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ADVANCED IMAGING CENTER
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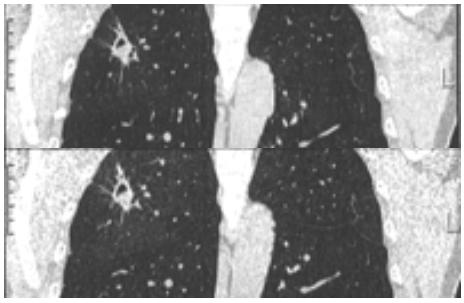
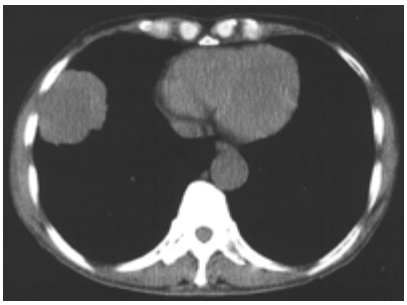
SCREENING LOW-DOSE CHEST CT (LDCCT)





Top: Routine reformatted coronal lung window (115 mAs, 150 mA).
Bottom: Low dose (25 mAs, 30 mA)

Left: Conventioanl axial soft tissue window (115 mAs, 150 mA)
Right: Low dose (25 mAs, 30 mA)

In the last newsletter discussing "Low-Dose CT with Automatic Exposure Control (AEC)," we talked about the advantage of a 64-slice and some 16-slice CT's in terms of reducing the radiation does by up to 60% using AEC. This concept, along with further reduction in the dose by reducing the mAs (pronounced "mass" but standing for milli-ampere second), a lower dose CT can be obtained. This will result slightly lower signal-to-noise ratio but still adequate image quality for diagnostic purposes.

This concept has been utilized by AIC, and other high-tech imaging facilities, for several years, but has recently been gaining a lot of public attention especially in relations to screening the chest in smokers. Low-dose chest CT has a much higher sensitivity than a chest x-ray (CXR) for picking up a small, subtle nodule or early cancer, particularly in the "hidden" areas of the lungs on a CXR (such as in the apices, hila, sulci, retrocardiac and retrosternal regions). LDCCT is finally being advocated for screening evaluation of the lungs for detection of early lung cancer (annually or biannually in patients with history of smoking) similar to a screening mammogram for detection of breast cancer.

As you can see in the above images, there is only a slight difference in the image quality between the high- and low-dose images using a high-quality MSCT (like a 64 and 16-slice CT) by reducing the mA (milli-Ampere) by 80%.

CONCLUSION. Low-dose (i.e., 40 or 25 mAs) helical multi-slice (64 or 16) chest CT produces satisfactory image quality, while maximally protecting patients from radiation exposure.

References:

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3. Xiaohua Zhu, Jianqun Yu and Zheng Huang**, Low-Dose Chest: Optimizing Radiation Protection for Patients.** American Journal of Roentgenology, 2004.

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