

GENDER AND OBESITY INTERACTIONS IN ECHOCARDIOGRAPHIC IMAGE QUALITY

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Background: The practical impact of obesity on echo services is obscure. We analysed the relationship of obesity to image quality using quantitative scoring and bio-impedance determinations of fat mass.

Methods: All consenting and eligible adult outpatients over a 3month period (n=237) were studied with a Bodystat Quadscan 4000[®] to establish lean and fat mass corrected for gender; height and weight. Each echo was graded with an Image Quality Index (IQI, 1-10) for parasternal & overall; apical; and Doppler aspects of the study. Values are mean \pm SD.

Results: 110M(62 \pm 13yr) and 127F(65 \pm 16yr) patients were prospectively studied. Values for weight (M84 \pm 14kg; F69 \pm 13kg), body fat (M22 \pm 7kg; F28 \pm 9kg) excess fat mass (M5.6 \pm 6.3kg; F11.4 \pm 8.4kg) showed significant gender variation (p<0.01, unpaired Student t-test), whereas BMI (M28 \pm 4; F27 \pm 5) did not. IQI (mean, 95% confidence intervals) also showed significant (P<0.01) gender differences in parasternal (M6.2 (1.6-8.5); F6.7 (3.3-8.6)) and apical image quality (M6.4 (0.7-9.0); F5.7 (0.2-8.4)), whereas Doppler imaging (M7.1 (3.7-8.9); F7.2 (3.7-8.9)) did not. Log IQI scores were used to achieve a normal distribution. Using linear correlation we found a significant (P<0.05) positive correlation between parasternal or apical image quality with body fat (M r =0.3&0.5, r =0.2&0.5), and excess fat mass (M r =0.3&0.5, r =0.2&0.4) regardless of gender. Apical image quality also correlated with BMI (M r =0.5, r =0.5) and weight (M r =0.4, r =0.5) irrespective of gender.

Conclusion: Using qualitative Image scoring we have noted significantly better quality parasternal images in females than males, but significantly worse apical images. The quality of the images correlated with body fat mass, irrespective of gender or imaging window.

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