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**Cross-sectional ultrasonic tomography of the medullary cavity of
child bones - Limits of resolution**

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In children with bone diseases, ultrasonography has proved to be a highly effective tool for assessing congenital disorders. However, with standard devices, this method of examination is limited and not suitable for diagnostic large purposes as tumors or sub-periosteal infectious. Authors dealt with the imaging of more adult bones than children, and the main aim has usually been to assess the thickness of the diaphysis and/or to estimate the wave velocity crossing the structure. Our group has been focusing on the cross-sectional radial imaging process, using ultrasonic computed tomography, of child bones. Although this method is known to provide a potentially valuable means of imaging objects with similar acoustical impedance, problems arise when it is proposed to obtain quantitative tomograms of more highly contrasted media. Finding solutions involves either using non-linear schemes. In this paper, we recall the advantages and limitations of ultrasonic computed tomography methods when dealing with highly contrasted scatterers. The results obtained are promising and suggest that the geometrical and acoustical characteristics of children's bones can be efficiently determined using this ultrasonic computed tomography method.