Are femur and humerus measured exactly by 3D ultrasound reliable parameters for the detection of trisomy 21 in the second trimester?

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Introduction

The aim of this prospective study was to find out whether femur and humerus measured correctly with 3D ultrasound are reliable parameters to detect trisomy 21 in the second trimester.

Material and Method

Femur and humerus length of 72 fetuses with confirmed trisomy 21 were measured with 3D ultrasound and compared with normal growth charts (1) (Fig. 1 and 2). All scans were performed using E8/E10 GE equipment (Zipf, Austria) with a 5-8 MHz 3D abdominal transducer. Gestational age was between 14+0 and 27+0 weeks of gestation.

Results

25/72 fetuses with trisomy 21 (34.7%) showed a femur length below the 5th percentile while the remaining 47 fetuses (65.3%) showed values within the normal range. 18/72 fetuses with trisomy 21 (25.0%) showed a humerus length below the 5th percentile while the remaining 47 fetuses (65.3%) showed values within or above the normal range.

Conclusion

When using 3D ultrasound for the measurement of femur and humerus in the exact anatomical plane, only 1/3 of the trisomy 21 fetuses showed a reduced femur length and only 1/4 of the trisomy 21 fetuses had a reduced humerus length in the second trimester. Therefore both parameters are not very reliable parameters for the detection of trisomy 21.

Reference