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doi:10.7863/ultra.34.1.174

Clarification of Terminology: Sonographic Appearance of the Pronator Quadratus Muscle in Healthy Volunteers

To the Editor: We read the article published in your journal by Sato et al[1] with great interest. We greatly appreciate their inspiring work.

The authors measured the maximum thickness of the pronator quadratus on axial and sagittal sonographic images and found a statistically significant difference in the thickness of dominant and nondominant hands. After discussion, they concluded that the difference in the pronator quadratus thickness between dominant and nondominant hands might need to be taken into account during sonographic studies.[1] However, although there has been extensive research and many publications on human handedness and skeletal morphologic characteristics along with muscular analysis, the effect of hand dominance on bodily morphologic characteristics was fortuitous.[2–6] For example, analysis of bone measurements standard to forensic medicine revealed that the right side consistently is larger in most bones, regardless of hand dominance.[2,3] Many environmental factors, including the psychosocial behavior of individuals, influence the shaping and size of the skeleton and muscles.[2–6] In addition, the volunteers included in the study were all right handed except 1 left-handed volunteer. Therefore, a difference in pronator quadratus thickness in favor of the right side might need to be taken into account during sonographic studies unless proven by further studies including sufficient numbers of left-handed volunteers. The muscular asymmetry due to handedness in studies covering left-handed along with right-handed people would enhance the precision of the results.

References

1. Sato J, Ishii Y, Noguchi H, Takeda M, Toyabe S. Sonographic appearance of the pronator quadratus muscle in healthy volunteers. *J Ultrasound Med* 2014; 33:111–117.
2. Danforth ME, Thompson A. An evaluation of determination of handedness using standard osteological measurements. *J Forensic Sci* 2008; 53:778–781.
3. Ubelaker DH, Zarenko KM. Can handedness be determined from skeletal remains? A chronological review of the literature. *J Forensic Sci* 2012; 57:1421–1426.
4. Katayose M, Magee DJ. The cross-sectional area of supraspinatus as measured by diagnostic ultrasound. *J Bone Joint Surg Br* 2001; 83:565–568.
5. Springer BA, Mielcarek BJ, Nesfield TK, Teyhen DS. Relationships among lateral abdominal muscles, gender, body mass index, and hand dominance. *J Orthop Sports Phys Ther* 2006; 36:289–297.
6. Min JY, Min KB, Paek DM, Cho SI. Side differences in the bone density of the distal radius and calcaneus in Koreans aged 4–86 years. *J Clin Densitom* 2007; 10:184–188.