mean ferritin value was calculated for each patient.

Normality of distribution of the studied parameters was assessed with the One-Sample Komgorov-Smirnoff test. Normally distributed parameters were then compared with Student’s t-test, whilst correlations between studied parameters were assessed with Pearson’s r function. A p value less than 0.05 was considered as statistically significant. SPSS® for Windows ver.11.5.0 and Microsoft® Office Excel 2003 software programs were employed for statistical analysis and graphical demonstration.

RESULTS

Results regarding the auxological status of the patients are shown in Figure 1 and are summarized in Table 1. Fourteen out of the 19 females (74%) and 11 out of the 16 males (69%) were shorter than average. Mean height SD scores were -0.32 and -0.42, respectively. By contrast, 16 out of the 19 females (84%) and 11 out of the 16 males (69%) had BMI values higher than the average. Mean BMI SD scores were 0.61 and 0.8, respectively. Most of the patients had delayed bone age (20/35, 57.1%) with an average SDS of -0.39, but only 5 of them had SDS less than -2. None of the patients had any clinical sign of endocrinopathy or presented with any kind of pubertal disorder. Biochemical profile, intact PTH concentrations and thyroid function tests were normal in every patient. IGF-I mean SDS for the girls was -0.35±0.95, whereas mean SDS for the boys was 0.14±0.82. IGFBP-3 mean SDS for the girls was -0.06±0.64, whereas for the boys it was -0.09±0.64. Mean ferritin levels ranged from 242μg/L to 4706 μg/L with an average of 1393±804μg/L.

![Figure 1](image_url)

Figure 1. SD scores of height, weight, Body Mass Index (BMI) and Bone Age (BA) in girls and boys.

All BMD results were within the normal range (Figure 2). The mean lumbar BMD Z-score was 0.42±1.25 for the females, -0.41±0.95 for the males (statistically significant difference between sexes; p=0.034) and 0.04±1.19 for the entire group of patients. None of the patients was in the osteoporotic range (Z-score <-2.5), whereas only 1 out of the 19 girls (5.26%) and 6 out of the 16 boys (37.5%) were in the osteopenic range (-1> Z-score >-2.5). Mean values and ranges of serum IGF-I and IGFBP-3 concentrations SDS, serum ferritin levels and lumbar BMD SDS are presented in Table 2. When correlated with age, lumbar BMD Z-scores showed a markedly linear regression, (r=0.467, r²=0.218, p=0.05, Figure 3). No correlation was observed between lumbar BMD and mean annual ferritin levels (r=0.242, p=0.162, Figure 4), nor between lumbar BMD and serum IGF-I (r=-0.109, p=0.532, Figure 5), whereas a positive correlation was seen between lumbar BMD and IGFBP-3 circulating concentrations (r=0.354, p=0.037, Figure 5). Finally, no correlation was observed between height SDS and lumbar BMD SDS (r=0.264, p=0.126, Figure 6).

DISCUSSION

Bone deformities were assigned as a characteristic