Effectiveness of routinely approach towards smoking cessation when lung cancer suspected in current and former smokers

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Abstract: As smoking is a major risk factor for lung cancer, routinely approach of present or past smokers towards permanent smoking abstinence is the most legitimate gesture to manage lung cancer development. We conducted a study on 160 lung cancer suspects with smoking history, addressed to the Smoking Cessation Center of the Clinic of Pulmonary Diseases Iasi, between January 2006 - December 2008. The patients were included in the study on basis of: past or current smoking history, bronchial biopsy confirmed or suspect clinical-radiological - bronchoscopic lung cancer diagnosis criteria. All subjects were routinely delivered a smoking cessation individualized program. Study outcomes were determined by reassessing smoking status at 6 months follow up. Lung cancer was confirmed in 46 of the 108 current smokers and in 24 of the 52 former smokers. We found 35.1 % smoking abstinence rates in current smokers willing to quit after standard 3 months smoking cessation therapy. On the other hand, risk of relapse to smoking was revealed in 7.7 % former smokers, when lung cancer diagnosis certified. These data suggest a high motivation to quit smoking in smokers suspected to be diagnosed with lung cancer. Moreover, as smoking relapses may intervene also, when lung cancer suspicion stressed, our study suggests the need for especially designed smoking cessation programs to be routinely delivered, aiming to target such psychological and disease profile.

Key -Words: smoking, smoking cessation, lung cancer, smoking status, motivation, abstinence

1 Introduction

Since early '50-s, there is no doubt about tobacco exposure role in producing lung cancer. This is due mainly to tobacco smoke, which consists of vapor (gas and semi volatile compounds) and particulate matter (0.1-1.0 μm) [1]. The thousands of toxicants in tobacco smoke, among which over 50 proved as carcinogenic- particularly nitrosamines and polycyclic aromatic hydrocarbons- , are responsible for various types of cancers and lung localization is one of the poorest prognosis to expect, especially in continuing smokers [2]. Carcinogenesis is a long way process beginning with damage of bronchial epithelial cells and impairment of mucous movement induced by gaseous components. This enables particulate matter trapping in mucous of bronchoalveolar space, allowing accumulation of carcinogenic molecules. Knowing the fact that the smoke produced by a single cigarette contains 1-3 mg of carcinogens, clearly, there is no other immediate benefic gesture than quitting smoking, and no other harmful attitude than continuing smoking, regarding this scientifically proved cancer risk factor [2]. But even if anytime welcomed, stopping smoking has not such a positive impact as never smoking at all. Prevention of tobacco consumption – and cigarette is the most dangerous tobacco product - is much more helpful to clear away danger of developing a lung cancer. As well, discontinuing smoking has proved beneficial, at any moment, no matter how late in disease course. This may avoid lung cancer development, but also has an important impact on lung cancer's treatment outcomes, here included patient's compliance or recovery to anesthesia, surgery, chemo and radiotherapy, upon case [3].

Knowing the fact that 95% of lung cancers are attributed to smoking, there are no justified excuses to explain continuing smoking, once lung

cancer risk is known as certainly linked to tobacco exposure. Therefore, routinely advice to stop smoking and providing smoking cessation therapy is legitimate in any current smoker and will prevent lung cancer development.

2 Problem formulation

Smoking related disorders are an overwhelming burden in countries where smoking rates are high and smokers are not routinely assisted towards quitting smoking. 30% of Romanians are active smokers and passive smoking is not uncommon, as smoking ban is not yet uniformly applied in all public places [4]. As lung cancer represents a major cause of death and disability and chronic tobacco exposure is the major cause of this disease, it is expected that smoking prevention and cessation diminish risk of lung cancer and ameliorate treatment outcomes in already confirmed lung cancers.

Our study included active and former smokers with confirmed or suspected lung cancer. All patients received brief advice to maintain non smoking status in the case of ex – smokers and standard smoking cessation counseling or/and pharmacological therapy was provided to active smokers. 6 months follow-up allowed us to estimate efficacy of standard smoking cessation approach and of smoking abstinence rates in patients suspect to develop lung cancer.

3 Material

A study was carried out on 160 patients addressed to the Smoking Cessation Center of the Clinic of Pulmonary Diseases between January 2006 - December 2008. The study aimed feasibility of smoke-free status in active or former smokers with lung cancer diagnostic presumption.

The following inclusion criteria were accepted:

- Current or former smokers
- Suspect lung cancer diagnostic based on: radiological aspect, bronchoscopic aspect of malignancy, malignant cytology in bronchial aspirate/ brushing and confirmed lung cancer based on bronchial biopsy.
- 6 months follow up of smoking status.

Exclusion criteria were:

- Never smokers
- Noncompliance to diagnostic procedures.
- Lost in follow-up patients.

4 Method

All 160 patients with smoking history and lung cancer diagnosis suspicion were initially evaluated about both conditions:

Smoking status was assessed by standard questionnaire with past (number of packs-year) and recent (daily cigarettes consumption in last 12 months) tobacco exposure, nicotine dependence score, quit attempts analysis and quitting smoking motivational interview.

There were 2 categories of subjects included in this study from smoking status point of view: current smokers (CS - defined as daily smokers at least 6 months before questionnaire assessment) and former smokers (FS - defined as smoking quitters at least 6 months before questionnaire assessment).

Nicotine dependence score was established based on Fagerstrom dependence test. Previous quit attempts analysis reviewed number of attempts to stop smoking registered before study inclusion, as well as withdrawal symptoms experienced within these ones. To assess motivation to quit smoking we used a standard motivational interview validated by the Romanian guidelines of smoking cessation [4].

Lung cancer diagnosis was confirmed based on imagistic (chest X-ray +/- computer tomography, bronchoscopic (bronchoscopy with bronchial aspirate +/-brushings) and histological (bronchial biopsy) criteria.

Depending on diagnostic confirmation, patients were classified as:

- Patients with lung cancer suspicion (LCS)
- Patients with lung cancer confirmation (LCC).

Whether lung cancer confirmed or not, all subjects were given brief advice to quit smoking/to maintain smoking abstinence and current smokers willing to quit were provided pharmacological-behavioral smoking cessation therapy for 3 months.

Brief antismoking advice consists of a sum of verbal indications to refrain from smoking, sustained by medical arguments that show tobacco use health hazards and benefits of smoking abstinence. Standard 3 months smoking cessation therapy program included minimum 4-6 visits at the Smoking Cessation Center to deliver pharmacological (varenicline, bupropion or nicotine 15 mg patches) treatment - free of charge - together with behavioral counseling and psychological support to smokers willing to quit assessed by motivational interview. A 6 months follow up visit was done to check smoking

status, thus abstinence rates were determined in both LCS and LCC subgroups.

Smoking abstinence was defined according to Russell criteria as "0-5 cigarettes daily smoking patient with 0-6 ppm carbon monoxide levels in exhaled air, at successive follow-up visits, including 6 months after quitting smoking" [4].

5 Problem solution

In the interval between January 2006-December 2008, 562 smokers were addressed to the Smoking Cessation Center of the Clinic of Pulmonary Diseases Iasi. Among them, a number of 160 current or former smokers with presumed lung cancer were selected to receive smoking cessation counseling and pharmacological therapy.

The patients included in our study (Fig.1) were 108 current smokers (CS) and 52 former smokers (FS).

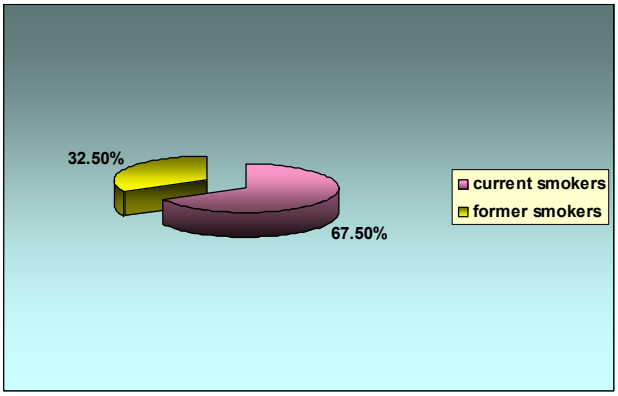

Fig.1 Smoking status of patients included in the study

Analysis of demographic, smoking and lung cancer disease characteristics in the Current Smokers subgroup

Current smokers with lung cancer suspicion were predominantly males (85, 2 %) from urban (78, 7%) residence areas.

Age average ranged between 38 – 84 years, with a peak of 38% for the 60-69 age groups (Fig.2).

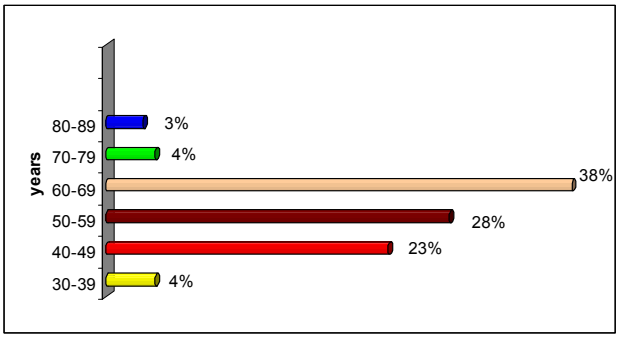

Fig. 2 Age distribution of current smokers suspected to develop lung cancer

Tobacco consumption registered a great variability (between 8 and 76 packs-year), as shown in Fig.3, the highest intensity of smoking (51, 8%) being found in males, heavy smokers, with low educational level, from rural areas.

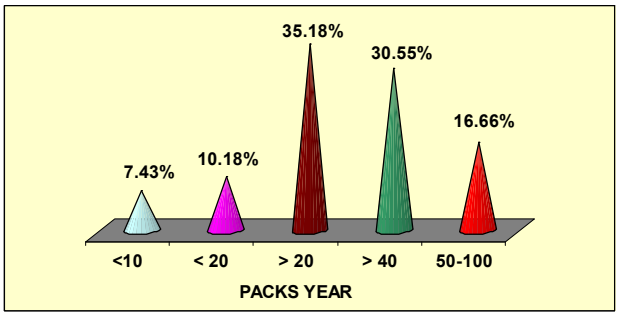

Fig.3 Tobacco consumption in current smokers lung cancer suspects

In the CS (n=108) subgroup, nicotine dependence score, according to Fagerstrom scale, was severe (>7) in 44, 4 %, moderate (4-6) in 29, 6 % and low (< 4) in 25, 9 % of cases.

39 % of CS subgroup had ever tried at least once to quit smoking. Withdrawal symptoms have been reported as severe in 18 (16, 7 %) patients.

All current smokers were given a motivational interview test to assess willingness to stop smoking. Only 66 such smokers asked to receive smoking cessation therapy immediately, while 33 subjects declared will quit later (Fig.4).

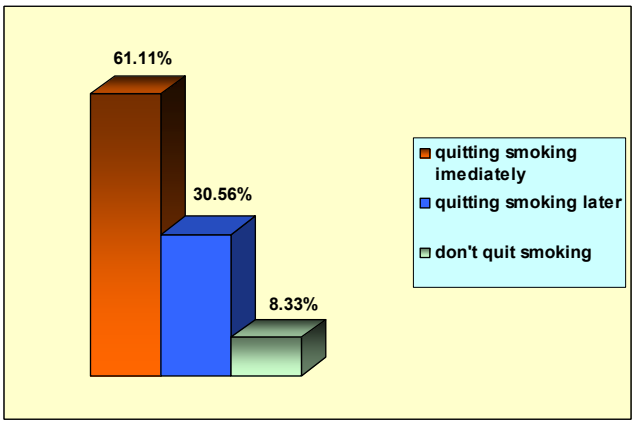

Fig. 4 Assessment of motivation to quit smoking

Among those 108 currently smoking patients with clinic and radiologic suspicion of lung cancer, 63 (58, 3%) underwent bronchoscopy with bronchial aspirate +/- bronchial brushings. Bronchial biopsy was possible in 54 cases and relevant in only 46 cases (see Fig.5).

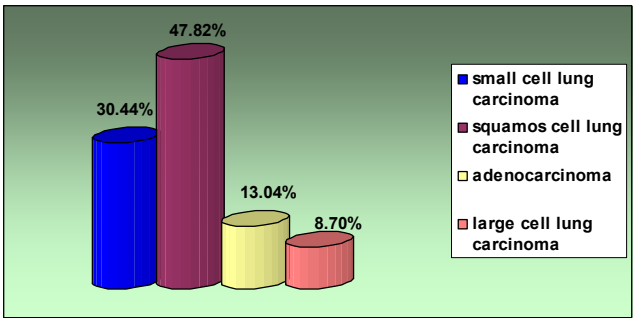

Fig. 5 Histological types of lung cancer in current smokers

Smoking cessation pharmacological therapy was prescribed in 74 currently smoking patients, among who 38 cases of confirmed lung cancer and 36 with unconfirmed lung cancer suspicion.

At 3 month end of treatment, 36 patients (48, 6%) had quit smoking (16 LCC and 22 LCS) and after 6 months follow-up, total abstinence rate was objectively found in 26 patients (35,1%), meaning 10 LCC and 16 LCS.

Analysis of demographic, past smoking history and lung cancer disease characteristics in the Former Smokers subgroup

We found 34 females and 18 males, with mean age 56.8, most coming from urban (75%) areas. In the past, when smoking, they registered an intensity of tobacco consumption higher than 20 packs-years in 65.4 % of cases.

Standard bronchoscopy was performed in 47 former smokers, yet bronchial biopsy in just 35, with relevant findings to confirm lung cancer (Fig. 6) in only 24 cases.

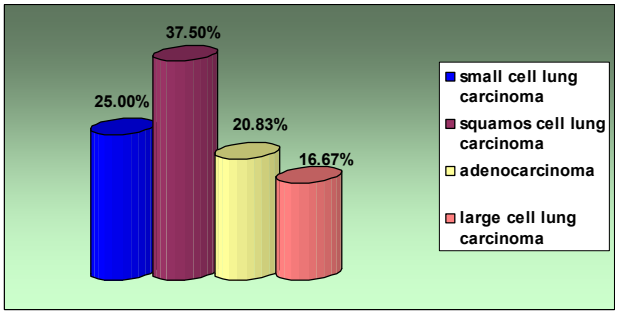

Fig. 6 Histological types of lung cancer in former smokers

Brief advice to maintain smoke-free status was given to all 52 former smokers. At 6 months follow-up visit, 48 patients were still ex-smokers, while 4 patients in the LCC category relapsed to smoking.

6 Discussions

There is few evidence on influence of smoking cessation programs in current or former smokers suspect to have lung cancer. Yet, literature overview in this field reveals several important landmarks.

Reducing tobacco consumption has a marked impact in decreasing lung cancer risk, as shown in a study to compare hazard ratio of heavy smokers > reducers > quitters > light smokers > ex-smokers and > never smokers [5]. Another study, published in J.Clin.Oncol, has found that lung cancer risk declines with increased duration of abstinence, as relative risk of current smokers is 16.6 > 10.9 in recent (< 5 yrs at baseline) ex-smokers > 3.4 in distant (>5 yrs at baseline) ex-smokers, compared to never smokers [6]. In men, mortality by lung cancer is progressively reduced as duration of abstinence increases [1]. Also, in women, risk of death from lung cancer is significantly lower if women quit smoking under the age of 50, compared to risk of women current smokers [7].

Even if all these facts are well known, little is done in current practice about routinely delivered smoking cessation in active smokers, at an early stage of smoking disease, to be effectively efficient in prevention of lung cancer development.

When a patient becomes suspect of lung carcinoma, smoking cessation should be the first therapeutic gesture. Often, such patients might feel depressed and doubt quitting will prolong their survival, so the doctor has to convince them smoking cessation is always the right thing to do, as studies have shown it is improving survival, especially in operable cancers [3]. Smoking cessation programs applied before surgery are cost-effective, improve quality of life [8] and especially designed smoking cessation programs to target lung cancer patients are needed. The cessation "nihilism" of lung cancer smokers is not justified as long as scientific evidence about future health benefits is available [9].

Taylor K.L et. col. found screening for lung cancer is the best opportunity to approach smoking cessation, as these patients become more vulnerable and opened to stop tobacco use [10]. Costa F. et. al. answered " yes" to the question: "Smoking cessation in lung cancer patients – is it worthwhile?", by showing that continuing smoking induces tumor growth, interferes with some chemotherapeutic agents and may slower post-surgery wound healing [11].

Putting together all these findings, present status quo suggests the need for new prospectively designed studies to analyze feasibility of quitting

smoking in lung cancer patients with smoking history.

7. Conclusions

Smoking cessation is working better when smokers suspected to have lung cancer diagnosis. In a smoking cessation program to routinely approach lung cancer suspect smokers to quit, we found higher abstinence rates than in our current smoking cessation practice. Former smokers must not be neglected, as relapse to smoking is not uncommon, especially in psychological distress context, when lung cancer suspicion revealed. Therefore, comprehensive approach of smoking, to periodically assess smoke free status in ex-smokers and routinely deliver smoking cessation in all current smokers is a "must have" to manage lung cancer development.

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