BODY COMPOSITION DIFFERENCES DISTINGUISH METABOLICALLY HEALTHY FROM METABOLICALLY UNHEALTHY OBESITY: A BIOELECTRICAL IMPEDANCE ANALYSIS STUDY

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Bioelectrical impedance analysis distinguishes metabolically unhealthy from metabolically healthy obesity by revealing significantly greater total and visceral adiposity in metabolically unhealthy individuals, despite comparable lean mass.

KEY POINTS

- In 132 adults with obesity (66 metabolically healthy, 66 metabolically unhealthy), metabolically unhealthy obesity was characterised by higher body fat percentage (38.6% vs. 29.4%), visceral fat level (15.1 vs. 7.8), and fat mass (32.8 kg vs. 22.5 kg), all p <0.001.
- Metabolically unhealthy obesity showed marked metabolic derangements including higher fasting glucose (120.7 vs. 88.5 mg/dL), HbA1c (7.8% vs. 5.5%), total cholesterol (234.6 vs. 182.3 mg/dL), triglycerides (198.2 vs. 110.4 mg/dL), and LDL (152.5 vs. 105.2 mg/dL), and lower HDL (40.2 vs. 55.8 mg/dL), all p <0.001.
- Fat-free mass, skeletal muscle mass, and total body water were comparable between metabolically healthy and unhealthy obesity groups (all p >0.05).
- Ultrasound demonstrated increased visceral fat accumulation significantly more frequently in metabolically unhealthy obesity (p <0.001), while metabolically healthy obesity showed predominant normal fat distribution.
- Fat distribution rather than lean mass appears to be a key determinant of metabolic health in obesity, supporting body composition assessment for precision obesity phenotyping.

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