LUNG CANCER/TUBERCULOSIS COMBINED CASES CLINICAL CHARACTERSTICS

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Introduction: For the first time C.Bayle spoke about combined cases Tuberculosis (TB) and Cancer in 1810 [annex 1]. The different types of clinical manifestations of Lung cancer (LC) makes it a challenge to be diagnosed and differentiated especially in tuberculosis inpatient facilities. Some scientists assert that tuberculosis and cancer are antagonists. Classics of pathologic anatomy P. Virchov and K. Rokitansky (1854) were advocates of latter statement [2,3]. Lung cancer and TB mutual correlations advocates note that in high TB mortality countries Lung cancer deaths is comparatively less. On the other hand, as a rule, decrease in TB mortality rates results in Lung Cancer mortality increase. In 1929, one of this theory advocates, R.Pearl suggested to use tuberculin as an anticancer treatment mean [3,4,5]. As the diagnostics of lung diseases improved, scientists began to believe that post tuberculosis sclerotic changes facilitate development of cancer. Some research showed that scars, which remain after healing of tuberculoses' lesion, could cause development of lung cancer ("cancer in the scar") [4,5]. Some authors point out that increasing incidence of lung diseases and tobacco addiction is associated with increased incidence of lung cancer and therefore there should be oncological watchfulness in follow-up of patients with lung diseases or tuberculosis [6.7.8.9.10].

In some cases, cancer, while speading, destroys previously recovered TB infected focuses and results in appearing Mycobacterium Tuberculosis (MBT) [annexes 11,12].

Varol Y. and some co-authors studied 38 male patients cases, where lung cancer and TB were found to coexist. The present study demonstrates that lung cancer combined with active pulmonary TB most frequently presents as squamous cell carcinoma, with a male predominance [13]. Other studies suggest adenocarcinoma predominance [annexes 14, 15].

In 2012 February 3rd, on the International Day Against Cancer, during the Armenpress interview as Hayro Galstyan, the head of National Centre of Oncology of Ministry of Health, RA, mentioned that Lung Cancer in Armenia among the Malignant tumors in the last 10 years is in the the first horizontal position from its prevalence [annex 16].

Lung Cancer combined with TB hasn't been studied. The aim of this work is to study Lung Cancer clinical manifestation among TB patients in hospital.

Material and methods: 82 patients case histories who were diagnosed as lung TB/cancer for the first time and who were examined and treated in National TB Control Centre during 2005-2015 were included. Following methods of diagnostics were used: The study involved patients diagnosed with tuberculosis and LC, either simultaneously or sequentially. We performed a search of the files of the pulmonology outpatient clinics for patients with tuberculosis and LC, and the electronic medical records of these patients were reviewed. A standardized form was completed for each patient included in the study. Demographic data and data relating to the diagnoses of tuberculosis and LC were collected, as were pulmonary function test results. The diagnosis of pulmonary tuberculosis was based on the following data: positive Ziehl-Neelsen staining for AFB a positive culture for MBT and radiological findings consistent with pulmonary tuberculosis or epidemiological, clinical, and radiological (chest X-ray, computed tomography) findings consistent with pulmonary tuberculosis, associated with a favorable response to treatment with antituberculosis

drugs. The diagnosis of LC was based on bronchoscopy, anatomopathological findings and cytological investigation of sputum, pathological investigation.

Results: Majority of patients were male (96.3%), aged mainly (91.1%) 40 and above years. Significant number of patients (97.5%) hav abused the tobacco by smoking 30-40 sigarettes per day: From other aggravating circumstanced insufficient living conditions were mentioned in 78.0% of the cases. Acute beginning of the disease and blood spitting were mentioned only by 35.4% cases. In the rest of the cases 64.6%, the disease begins progressively by cough, generalized weakness, respiratory difficulties that were attributed to smoking. During 45.1% of patients received antibiotic therapy 2-3 times during 1-2 months and in in-patient or outpatient conditions, from which the temporary improvement has been observed, subsequently getting worsened. After the 3-rd month of admission to hospital the first symptoms disappeared in 40.2% of cases, for the rest 59.8% of cases a longer period was observed. The similarities of the symptoms in combined cases mislead the primary healthcare doctors to the TB in 81.7% cases and the patients were referred to the National Tuberculosis Control Centre SNPO.

We found that the lung cancer more often 82.9% was combined with the chronic types of TB: Based on our study, it was found that the lung cancer more often 82.9% is combined with the focal, fibrocavernousis and cirrhosis types, and in 9.8% cases it developed exclusively in the presence of residual changes of post-tuberculosis (large calcinates, hard foci, solitary and multiple tuberculomas, lung cirrhosis). Pleura infection complicated 31.7% of Lung Cancer and also caused hemorrhagic pleura. Slight 2.4% cases were observed when TB and cancer were identified at the same time. Before cancer diagnosed, the 87.8% of patients received TB treatment at different time. Sensitivity was checked by Manthoux Test. 36.6% of cases didn’t respond to Tuberculin skin test. Mycobacterium tuberculosis was observed in sputumphlegm by microscopic method in 25.6% of patients, of which 76.2% were observed by the culturing method. In majority of cases (57.3%) the

lung cancer had a central localization and 37.8% of cancer cases were peripheral. By the morphological examination of the bioptat: In comparison with other types, squamous cell lung cancer was the predominant and discovered in 42.7% cases by histology.

Below is a presentation of a clinical study from a case history 388/150

Patient	G.
Date of birth:	1957
Date of admission	December 22 2014
Date of discharge	February 20 2015

He is a driver in the military unit.

The disease is detected in the military unit during preventive X-Ray examination. Left Lung infiltrative TB was suspected and referred National Tuberculosis Control Centre SNPO for further examination and treatment.

Complains: pain in the chest and cough.

In the anamnesis cardiac ischemic disease, coronary artery bypass grafting (CABG)in 2008. Arterial hypertension II^{o} (high risk). Gets drugs connected with it: in this regard to preparations.

From harmful habits he mentioned smoking.

General condition at admission was satisfactory.

Weight was 66kg. The temperature 36,6. Heart tones: Friquent-100 beat/m, blood pressure was 150/100mm Hg.

There was no crepitation in the lungs.

Physiological running was free and painless. Frequent coughing.

February 18 2015: Blood general examination Haemoglobin 160 g/l. Lakiotis 3,9. Erythrocyte grounding speed was 10mm/h.

Sputum smear microscopy result December 22 2014 11 AFB.

22 December 2014 ESG - Regular synus rhythm 1´- 85. Horisontal position of heart. Hypertrophy of left ventricle. The ventricle is overloaded.

22 December 2014 Abdomen ultrasound – Liver is enlarged 2-2.5cm, diffuse changed, homogenous. There is no portal or biliary hypertension. Gall bladder is. Spleen is without pathologic changes. Kidneys are of normal shape and size, thin renal parenchyma with wavy contours and 1 microlyte at each side. Urine outflow is normal. Urine bladder is empty. There is no free fluid in the abdomen and pleural cavities.

Chest organs X-ray made on 24 December 2014 (Figure 1): In the left lung upper part we observed approximately 4x3cm sized comparatively flat contoured shadow that made ,,a round infiltrate,, impression. Left trachebronchial group lymph nodes were a bit bigger. Sinuses were free. In the upper parts of the left and right lungs there is fibrosis and hard nidus.

Based on the anamnesis and test results left lung upper lobe infiltrative TB in the destruction phase is diagnosed. MTB positive. DOTS 1st category treatment has been prescribed.

Further examinations

22.01. 2015: Blood general examination Haemoglobin 130 g/l. Lakiotis 5,2. Erythrocyte grounding speed was 10mm/h.

Further examinations on December 27th, January 23rd, February 18th, 19th no bacterium was found in sputum and bronchial lavages (February 20th). Though no bacterium was found in the smear the patient continues to complain of pain getting stronger.

Permanent pains in the chest more frequent from the left part, that do not weaken after taking analgesic tablets (pills), more often in the left part of the chest. High temperature, dizzy, lack of appetite and frequent urination.

Vesicular breathing in the right lung. In the upper part of the left lung we observed dry wheezes. Heart tones: Friquent-100 beat/m , blood pressure was 120/80. Weight was 65kg. The temperature 36,6.

18 February 2015: Blood general examination Haemoglobin 126 g/l. Lakiotis 6,8. Erythrocyte grounding speed was 58mm/h, nitrifies were 83, and lymphocytes 12.

18 February 2015: Abdomen organs sonofluorography: Liver fat lipodistrophia (in the measure). Cystitis, the bladder's wall were thickened by 4-6mm, prostatis was without peculiarities, lack of astetits, there is an unnoticeable hydrothorax from both sides, (40-60mm). 18 February 2015: ESG synus tachycardia 100-110B/M.

Chest organs X-ray made on 18 February 2015: The sizes of the shade described in the upper lobe of left lung and in the hilum have got bigger.

On 20 February 2015 we made fibro-bronchoscope during of which we observed closed state of the left lung upper part bronchi because of soft tissue hypertrophy. He was diagnosed left lung central cancer. The sample, taken from the mentioned tissue recorded the following under cytological examination: Bronchial epithelial proliferation with signs of metaplasia and high degree dysplasia. Presence of some well expressed atypical cells.

The presented case shows, that lung cancer developing is an old post-tuberculosis changes background. Little quantity mycobacterium discovering can be explained by elimination of cancer cells of post-tuberculosis bacteria, that is proved with the fact, that the mentioned sample did not grow in the hard environment. The clinician ascribed the pain in the left side of chest to cardiac ischemic disease and surgery connected with it.

Conclusion: Lung cancer and TB combination was observed mainly in men above 40 years. In the situations of tobacco abuse and tuberculosis the symptoms of lung cancer were attributed mainly to smoking. The generality of combined cases, the decreased sensitivity to tuberculin, and the low frequency of Mycobacterium tuberculosis identification are significantly complicating the diagnosis of TB combined with lung cancer.

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All contributing authors declare no conflicts of interest.

References

1. Hambly A.S.Combined pulmonary tuberculosis and carcinoma of the ling. U.S.Armed Forsed Med. J.1952.Vol.3.N1:75-94

2. Aoki K: Excess incidence of lung cancer among pulmonary tuberculosis patients. Jpn J Clin Oncol.1993,23:205-220.

3.Sadovnikov AA Panchenko KI.Pulmonary tuberculosis and cancer. Probl Tuberk. 2009, 8: 55-58.

4. Meyer EC.,Scatliff H,Lindskog G.E. The relation of antresedent tuberculosis to bronchogenic carcinoma. J.Thorac.Cardiovasc. Surg.1959.Vol.38 N3;384-397

5. Pearl R. Cancer and tuberculosis. Am.J.Hyg.1979. Vol.9,N1:97-159.

6. Sadovnikov AA Panchenko KI. Lung Cancer on the background of post – tuberculosis**.** Probl Tuberk .2011.N 6:29-33.

7. Zhingel IP, Tsimmerinov IE: Diagnosis of cancer of the lung in patients with tuberculosis subjects with post – tuberculosis changes of the lungs Probl Tuberkuloza. 1999, 6: 26-29

8. Nikitin VA, Cherenkova OV,Vasileva LV. Tabacco and lung diseases: Effectiveness of approaches to treatment. Tuberculosis and lung diseases. 2016,94(12):7-12

9.Tantucci C., Modina D. Lung function declin in COPD. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3282601/

10. Powell HA, Iven-Omofoman B, Baldwin DR et al. Chronoc obstructive pulmonary disease and risk of lung cancer: the importanse of smoking and timing of diagnosis https://www.ncbi.nlm.nih.gov/pubmed/23196277

11. Westergren A. One hundred cases of pulmonary carcinoma, analyzed with reference to tuberculosis. Acta Chir. Scand.1959. Vol.245: 129-141

12. Saulus Cicenus and Vladislavas Vencevicius.Lung cancer in patients with tuberculosis. Word Jurnal of Surgical Oncology.wjso.biomedcentral.com/articles/10.1186/1477-7819-5-22

13. Varol Y1, Varol U2, Unlu M1, Kayaalp I1 et al.

Primary lung cancer coexisting with active pulmonary tuberculosis.

https://www.ncbi.nlm.nih.gov/pubmed/25189563

14. Mejri I, Ourari B, Cherif H, et al. Pulmonary tuberculosis and lung cancer:

A complex interaction. http://erj.ersjournals.com/content/48/suppl_60/PA3721

15. Denise RS, Dirceu FVJ, ,Alice MM, et. al.

Pulmonary tuberculosis and lung cancer: simultaneous and sequential occurrence.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4075860/

16. The most common lung cancer in Armenia. https://armenpress.am/arm/news/678298/

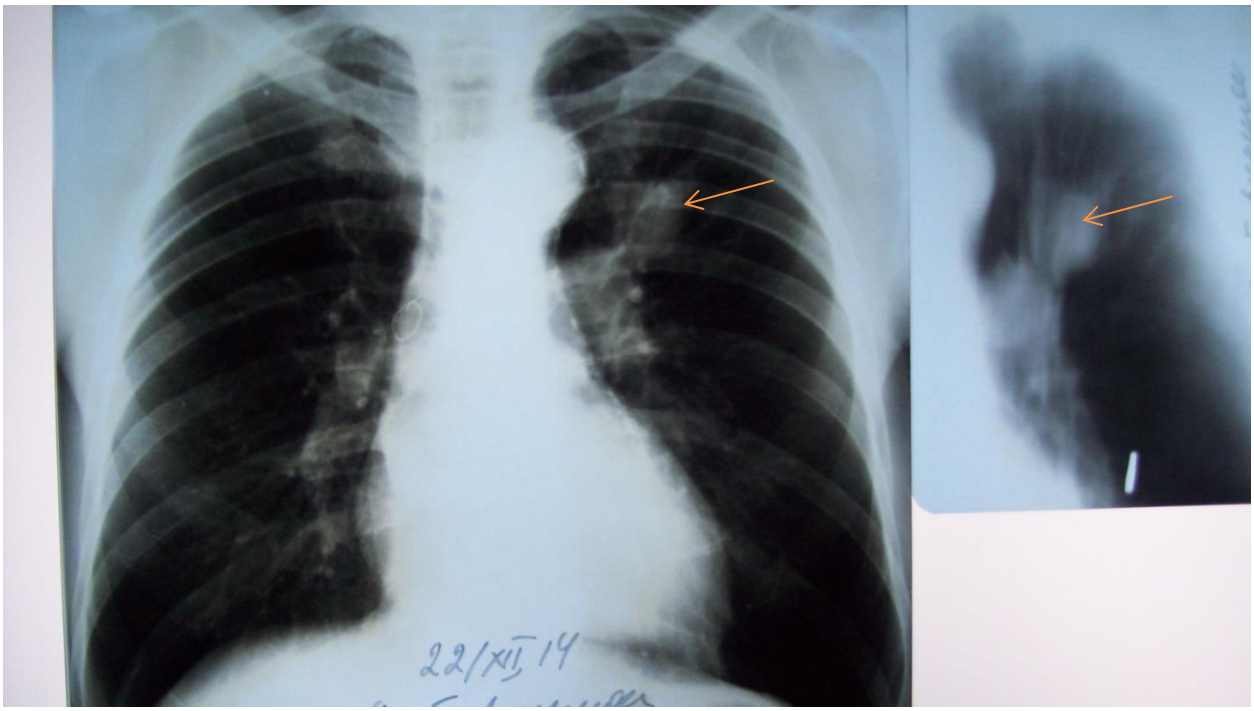

Figure 1

Chest organs X-ray and Tomography in direct projection made on 22 December 2014: In the left lung upper part we observed approximately 4x3cm sized comparatively flat contoured shadow that made ,,a round infiltrate,, impression. Left trachebronchial group lymph nodes were a bit bigger. Sinuses were free. In the upper parts of the left and right lungs there is fibrosis and hard nidus.