

**Purpose:** To demonstrate a procedure for using a Konica Minolta computed radiography (CR) system for the measurement of computed tomography (CT) radiation profiles and to compare this method with conventional and radiochromic film measurements.

**Methods:** The exposure and processing conditions of a Konica Minolta CR reader system were characterized to establish the relationship between exposure in the imaging plate (IP) and pixel value. A 6 cc ionization chamber was exposed at the isocenter of a CT scanner using 80 kVp, 0.4s with various mA settings. CR images were processed in fix modes with various combinations of G and S values, establishing exposure and pixel value relationships. Optimal mA settings and processing parameters were selected to avoid the overexposure of the IP. The radiation profiles were collected using different collimation settings (40, 20, 10 and 5 mm) at 10 and 20 mA, respectively. The peak pixel value measured from the 10 mA profile was used to identify the location of 50% of maximal exposure in the 20 mA profile. The FWHM of the dose profile at different collimation beam widths can then be determined. The results were compared to those obtained from digitized conventional and radiochromic film profiles.

**Results:** The optimal exposure (80 kVp, 0.4s, large body filter, 10 and 20 mA) and processing settings (fix mode with  $S = 5$  and  $G = 1.81$ ) were determined for CT radiation profile measurement. The FWHM results measured using this method agreed well within  $\pm 10\%$  when compared to the conventional and radiochromic film results.

**Conclusions:** The FWHM of CT radiation profiles can be accurately measured using a Konica Minolta CR system, when appropriate exposure technique and processing parameters are used. It has been proven to be a convenient and cost-effective method for routine clinical quality assurance checks.