**8. Nutrition**

**303** Nutritional status of adult population in Cork University Hospital

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**Background:** A variety of complex organic and psychological factors contribute to malnutrition in Cystic Fibrosis and will vary considerably between patients depending on clinical state, disease severity, age and sex.

The adverse effects of malnutrition are well documented including poor exercise tolerance and increased susceptibility to infection.

**Aim:**

The aim of the study was to assess the nutritional status of adult patients attending Cork University Hospital for annual assessment in 2004/2005.

**Methods:** The adult CF population attending Cork University Hospital is eighty-five patients. Seventy patients had annual assessment carried out in the 2004/2005 periods. The group comprised thirty five (50%) male and thirty five (50%) female patients.

Nutritional Assessment comprises weight, height, anthropometry, vitamin levels and enzyme sufficiency. Weight and height were assessed retrospectively in the seventy patients and Body Mass Index (BMI) calculated.

Skin fold measurements are used to assess a person’s fat and muscle stores. Mid arm circumference (MAC) and triceps skin fold thickness (TSF) were also assessed. Out of a possible 70 patients 60 (87%) have anthropometric data recorded.

**Results:**

- Of the seventy patients assessed fifteen patients (21%) were underweight with a BMI of <18.5. Forty-eight patients (69%) are ideal weight as defined by WHO recommendations of BMI 18.5~4.9, five patients (7%) are overweight and two patients (3%) are defined as obese with a BMI between 30 and 35.
- MAC levels in the male group (age 20–40) showed 86% <25th centile, whereas in the female group (age 18–47) 58% were <25th centile (Bishop et al, reference values for MAC).

**Conclusions:**

By creating a database of nutritional information we can compare patients yearly results. Underweight patients can be targeted and more aggressive forms of nutritional support e.g. enteral feeding considered earlier.

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**304** Fasting ghrelin and leptin levels in Cystic Fibrosis adolescents: relationship with body composition

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Cystic Fibrosis (CF) patients have been reported to have negative energy balance. Ghrelin and leptin are hormones, which are implicated in energy balance coordination and body weight regulation. There are conflicting data regarding the levels and role of leptin while ghrelin has not been studied in CF.

The aim of this study was to investigate fasting serum ghrelin and leptin in CF adolescents as compared to healthy controls. Fifteen CF adolescents having pancreatic insufficiency (7 females, 8 males, mean age 19.26±4.95 years) and twenty healthy adolescents (10 females, 10 males, mean age 19.05±5.69 years) were enrolled. Diabetic patients were excluded. Ghrelin and leptin levels were determined after an overnight fast. Values were expressed as mean ± SD. Weight (kg), body mass index (kg/m²) and body fat (%B) % were significantly lower in CF adolescents (51.36±17.67, 19.32±4.64, 15.25±7.51, respectively) than those of controls (63.82±14.90, 22.20±2.77, 20.11±4.04, respectively). Height was comparable.

Leptin levels were comparable between CF and control individuals but significantly lower in CF males as compared to CF females. (11.27±1.54 and 21.57±7.68, respectively, p < 0.001). Fasting ghrelin levels were significantly lower in CF males as compared to controls (687.93±272.39 and 1535.46±313.28, respectively, p < 0.001) and comparable in females. Furthermore, ghrelin had negative correlation with BF %.

**Conclusion:**

As the overall clinical outcome of CF patients is related to the nutritional status and body weight, it is of enormous importance to elucidate the role of ghrelin, one of the main regulators of appetite, which is decreased in CF patients.

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**305** “Little scissors in my tummy!” A booklet about pancreatic enzymes for children with CF

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**Aim:**

Our goal was to design an educational instrument to help children from 6 to 12 to take their pancreatic enzymes (rE) properly. Children with CF need to take a high dose of enzymes daily. Pancreatic enzyme therapy is an important aspect of the treatment of CF. Therefore they have to know why, when, how and how many enzymes they have to take.

**Methods:**

1. Consensus of dieticians: During several meetings with the dieticians of all CF centers in Belgium*, we discussed what children with CF have to and want to know about PE and how this can be best explained:
   - why you have to eat
   - what happens in your body when you eat
   - how does a normal pancreas work
   - what happens in your pancreas when you have CF
   - why you have to take pancreatic enzymes and how
   - what happens in your tummy when you forget your PE or take them too late

2. CF educationalists wrote an easy and fun to read text based on this consensus.

3. To visualize the story about PE, an illustrator made large and colorful drawings with the comic characters used in all the Belgian CF educational material.

4. We edited an attractive multiple use booklet.

**Results:**

In 2005 all children with CF (aged 6 to 12) received a booklet for free. The booklet is widely used by CF dieticians in the CF clinics and by teachers when explaining CF in schools. Due to its great success, a first reprint was made in January 2006. This shows the need for such simple, but clear and fun to read educational material for children.

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**306** Growth parameters in Scandinavian CF patients

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**Aims and Methods:**

850 patients (407 F) Scandinavian CF patients participated in a comprehensive study of their nutritional status. Median age was 18.5 y (0.3 to 65.9 y), 392 (46%) were >20 y of age. Seven CF-centers participated.

**Results:**

25 patients were lung transplanted (2 children). CF-related DM was reported in 126 individuals (14.8%). Individuals having Hba1c above upper reference limit were 21% in Sweden (S), 22% in Denmark (DK), and 3% in Norway (N). Pancreatic insufficiency was recorded in 493 individuals (8.6%). Eight patients (0.9%) had known coeliac disease (CD). Ten additional patients out of 388 tested had a positive endomysium test, and transglutaminate-IgA above upper normal level (20 U), indicating a maximal prevalence of coeliac disease of 3%.

In adult patients the percentage of cases with target height index (measured h/target h) >1.0 was identical in N and S (41%). Median BMI for those >20y was 21.6 in DK, 21.1 in N, and 21.8 in S (n.a.). Median BMI was 22.4 in adult males, and 21.1 in females (p < 0.001). Adult patients with BMI less than 18.5 were 9.6% (DK), 10.7% (N), and 10.2% (S). BMI z-scores at all ages (median) were –0.18 (DK), –0.30 (N), and –0.11 (S). The differences were not significant.

**Conclusions:**

Growth and nutritional status in Scandinavian CF patients is generally good, but only 41% reached or exceeded their target height and median BMI was lower than in normal individuals. There were small and insignificant differences between the three countries. The endomysium test and transglutaminate-IgA may indicate an increased prevalence of CD. Duodenal biopsies are required before a final diagnosis of CD can be made.

The present results are preliminary. Final data will be presented.