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Pulmonary arterial hypertension, is it a vascular neoplasm?

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Pulmonary arterial hypertension (PAH) is a disease of the small pulmonary arteries characterized by vascular obstruction leading to progressive elevations in pulmonary vascular resistance and pulmonary artery pressures and ultimately right heart failure. In PAH, a distinct vascular lesion known as the plexiform lesion is considered the histological hallmark of this disease. Although plexiform lesions involve the three components: Smooth muscle layer, adventitia and the endothelium, most studies have focused on the smooth muscle component and the role of vasodilators although less than 10% of PAH patients respond fully to simple vasodilators therapy. Thus, the development of new theories has become necessary. Subsequently, augmented endothelial cell proliferation leading to complicated capillary-like channels (angio-proliferation) as the main component of the plexiform lesion has been reported. Furthermore, the discovery of endothelial monoclonality in plexiform lesions of idiopathic PAH further support the “neoplastic hypothesis” of the disease. Several mutations have been linked to both angio-proliferation and inhibition of apoptosis in endothelial cells from plexiform lesions, the whole mark of tumor formation. For instance, alterations in transforming growth factor- β (TGF- β) receptor II may turn endothelial cell insensitive to the cell growth-controlling effects of TGF- β 5. Moreover, expression of anti-apoptotic protein survivin has been reported in PAH plexiform lesions. Furthermore, a shift from oxidative phosphorylation to aerobic glycolysis (the Warburg effect) which is originally described in tumor cells has been also described in PAH. Although the recently published IMPRES study using Imatinib, a tyrosine kinase inhibitor in treating severe pulmonary hypertension was considered negative because of the drug toxicity, it has nevertheless confirmed the significant efficacy of these agents in improving the exercise tolerance, symptoms and hemodynamics and further supports the neoplastic features of the disease. This should certainly open the door to develop new diagnostic techniques and targeted therapies against the vascular remodeling component.

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The epidemiological situation of Pulmonary tuberculosis in the penitentiary system

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Relying on the data from World Health Organization and Center for Disease Prevention and Control, we can say that TB is a global epidemic and is among the world's leading deadliest diseases. TB has caused more deaths in youth and adults than any other infectious disease, such that 1 person dies every 10 seconds. The first Guidelines for the Control of Tuberculosis in Prisons were developed and published by the World Health Organization (WHO) and the International Committee of the Red Cross (ICRC) in 1998. TB registered cases in all age group tallies to about 2.8% of the world's population and of this 2.8%, 26% of the cases could have been avoided. This is in the case of developing countries. Since 1990, the society has achieved significant success in the fight against TB as TB cases and related deaths has declined. TB deaths are expected to decrease by 50% globally by 2015. TB is a serious problem in the prison system. TB is 10 times more common in prisoners than in civilians. Approximately, there are about 10 million prisoners in the world. Most of them are men, ages varying between 15 to 45 years. Many of them are either carriers or infected with hepatitis B, C and HIV/AIDS. Infection risk is higher in closed spaces. TB control program in prison consists of three types of screening which includes: Entry screening, re-screening (in a massive scale) and contacts screening. It is important to reduce the risk of transmission of TB in the prison facilities with adequate infection control measures.

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