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EDITORIAL

European Institute of Oncology project for lung cancer screening

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The opportunity of a screening for lung cancer has been debated for years, since the value of low-dose spiral CT in detecting small parenchymal lesions was demonstrated by ELCAP and other reports. I would like to present to ICIS members the first results of a preliminary study performed in Milan, even though complete data cannot be divulged prior to publication. These results could help in planning further studies or new protocols.

The study started in May 2000. 1036 volunteers, over 50 years of age, were enrolled who were either heavy smokers or ex-smokers with a history of more than 1 packet/day for more than 20 years. They have all been submitted to two yearly consecutive low-dose spiral CT chest examination (140 kVp, 40 mA, 2 : 1 pitch, with a slice thickness of 10 mm. Effective dose equivalent to patient was estimated 0.7 mSv).

The examined population had a mean age of 58 (range 50–70), 742 males and 297 females, smoking on average 26 cigarettes a day for a mean of 37 years. 14% of volunteers had stopped smoking for a mean of 9 years.

After the first low-dose CT, 5.91% of volunteers were recalled for further investigations, as a pulmonary lesion greater than 5 mm was detected. Nodules smaller than 5 mm were not considered for diagnostic work-up: at the second year CT only 1/151 of such nodules showed increased size (from 4.8 to 7.5 mm). This was an adenocarcinoma (T_1N_0).

Out of the 61 recalled subjects, 15 had non-nodular abnormalities and 46 a non-calcified nodular lesion. Diagnostic work-up was performed by HRCT, contrast enhancement evaluation (feasible in 65% of nodules, having positive basal density and homogeneous enhancement), PET (for lesions greater than 7 mm), 3 months' follow-up with volumetric analysis and biopsy when necessary.

With regard to non-nodular lesions, HRCT, PET scan and follow-up (required in 5/15 cases) showed to be the most useful and accurate methods to reach the diagnosis. In one case only a VAT biopsy was performed on a benign lesion (a growing partially solid lesion, positive to PET scan, that proved to be due to post-inflammatory changes due to bronchiectasis).

The definitive diagnosis of non-calcified nodules was reached in 58% of cases on the basis of HRCT morphology and evaluation of nodular density (when lower than 0 H.U; considered benign): no benign case was biopsied or subjected to surgery; a false-negative diagnosis was due to a small apical nodule, diagnosed as a scar, but the lesion increased from 8 to 15 mm in diameter at the second year low-dose CT. This was a T_1N_0 adenocarcinoma.

The results of contrast enhancement and PET agreed in 22% of cases, leading to diagnosis: we had two false-positive diagnoses (an intraparenchymal inflammatory node and a MALT lymphoma) and one false-negative (an adenocarcinoma diagnosed 3 months later on the basis of its growth, evaluated at HRCT due to its irregular morphology).

Follow-up for evaluation of nodule growth was required to reach a diagnosis in 22% of recalled patients: all the diagnoses, but one, were confirmed by operation (in malignant cases) or by the 1 year follow-up. Only one case of a regular round and smooth 8 mm nodule, with indeterminate contrast enhancement and PET negative, grew from 3.42 to 5.25 mm^3 in 6 months and was submitted to VAT biopsy. This was a hamartoma.

Only 7% of the recalled patients with benign lesions were submitted to invasive procedures.

Preliminary results confirm the ability of low-dose CT to detect small parenchymal lesions. The recall

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rate is low, considering that only nodules greater than 5 mm are submitted to follow-up, and this seems to be justified by our results. The use of contrast enhancement and PET scan to characterize the lesions reduces the need of follow-up and of invasive procedures.