Evaluation of a High Contrast Film/Cassette Verification System

A new high-contrast film/cassette verification system (EC-V) has been introduced recently for the purpose of improving the film contrast in patient treatment verification. The purpose of this study is to perform a clinical evaluation of this system, which is comprised of Kodak EC-L film in combination with either a Kodak EC-V Verification Cassette or a Kodak EC-V Verification Fast Cassette. The EC-V has one phosphor-intensifying screen and is supposedly appropriate for treatment ports with a tumor dose of 90 cGy or higher. The EC-V Verification Fast Cassette has two phosphor-intensifying screens and is supposedly appropriate for treatment ports with a tumor dose of about 45 cGy. The 2-cassette, Kodak EC-V Verification system was designed to accommodate patients with commonly prescribed curative dose. We first studied the basic characteristics curves of the system and compared with the Kodak Ready Pack V film. In the clinical application, the sites which are most appropriate to use with this 2-cassette system were determined. We also look into the possibilities of using this system for dose verification purposes. The effects of patient thickness, SSD, air gap, and field size on the dose response are investigated. Results indicated that high-contrast system predicts doses more accurately than low-contrast system. However, short latitude associated with high contrast dictates the proper placement of the film from the source. It requires time and effort to set up the proper technique for clinical use in order to generate an acceptable verification image.