

ULTRASOUND QUALITY CONTROL PROGRAM OF TWENTY-ONE UNITS OVER FOUR YEAR EXPERIENCE

This paper will present summarized results of the current ultrasound QC program in our institute over past four years. A tissue-mimicking multi-purpose QC phantom supplemented with a low contrast phantom was used for performance testing of Gray-scale mode and a Doppler phantom/flow control system for Doppler mode. The Gray-scale tests included distance accuracy, system sensitivity and penetration, axial and lateral high contrast resolution, low contrast detectability, void perception, image uniformity, dead zone and image display evaluation. The Doppler tests included the maximum sensitivity of Doppler signals, Doppler angle accuracy, directional discrimination, range-gate accuracy and peak velocity readout accuracy. In addition, physical inspection checked the probe integrity and system electrical-mechanical cleanliness. These QC tests have been performed annually. Of all the deficiencies revealed during QC testing over the past four years, 23% was directly related to broken probes or system mechanical integrity revealed from simple physical inspection. 69% was found in Gray-scale mode, of which majority was related to image uniformity, image display and storage devices. 6% of the deficiencies was associated with software settings. Only 2% of the deficiencies was found in Doppler mode. The result of this analysis recommends that some QC tests such as image uniformity, image display evaluation and physical inspections should be performed more frequently in order to reveal problems at their earlier stages. The small number of problems revealed in Doppler mode suggests the limitation of the current Doppler QC program.