doubled(3). Automatic generation of laboratory signals when an ADR is developing helps in early identification, reduction of morbidity, hospital stay, and treatment costs. The staff in the process get tuned to suspecting an ADR.

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Bone Mineral Density and Thalassemia Major and Intermedia

We read with keen interest Karimi, *et al.* article on bone mineral density in beta thalassemia. Dual energy *X*-ray absorptiometry (DEXA) provides the measurement of the total amount of bone mineral content (BMC; g) contained within the scanned skeletal region and the two-dimensional projected bone area (BA; cm^2). DEXA does not measure the bone thickness and therefore the volume (cm^3) that is required for estimation of volumetric bone mineral density (vBMD; g/cm^3). The ratio of BMC to BA allows estimation of the areal BMD (aBMD; g/cm^2), which is a function of bone size and its vBMD. Therefore, in a child with a chronic disease, a low aBMD might be due:

(*a*) the adverse effect of the disease on his/her growth and pubertal development, resulting in smaller bones;

(*b*) impaired mineralization; or

(*c*) both these factors.

These issues are particularly relevant in patients with beta thalassemia major in whom impaired growth and hypogonadotrophic hypogonadism are well known secondary complications(2). We, therefore, were surprised that data on height, weight and Tanner stages of pubertal development for thalassemic subjects and controls were not provided by the authors. Furthermore, the authors could have compared the bone mineral apparent density (BMAD; g/cm^3) of the lumbar spine and the femoral neck, by dividing BMC by the three-dimensional bone volume derived from its two-dimensional projected BA, in their Thalassemic subjects and controls(3). They could have also compared the size adjusted BMC in the two groups. This is easily done using a regression or a multivariate statistical model to adjust the BMC for projected BA, height, weight and Tanner stages of sexual development(4).

Such approaches would have reduced the influence of any changes in bone size due to Thalassemia and secondary endocrine problems on DEXA measured bone variables. Without such adjustments, the authors' conclusion that low BMC and aBMD in their Thalassemic subjects was due to impaired mineralization is, in our opinion, less secure.

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Reply

1. The purpose of our research was comparison of bone density (BMD and BMC measured by DEXA) between thalassemia major, intermedia and normal subjects and we did not conclude that the difference was due to impaired mineralization.

2. We pointed out that low bone mass in thalassemic subjects is more the reflection of endocrine abnormalities and this is in agreement with comment by Dr. Khadilkar. We believe that the thalssemic patients have lower BMD due to adverse effects of chronic disease on pubertal and growth development.

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