Editorial

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Artificial Intelligence and Chest CT: A Smarter Path to Sarcopenia Detection

인공지능과 흉부 CT: 근감소증 진단의 효율적 접근

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See the article, "*Enhancing the Diagnosis of Sarcopenia Through Low-Dose Chest CT and Artificial Intelligence-Based Segmentation: Optimizing Resource Utilization in Healthcare*", in volume 86 on page 501-509 (https:// doi.org/10.3348/jksr.2023.0108).

We read with great interest the article by Dr. Lee and colleagues (1), published in the July 2025 issue of the *Journal of the Korean Society of Radiology*, which explores the early clinical application of low-dose chest CT (LDCT) as a practical, lower-risk alternative to routine CT for sarcopenia assessment. In their prospective study, the authors enrolled 100 patients who underwent both routine-dose contrast-enhanced chest CT and LDCT within a six-month interval. Addressing a notable gap in clinical practice, this study investigates whether LDCT—already widely adopted for lung cancer screening—might serve a dual function: detecting both pulmonary pathology and skeletal muscle loss. Using a commercially available AI-based segmentation tool, Dr. Lee and colleagues quantified skeletal muscle volume across the thoracic region and compared results between LDCT and routine CT in the same patients. We commend the authors for their innovative approach and for demonstrating the potential of LDCT to expand its clinical utility.

Sarcopenia, defined by age-related loss of skeletal muscle mass and strength, has emerged as a key prognostic factor influencing survival, morbidity, and quality of life in older adults (2-4). Yet, despite its clinical relevance, sarcopenia remains difficult to assess consistently due to the lack of standardized diagnostic criteria and accessible imaging protocols. While CT imaging offers unparalleled anatomical resolution and direct visualization of muscle tissue—particularly at the L3 level—its use for sarcopenia evaluation has been largely limited to retrospective analyses due to concerns about radiation exposure and cost (5).

This study adds timely and meaningful evidence supporting LDCT as a viable, opportunistic imaging modality for sarcopenia assessment. Impressively, the skeletal

muscle volume index (SMVI) derived from LDCT strongly correlated with that from routine CT (r = 0.956), even though LDCT slightly underestimated values due to higher image noise (1). On average, SMVI from LDCT was approximately 10% lower than from standard CT. However, the consistent and predictable linear relationship between the two modalities suggests that these differences can be systematically corrected—either manually or through AI-based calibration. Importantly, this work reflects a broader paradigm shift in radiology toward dose reduction and value-based imaging. By leveraging scans already obtained for lung cancer screening, LDCT minimizes redundant radiation exposure and avoids additional healthcare costs—strengthening its role as a cost-effective, patient-centered tool in routine clinical care.

In conclusion, this study makes a compelling case for reimagining sarcopenia assessment in everyday practice. LDCT, when paired with AI-driven muscle quantification, represents a practical, efficient, and safer pathway for early sarcopenia detection—particularly when integrated into existing lung cancer screening programs. As AI technology continues to evolve, such synergistic imaging strategies may play an increasingly pivotal role in the proactive management of aging populations (6). This study is a meaningful step toward that future—one that prioritizes precision, prevention, and patient safety.

Author Contributions

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Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

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