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Quantitative ultrasound (QUS) is a non-invasive medical imaging technique that uses sound waves to measure various properties of bone and soft tissue. It is similar to traditional ultrasound imaging, which uses high-frequency sound waves to create images of the inside of the body, but instead of producing images, QUS provides quantitative data about the tissue being imaged.

In bone imaging, QUS is used to measure bone density, which can be an important indicator of bone health and the risk of fractures. QUS can also be used to assess bone quality, including properties such as elasticity and strength, which can affect fracture risk even in patients with normal bone density.

In soft tissue imaging, QUS can be used to measure parameters such as tissue density, elasticity, and viscosity. It has applications in fields such as sports medicine, where it can be used to evaluate muscle and tendon injuries, and oncology, where it can be used to monitor the response of tumors to treatment.

QUS is a relatively inexpensive and non-invasive technique, making it a potentially useful tool for large-scale screening and monitoring programs. However, it is important to note that QUS measurements may be affected by factors such as tissue hydration, body composition, and operator technique, and that results may not always be comparable to other imaging modalities such as dualenergy X-ray absorptiometry (DXA) or computed tomography (CT).

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