INTRODUCTION

The automatic adjustment of CT scanners flow have been improved continuously and builds an important resource of optimization. To ensure its effectiveness and adequacy to the local population, this system must be evaluated periodically and before use. There are four main ways which modulation can be done: modulation in axis Z, angular modulation, XY plan, temporal modulation and combining all the previous ones.

OBJECTIVES

Verify the influence of the dosis modulation system in the quality of images checking noise's variation and the respective dose amounts during exposure in the abdomen simulator for GE and Phillips equipments.

MATERIALS AND METHODS

The work was developed by two institutions in Rio de Janeiro, Brazil.

Equipments: Philips 64 e Siemens Duo
Number of Images: 115
Parameters: filter and reconstruction increment, cut thickness, kVp, mAs, collimation, Pitch, scanning length, number of cuts per rotation, field of view (FOV), AEC type and window.
Estimated dose: CVOL e PKL values were estimated for each simulation based on the nCTDIW of each scanner.
Image Quality's Evaluation: The noise was analysed in each organ through ROIs using image J software. The relations between noise and mAs were analysed in different organs of each image obtained and using different modulation systems.
Phantoms: 3D Abdominal Phantom, Triple Modality, model 057 (Figure 02) and Dosimetric Phantom.

RESULTS

To quantify the modulation and compare with the one done without modulation system, the relations between noise and mAs were analysed in different organs of each image to the different modulation systems considered to check how the noise level reacts with an anatomic change and mAs (picture 04).

AEC Siemens (Muscle)

without AEC Siemens(Muscle)

The dosimetry was done to compare the modulation systems in both equipments. It was observed a reduction of dose in 52% when compared with the value of the simulation done without modulation using Philips equipment (chart 01).

One part of the chart was illustrated to show mAs variation per image and the respective values of CT and noise for each organ of the simulator which represents several organs and regions of interest with different CT numbers.

The noises variation values were acquired for both types of simulation in several organs using Siemens system (chart 04).

REFERENCES