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Comparison of Acceptance Tests for SPECT Systems in Tehran

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Abstract:

Introduction: Acceptance test is a necessary procedure after SPECT system installation. The goal of this test is to reveal system's present condition, to compare it with manufacturer's specifications and also as a base for later tests. Methods: This study investigated four SPECT systems in Tehran. All of the quality control tests are performed on the basis of NEMA and IAEA recommendations and by a same group. These tests include intrinsic spatial resolution, intrinsic energy resolution, temporal resolution, intrinsic linearity, maximum count rate, pixel size, intrinsic and extrinsic uniformity, sensitivity, reconstruction spatial resolution with and without scatter and centre of rotation. Results: Results of this investigation show that three systems have minimum acceptance conditions, but the fourth one due to it's suboptimal energy resolution and spatial resolution lacked the required specifications for acceptance. It was shown during the next six months after installation that this system showed frequent impairments and even had been out of service for a while. However, other systems did not show any considerable problems. Conclusion: The acceptance test is an essential step after installation of any SPECT system. If there is no considerable deficits at the initial acceptance test of a SPECT system, it won't become troublesome for a long time.

Keywords:

SPECT . Quality control . Acceptance test

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