Calcium intake in cystic fibrosis patients

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Introduction:

Several possible etiological factors in the occurrence of Cystic Fibrosis related bone disease

– vitamin D
– hormones
– medication
– physical activity

A sufficiently high calcium intake is indispensable

Scientist warn that calcium intake of Belgian children is low.
Aim:

- CF related bone disease increases with prolonged life expectancy and is a complex problem

- **AIM:** verify if current nutritional advice on calcium is achieved

- Daily alimentary current intake of Calcium by CF patients
  - Intake of related nutrients of Calcium by CF patients
  - Comparison of daily calcium intake to recommendations for calcium from the Belgian Population Reference Intake (PRI)
Methods:

Retrospective food intake questionnaires

121 CF patients:
- 65 male / 56 female,
- age 1-41 year (mean age 15.9 year)
- CF centre: Ghent

Daily Calcium and Phosphorus intake was calculated. Calcium supplements and calcium content of water were not included.
Methods:

Based on the **Belgian Population Reference Intake (PRI)** of calcium, patients were divided in 3 age groups:

- **A:** 1-10 year: n = 40
- **B:** 11-18 year: n = 38
- **C:** >19 year: n = 43

**National daily recommendations:**

- **A:** 1-10 yr: 800 mg/d
- **B:** 11-18 yr: 1000 - 1200 mg/d
- **C:** >19 yr: 900 mg
Results:

- **Ca intake expressed as % of PRI**
  - **A:** 39 - 334 (mean 119%); boys: 116%, girls: 121%
  - **B:** 42 - 250 (mean 111%); boys: 126%, girls: 93%
  - **C:** 27 - 242 (mean 110%); boys: 105%, girls: 114%
  - **total group:** 27 - 334 (mean 113%); boys: 116%, girls: 109%

- **Average Ca intake the total group:** 113 % of PRI

- **No correlation** between age and % PRI coverage
Results:

- **Ca content** below PRI in 41% of the total group
- % of patients taking below PRI:
  - **A**: 40%: boys: 32%, girls: 50%
  - **B**: 39%: boys: 38%, girls: 41%
  - **C**: 42%: boys: 55%, girls: 33%
- **mean % intake of PRI**
  - **A**: 75%
  - **B**: 65%
  - **C**: 70%
- 7 patients < 400 mg/day
Calcium intake in CF patients

- A: 1-10 y
- B: 11-18 y
- C: 19 y

Below PRI mean PRI

bar chart showing calcium intake percentages for different age groups.
Results:

- **Main contributory food sources for Ca:**
  - milk products: 48%
  - cheese: 18%
  - cereal products: 6%
  - vegetables and fruit: 4 and 1%
  - energy drinks: 5%

- **Dietary ratio of Ca/P:**
  - < 0.5 in 17% of patients
  - 0.5-1 in 75%
  - > 1 only in 7%
Summary:

- Compared to the Belgian PRI, **40% of all CF patients** of all ages have inadequate daily calcium intake.

- The **mean intake** of CF patients with inadequate calcium intake compared to the PRI is **70%**.

- **Uptake of calcium is complicated by the high dietary phosphor content and low consumption of vegetables and fruit.**
Conclusion:

- Nutrition is one of the pillars in the CF therapy: attention must be paid to the nutritional factors related to bone metabolism.
- This study shows that calcium intake and uptake is deficient in a large portion of CF patients.
- Inform patients on the importance and need of calcium.
- Appreciation for milk as a good source of calories and of calcium. Teach rule: 400 ml delivers 500 mg calcium.
- Extra attention for girls <11 years and male adults.