282 The effect of social deprivation on weight in the UK cystic fibrosis population

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Background: Maintaining nutritional status is a key component of care in people with cystic fibrosis. Low socioeconomic status has been linked with poor outcomes in CF. We explored, for the first time in a UK-wide cohort, longitudinal weight gain and its relationship with socioeconomic status (SES).
Methods: We undertook a retrospective longitudinal cohort study of 4,346 people with cystic fibrosis aged less than 20 years (21,132 observations) in UK CF registry between 1995 and 2006. Census based indices of multiple deprivation (IMD) from the UK constituent counties were used as small area measures of SES. Piecewise mixed model regression was used to estimate the effect of SES on weight-for-age z-score (WFA).
Results: WFA was significantly lower in the most deprived quintile at all time points. The estimated WFA at birth (intercept) was −0.64 in the least deprived quintile compared to −1.31 in the most deprived (mean difference 0.67, 95%CI 0.42–0.92). The population WFA increased up to age three by 0.2 per year, and then declined subsequently by −0.033 per year. There was a significantly steeper improvement in WFA in the most deprived quintile in the first 3 years (mean difference per year 0.13, 95% CI 0.06–0.20), with no difference in the rate of decline subsequently.
Conclusions: Social deprivation is associated with lower WFA in the UK cystic fibrosis population, but there is a period of increased weight gain in the first three years, highlighting the importance of early diagnosis and treatment.

283 Cystic fibrosis: the thicker, the better? A retrospective longitudinal study over 10 years

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Question: Resent studies showed, that underweight in patients with cystic fibrosis (CF) is correlated with decreased lung function. Further it was shown that gain of weight resulted in a better lung function. We want to investigate the influence of adiposity (BMI >90th percentile) on the long term changes in pulmonary function.
Methods: Using the data from the German CF-registry we focused on patients whose weight exceed the 90th BMI-Percentile in 1999 and 2009. We matched each of those patients with two patients of normal weight in the same years. Normal weight was defined as a BMI between the 25th and the 75th percentile. Furthermore the controls were matched for age (+/−) one year, gender, lung function (FEV1 +/− 7%) in 1999 and the same status for *Pseudomonas aeruginosa* (PSA) in 1999 and 2009.
Results: We identified 28 obese patients (12 male, 16 female). The mean age (+SD) in 1999 was 18.22+9.03 years. Lung function measurements were reported in 23 of those patients and 46 matched controls. Both groups showed the same trend of their lung function. In both a decrease of <1% per year was registered. There was a 8.2+19.5% decrease of FEV1 %predicted in the obese patients compared to 10.3+16.7% decrease of FEV1 %predicted in the controls.
Conclusion: Over a period of 10 years the comparison of the lung function in obese patients compared to patients of normal weight showed no advantage for patients with adiposity. There is no advantage for adiposity at least relating long term changes in pulmonary function. Since there are known disadvantages of adiposity, we conclude that patients with CF should aim for a normal weight between the 25th and the 75th percentile.

284 Bioimpedance spectroscopy-derived body composition indices reveal lean tissue mass depletion in pediatric cystic fibrosis patients

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Objectives: Chronic catabolic state in malnourished cystic fibrosis (CF) patients leads to lean body mass depletion that is poorly detected by routine nutritional indicators. This study aimed to determine body composition changes in pediatric CF patients using bioimpedance spectroscopy (BIS)-derived indices of adipose and lean tissue mass compared to standard anthropometric evaluation.
Methods: 36 CF patients aged 5 to 18 years were enrolled in this cross-sectional study. Anthropometric measurements [height-for-age, BMI and mid upper arm circumference (MUAC)] were evaluated according to national reference data. Body composition was assessed using a BIS device (Body Composition Monitor, Fresenius). Adipose tissue index (ATI (kg/m^2) = adipose tissue mass/height^2) and lean tissue index (LTI (kg/m^2) = lean tissue mass/height^2) were used as indices of fat mass and lean mass respectively and were evaluated using manufacturer provided reference ranges for children and adolescents. BMI, MUAC, ATI and LTI percentile <10th were used as cutoff points defining nutritional failure.
Conclusion: Mean z scores for height, BMI and MUAC were −0.61, −1.08 and −1.31 respectively. BMIp values >10th were found in 57% males and 73% females. 17% of males and 36% of females with BMIp >10th had LTIp < 10th (hidden lean tissue mass depletion). In 22% of males with BMIp < 10th isolated fat mass reduction was identified, all females with BMIp < 10th had lean tissue depletion. Lean tissue loss was undetectable by BMI in 22% of males and 50% of females with LTIp < 10th.
Bioimpedance spectroscopy reveals lean tissue mass depletion undetected by BMI. Hidden lean tissue loss seems to be more severe in females.

285* The impact of BMI on survival of patients with cystic fibrosis undergoing lung transplantation: a single centre experience

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Lung transplantation offers improved survival and quality of life for patients with advanced cystic fibrosis (CF) lung disease. The ISHLT guidelines for transplantation lists BMI > 30 as a relative contraindication, yet there is no reference to low BMI. At our centre patients are preferred to have a BMI > 17 prior to transplantation. We reviewed BMI of our CF cohort undergoing transplantation, and its effect on survival.
A retrospective case note and database review was conducted. BMI pre transplantation was recorded. Survival of those above and below the median BMI was analysed. A recent paper from our centre demonstrated significantly poorer survival in those with *Burkholderia cenocepacia* to the extent that these candidates are no longer accepted for transplantation. Therefore this cohort was excluded from analysis.
238 patients with CF have been transplanted since start of programme. 12 were colonised with *Burkholderia cenocepacia* and excluded from analysis. Median BMI was 18.8 (range 12–27). 15 recipients had no record of pre-transplantation BMI. Those with a BMI below the median had a 30 day survival of 92%, 1 year 79%, 5 year 59% and 10 year 46%. Those above the median BMI had a 30 day survival of 96%, 1 year 91%, 5 year 71% and 10 year 62%. Overall survival was significantly better in those with a BMI above the median ($p = 0.018$).
At our centre, those undergoing lung transplantation for advanced CF lung disease have significantly poorer survival if their BMI is below the median of 18.8. Multivariate analysis has not been performed, yet this data provides some evidence that lower BMI is a prognostic indicator of reduced survival for these patients.