Clinically significant fracture incidence in Czech children: a population-based study.

Soucek Ondrej, Lebl Jan, Sumnik Zdenek

Department of Pediatrics, 2nd Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic

Objective and hypotheses:
The aim was to describe the incidence of clinically significant fractures (extremity long bone and vertebral fractures) in healthy Czech population aged 0-20 years and thus establish a control data for comparison of fracture incidence in chronically ill children.

Disclosure: None of the authors have any conflict of interest.

Background:
Before reaching adulthood, every second boy and every third girl will sustain fracture. This growth spurt-related bone fragility is partially caused by a quick longitudinal growth and a relatively slower increase in bone width. However, no study has focused particularly on clinically significant fractures, a criterion for osteoporosis diagnostics.

Figure 1. Number of girls (A) and boys (B) in Czech Republic.

The population count is the mean over the years 2008 through 2014.

Methods
The extremity long bone and vertebral fractures (identified by the International Classification of Diseases, version 10) were recorded from the National Registry of Hospitalised Patients and the demographic data were obtained from the Institute of Health Information and Statistics. Number of fractures per age- and gender-specific population count was calculated. Data from years 2008-2014 were averaged.

Results
The median fracture incidence was 2.4‰ in girls and 6.2‰ in boys. Whereas there was no clear peak but a plateau between the ages 6 and 11 years in girls, with a fracture incidence around 5.5‰, there were two peaks of fracture incidence occurring at the ages of 6 (7.1‰) and 13 (9.7‰) years in boys. The fracture incidence was similar in the first three years of age between the sexes (0.4-2.0‰), but from the fourth year the incidence was consistently higher in boys and remained more than two times higher at the age of 20 years (3.2‰ vs. 1.4‰, p<0.001).

Figure 2. The incidence of clinically significant fractures in girls (A) and boys (B).

Conclusions
The incidence of fractures important for osteoporosis diagnostics is higher in boys than in girls and increases until the early puberty in girls and mid-puberty in boys. The role of bone quality and physical behaviour on fracture incidence remains to be elucidated.

A

B

Clinically significant fractures in girls

Clinically significant fractures in boys

The population count is the mean over the years 2008 through 2014.