth, and may create colonisation leading to lower respiratory tract (LRT) infections.

Objectives:

- To look for correlation between sinus and lung pathogens in children with CF
- To test a new protocol for eradication of paranasal sinus pathogens.

Method: Paired sinus and LRT samples were taken from children using sinus rinses. Protocolised antibiotic treatment was prescribed following positive cultures. Existing treatment protocols were modified for oral +/- nasal nebulised antibiotics. Repeat washouts were taken following treatment.

Results: 117 patients attended; 42 too young, 21 declined, 41 patients sampled.

Table: Correlation of paired timed sinus and LRT samples

LRT samples	Sinus samples			
	<i>Pseudomonas aeruginosa</i>	<i>Staphylococcus aureus</i>	Other (including MRSA)	None
<i>Pseudomonas aeruginosa</i>	4	2	1	0
<i>Staphylococcus aureus</i>	0	1	0	0
Other (including MRSA)	1	0	2 ^a	1
None	3	4	4	18

^aNot same pathogen in LRT to sinus.

11 with negative LRT had positive sinus cultures. Only 1 negative sinus had a positive LRT sample. All patients received treatment for positive LRT samples. Sinus treatment was provided to 11/22 patients; 5/7 to date have had successful eradication. The remaining patients did not receive treatment due to chronic colonisation.

Conclusion: 23 paired timed sinus and LRT samples showed a correlation. Eradication from sinus was successful in 72% of samples to date, however 4 patients have isolated different pathogens on repeat sinus rinses. There were 11 patients who grew pathogens in their sinus with no evidence of pathogens in their LRT. Long term follow up is required to prevent LRT acquisition and colonisation in this group.

WS19.3 The value of deep oropharyngeal suction specimens in identifying lower airway bacteria in young children with cystic fibrosis

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Objectives:

1. To compare bacterial isolates from upper airway samples obtained via deep oropharyngeal suction (OPS) with broncho-alveolar lavage (BAL) in young children with CF.

2. Assess level of child distress during OPS.

Methods: Young children with CF undergoing BAL as part of an annual surveillance program were studied. OPS was performed by stimulating a cough and suctioning the back of the oropharynx with the child awake to mimic clinical practice. BAL of the right upper, middle and lingula lobes was then performed. Child distress during OPS was rated using the Groningen Distress Scale (1 = Calm, 2 = Timid/Nervous, 3 = serious distress but still under control, 4 = serious distress with loss of control, 5 = panic).

Results: Paired OPS and BAL samples were obtained in 58 children (32 boys, mean age 36 months). Isolation of any growth was considered a positive culture. Table 1 shows diagnostic accuracy of OPS compared to BAL. Table 2 displays levels of distress.

Table 1. Diagnostic accuracy of OPS

	Prevalence on BAL samples (n=58)	Sensitivity % (95% CI)	Specificity % (95% CI)	+ve Predictive Value % (95% CI)	-ve Predictive Value % (95% CI)
<i>Pseudomonas aeruginosa</i> , n(%)	3 (5)	67% (21–94)	96% (88–99)	50% (8–92)	98% (90–100)
<i>Staphylococcus aureus</i> , n(%)	11 (19)	82% (52–95)	87% (75–94)	60% (32–84)	95% (84–99)
<i>Haemophilus influenzae</i> , n(%)	25 (43)	40% (23–59)	88% (73–95)	71% (42–91)	66% (50–80)
<i>Aspergillus fumigatus</i> , n(%)	11 (19)	36% (15–65)	98% (89–100)	80% (29–97)	87% (75–95)
<i>Stenotrophomonas maltophilia</i> , n(%)	4 (7)	0% (0–49)	96% (87–99)	0% (0–81)	93% (83–98)
MRSA, n(%)	2 (3)	50% (9–91)	100% (94–100)	100% (17–100)	98% (91–100)

Table 2. Distress during OPS

Age (months)	0–12 (n=5)	12–24 (n=10)	24–36 (n=14)	36–48 (n=15)	48–60 (n=8)	>60 (n=6)
Level of Distress, Median [IQR]	1 [1–1]	3 [2–3]	4 [3–4]	4 [3–4.5]	2.5 [2–3.5]	2 [2–2]

Conclusion: A negative OPS result is a good indicator of the absence of lower airway infection, except for *haemophilus influenzae*. However, a positive OPS result is not a good predictor of lower airway infection. Distress during OPS was age related and peaked from 24–48 months.

WS19.4 A randomised controlled trial of the effect of hypertonic saline (HS) inhalation on exacerbation resolution, hospital length of stay and time to relapse in adults with cystic fibrosis

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Objective: To determine the effects of HS during hospitalisation for CF pulmonary exacerbation on length of stay, lung function, oxygenation, bacterial load, symptom scores, quality of life, exercise tolerance, and time to relapse.

Methods: 132 adults, mean age 28 (SD 9) y, FEV1 48 (20) %pred, were randomised to thrice-daily nebulisation of 4 mL of 7% saline or a taste-masked control of 0.12% saline throughout their hospital admission.

Results: All participants tolerated their allocated inhalation solution. Length of stay was 12 days in the HS group and 13 days in the control group (MD 1 day, 95%CI 0 to 2). Exacerbations (as defined by Fuchs 1994) resolved on day 10 in the HS group and day 11 in the control group (MD 1 day, 0 to 2). Participants were significantly more likely to return to their baseline FEV1 at discharge in the HS group (75%) than the control group (57%), NNT 6 (3 to 65). On a 100-mm visual analogue scale recorded daily, the HS group had significantly greater improvement than the control group in: sleep disturbance by 15 mm (95%CI 6 to 23), chest congestion (9 mm, 4 to 14), and dyspnoea (6 mm, 1 to 12); and borderline significance for fatigue (8 mm, 0 to 15) and cough (6 mm, 0 to 11). At discharge, the HS group had significantly less severe: sleep disturbance by 13 mm (95%CI 4 to 23), chest congestion (10 mm, 3 to 18), and dyspnoea (8 mm, 1 to 16). After 12 months followup, no significant difference in time to next exacerbation requiring hospitalisation has been detected between groups (p=0.3).

Conclusion: For a similar or shorter length of stay in hospital, nebulised HS allows patients to leave hospital with greater resolution of their exacerbation.