



ISSN: 0975-833X

RESEARCH ARTICLE

EFFICACY OF TREATMENT OF PULMONARY TUBERCULOSIS IN PREGNANT WOMAN

\*Maria Pavlova, Anna Starshinova, Irina Chernokhaeva, Ludmila Archakova, Nadezda Sapozhnikova, Pavel Gavrilov, Viacheslav Zhuravlev and Piotr Yablonskii

Department of Phthisiopulmonology, St. Petersburg Research Institute of Phthisiopulmonology, 191036, St. Petersburg, Russian Federation

ARTICLE INFO

Article History:

Received 20<sup>th</sup> March, 2015  
Received in revised form  
08<sup>th</sup> April, 2015  
Accepted 24<sup>th</sup> May, 2015  
Published online 27<sup>th</sup> June, 2015

Key words:

Dithiol,  
Gold (I),  
Ligands,  
Microorganisms,  
Transition metal,  
Dithiocarbamate.

ABSTRACT

Treatment of tuberculosis in pregnancy always presents certain difficulties and should consider not only the condition of pregnant woman, but also a child. Recently tuberculosis and pregnancy were considered incompatible. Presented clinical case demonstrates possibility of treatment during pregnancy with good clinical outcome and recovery of specific process in the mother and adequate development of the child. Adequate complex therapy, taking into account the sensitivity of isolated Mycobacterium tuberculosis, as well as continuous monitoring of condition of pregnant woman/mother and fetus/newborn child by both physician specialist in TB and obstetrician – gynecologist should be used. All period of therapy consist 12 month.

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**Citation:** Maria Pavlova, Anna Starshinova, Irina Chernokhaeva, Ludmila Archakova, Nadezda Sapozhnikova, Pavel Gavrilov, Viacheslav Zhuravlev and Piotr Yablonskii, 2015. "Efficacy of treatment of pulmonary tuberculosis in pregnant woman", *International Journal of Current Research*, 7, (6), 16859-16861.

INTRODUCTION

The combination of tuberculosis with pregnancy attracts attention of physicians since long ago and raises a number of questions. Prior to use of antibiotics publications of Grisolle (1850) and Maragliano (1899) pointed out the negative effect of pregnancy on clinical course of tuberculosis. The greatest danger of the onset or exacerbation of tuberculosis is observed in early pregnancy (2nd month), its middle (5<sup>th</sup> month), in the last weeks of pregnancy before delivery, and within first 6 months after it. Two-thirds of all cases of tuberculosis exacerbations in pregnant women are accounted for the first six months after delivery. The combination of tuberculosis with pregnancy attracts attention of physicians since long ago and raises a number of questions (Zaykov, 2010). When inactive TB disease, then its worsening during pregnancy is extremely rare. Some authors recommend that at the slightest suspicion for TB, regardless of the period of pregnancy, the patient should be examined by X-ray examination of the chest (Savula, 2004, 2008).

Development of severe forms of the disease, such as tuberculosis meningitis and miliary tuberculosis, are also possible (Makarov *et al.*, 2004; Addis, 2001). The question arises about abortion. In such a case it is important for a physician to perform thorough analysis of patient's condition conducting bacteriological examination of sputum, if necessary - chest radiography with abdominal shielding (Kalachevsky, 1994). Examples of successful treatment of tuberculosis in pregnant women and delivery of a healthy child are of special interest for physicians, pulmonologists and pediatricians. The below is the clinical observation of patient X. 28 years old, which at the time of TB diagnosis the period of pregnancy was 12<sup>th</sup>-14<sup>th</sup> Weeks.

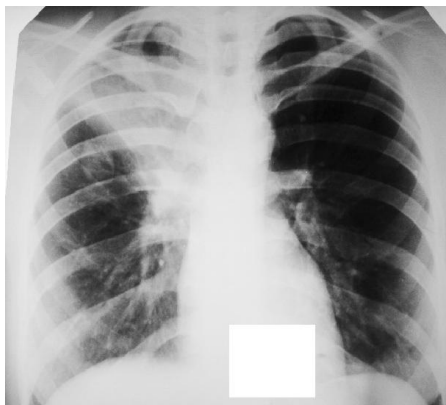
Woman X. 28 years old entered the hospital on 30.09.2010 diagnosed with fibro-cavernous pulmonary tuberculosis and positive result of bacterial excretion with M. tuberculosis (MBT (+)), 12-14 Weeks of pregnancy. From anamnesis it is known that the onset of lungs tuberculosis in the patient was in July 2006. It was diagnosed focal tuberculosis of the upper lobe of the right lung and positive result of bacterial excretion, MBT (+). Treatment of anti-TB drugs (isoniazid, rifampicin, pyrazinamide, ethambutol) in a hospital at place of residence was administered (Figure 1).

\*Corresponding author: Maria Pavlova,  
Department of Phthisiopulmonology, St. Petersburg Research Institute of Phthisiopulmonology, 191036, St. Petersburg, Russian Federation.



**Figure 1.** The data of X-ray examination of the patient X, 28 years. **Diagnosis:** Fibrous-cavernous tuberculosis of the upper lobe of the right lung in the phase of infiltration and contamination /MBT (+). Review the chest radiograph in the anterior projection with the identification process (21.07.2006). In the right upper lobe infiltrate determined rounded, surrounded by polymorphous lesions

In August 2007 X-ray study (spiral computed tomography (CT) of the chest) revealed growing changes in the upper lobe and C6 of the right lung, emergence of destruction cavity. Therapy: isoniazid (0.6), pyrazinamide (1.5), rifampicin (0.6), ethambutol (1.2), and kanamycin (1.0) in 3 months, the continuation - 9 months, the overall therapy duration – 12 months. From September 2007 until July 2008 patient continued therapy. By July 2008 (Figure 2) on survey X-ray a decrease in the volume of the right upper lobe due to its partial atelectasis and its infiltration was observed, as well as polymorphic lesions and specific foci with the decay in the right lung in S6.



**Figure 2.** The data of X-ray examination of the patient X, 28 years. Review the chest radiograph in the front projection (27.07.2008). **Progression:** decrease in volume of the upper lobe of the right lung due to partial atelectasis with its total infiltration. Polymorphic lesions and specific foci with the collapse of the right lung in S6

In August 2010 the patient's condition worsened acutely with: weakness, anorexia, febrile, cough with mucous expectoration to 10.0-30.0 ml per day. At X-ray in anterior projection (Figure 3) further progression of the process with the formation of giant cavity decay with the liquid level in upper lobe of the right lung was determined. Infiltrative tuberculosis of the upper lobe of the right lung, MBT (+) was diagnosed. By molecular genetics method using PCR real time in 07.10.2010 of

Mycobacterium tuberculosis complex was determined, and resistance to isoniazid was revealed. By ultrasound pelvic installed intrauterine pregnancy of 12-14 weeks, the fact that the heartbeat is present. Pregnancy is 14-16 weeks. In the hospital the patient received therapy for: isoniazid (0.6), pyrazinamide (1.5), ethambutol (1.2), rifampicin (0.6) per os. At complex therapy by the end of 1 month a positive clinical dynamics was observed: reducing the symptoms of intoxication, coughing stop, sputum ceased to stand, improved appetite.



**Figure 3.** The data of X-ray examination of the patient X, 28 years. **Overview** the chest radiograph in the front projection (27.09.2010). **Further progression** with formation of giant cavity decay with the liquid level in the projection of the upper lobe of the right lung. Increase in specific infiltration and increased degradation of cavity in S6 of the right lung

Fetal ultrasound (25.01.11): in the uterus one live fetus in the head diligence, heart clear, rhythmical. By size of fetus pregnancy is 35/36 weeks. In the posterior wall of uterus placental abruption is detected, vascular pts d = 1.5-2.0 cm. Transfer to maternity ward was recommended. The patient was transferred to the maternity ward of infection department in infection hospital. X-ray examination carried out (Figure 4). In CT chest from 15.02.11: atelectasis of the upper lobe of the right lung (Figure 5) is determined. The lumen of the right upper lobe bronchus is not visualized. In S6 of the right lung the cavity of irregular shape dimensions 3.9 x 1.8 cm is determined. Surrounded polymorphic pockets.



**Figure 4.** The data of X-ray examination of the patient X, 28 years. Review the chest radiograph in the front projection (08.02.2011). **Marked** the closing of the cavity with the formation of degradation fibro-atelectasis the right upper lobe. **Marked** regression of specific changes in S6 the right lung cavity with reduced degradation



Figure 5. CT, patient X. 2 years after delivery, clinical cure of pulmonary tuberculosis. A. Pulmonary window. Fibro-atelectasis the right upper lobe.

The patient continued to TB treatment: isoniazid (0.6), pyrazinamide (1.5), ethambutol (1.2), rifampicin (0.6). Tolerability was satisfactory. At follow-up after 2 months of therapy the patient's condition was satisfactory, no complaints. In the analysis of sputum *Mycobacterium tuberculosis* were not detected by all methods (microscopy, culture). By computer tomography examination (CT) chest from 15.04.2011: the picture is stable, in C6 thin-walled cavity persists (see Figure 6).

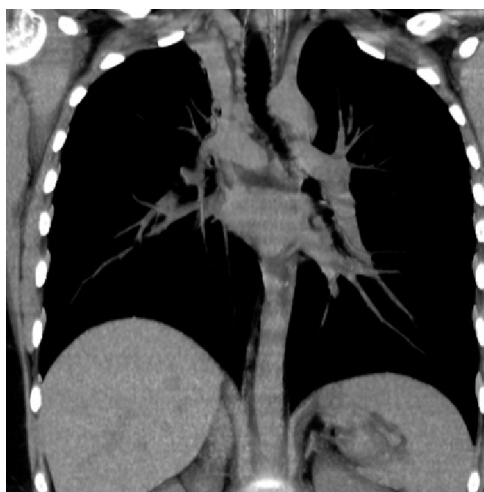


Figure 6. CT, patient X. 2 years after delivery, clinical cure of pulmonary tuberculosis. B. Soft tissue window, front reconstruction. Fibro-atelectasis the right upper lobe. Total occlusion of the right upper lobe bronchus

Surgical treatment was refused. Patient was examined as follow-up observation period at the Institute in 2012 and 2013. During this period of observation the patient's condition was satisfactory, persistent absence of bacteria excretion. Follow-up spiral CT of chest in 2012 and 2013: cavity destruction was not determined any longer, the rest of X-ray pattern is stable. The patient developed clinical recovery from pulmonary tuberculosis (see Figure 7, 8). Development of the child was in accordance with the age.

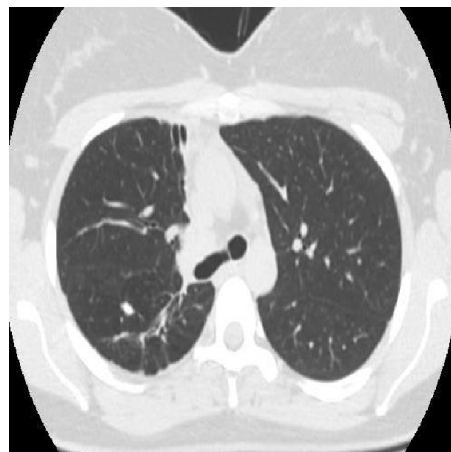


Figure 7. CT, patient X. 2 years after delivery, clinical cure of pulmonary tuberculosis. Pulmonary window. Sealing area of the lung tissue and fibrous deformation lung pattern with few clearly demarcated foci in S6 of the right lung (in place of the previously visualized cavity)

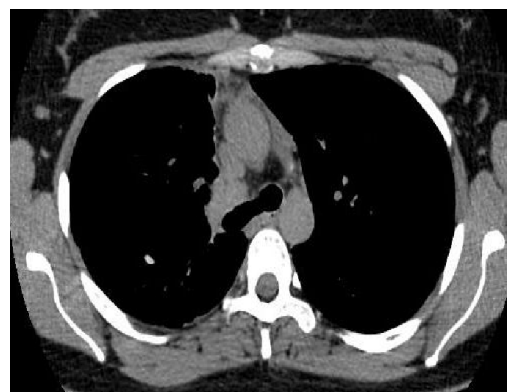


Figure 8. CT, patient X. 2 years after delivery, clinical cure of pulmonary tuberculosis. D. Soft tissue window. Subtotal calcination focal changes in S6 of the right lung

## Conclusion

The combination of tuberculosis with pregnancy attracts attention of physicians since long ago and raises a number of questions. On the one hand the effects of pregnancy and course of tuberculosis, on the other – impact of tuberculosis on the course of pregnancy and delivery, and health of a woman after delivery and a newborn.

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