

Lung cancer and Hepatitis C virus

Sir,

There is evidence of possible association between Hepatitis C virus and lung cancer.^[1,2] We present a case to emphasize on this association.

A 29-year-old, non smoker was admitted with the chief complaints of chest pain and breathlessness for 2 months and hemoptysis for 1 month. He was a never smoker and didn't have significant exposure to second-hand tobacco smoke. He had no family history of lung cancer, but had received 3 units of blood transfusions 9 years back. Routine investigations except for liver function tests were within normal limits. His serum bilirubin was 3 mg/dl, SGOT 65 U/L, SGPT 52 U/L and alkaline phosphatase 240 U/L. Anti HCV antibodies were detected through ELISA method. His HCV genotype was type 1. HCV quantitative report was 21, 90,000 IU/ml HCV RNA. He tested negative by ELISA for HIV, Ig M Anti-HAV, Ig G Anti- HAV and HBsAg. Sputum for AFB smear was negative and PPD showed induration of 3 mm after 72 h.

Chest X ray PA showed a mass lesion in the left middle zone [Figure 1]. Contrast enhanced CT scan (CECT) of thorax revealed a heterogeneously enhancing mass lesion with enhancement of 68 Hounsfield Units in the left upper lobe, abutting the chest wall [Figure 2]. CT-guided biopsy of lung mass and histopathology revealed an adenocarcinoma [Figure 3]. Immunohistochemistry revealed tumor positive for TTF-1. CECT of neck and abdomen were negative, thus ruling out a primary from these regions. The diagnosis of adenocarcinoma lung with Hepatitis C seropositivity was made.

Exposure to environmental tobacco smoke, occupational exposure (arsenic, asbestos, chromates, chloromethyl ethers, nickel, radon), combustion-generated carcinogens, fumes and smoke from cooking stoves and high-fat diet are risk factors for lung cancer in never smokers.^[3] It is a well-known fact that viruses cause lung cancer in never smokers. Human Papilloma virus, Simian virus 40 and Epstein Barr viruses have also been implicated in causation of lung cancer.^[4-6]

These viruses cause lung cancer by multiple and complex mechanisms. Human Papilloma virus expresses viral oncoproteins E6/E7 and E5.^[4] Oncoprotein E7 hypermethylates and inactivate regions of P16 genes leading to uncontrolled mitosis.^[4] This mechanism confers resistance to Cisplatin in HPV subtype 16/18 infected lung cancer. Oncoprotein E5 phosphorylates pRB gene leading to uncontrolled cell replication and inhibiting the tumor suppressor gene p21 leading to cancer relapse.^[4] Simian Virus 40 DNA sequences are found in pleural mesotheliomas.^[7] Epstein Barr Virus (EBV) association has been found in two types of lung cancers, lymphoepithelioma-like carcinoma and squamous cell

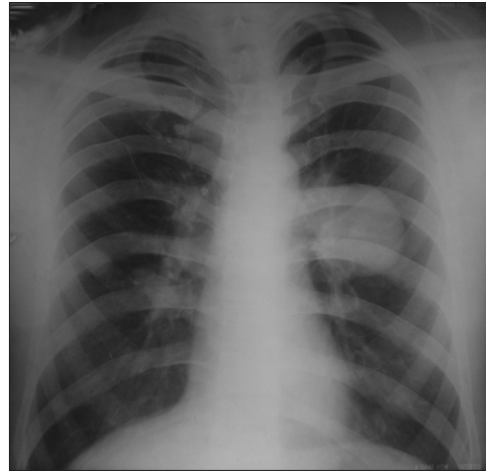


Figure 1: A Chest X Ray PA view showing a mass lesion in the left middle zone

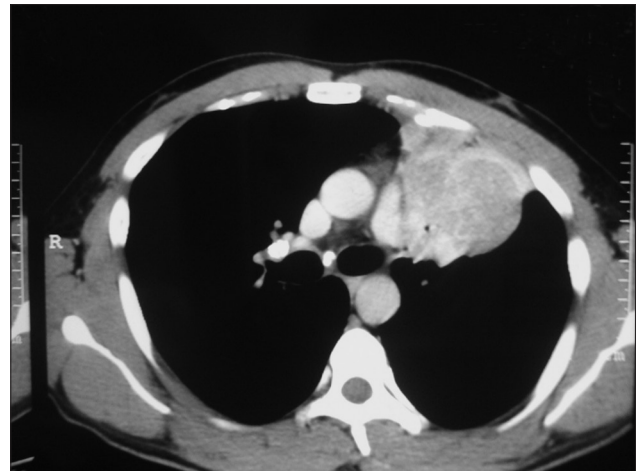


Figure 2: A CECT Thorax showing left collapse with a mass lesion in the anterior segment of left upper lobe

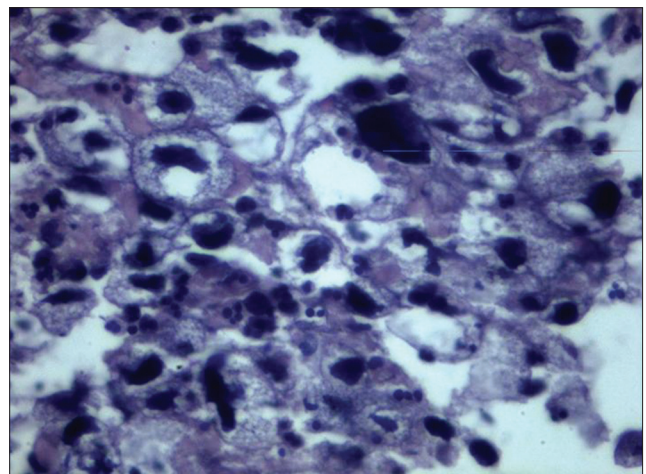


Figure 3: A high power micrograph of a section through the lung mass showing cancer cells with abnormally large nuclei

carcinoma. Lymphoepithelioma-like cancer of the lung tends to affect young never-smoker patients.^[8]

Hepatitis C virus (HCV) is endemic worldwide and affects 170 million people comprising 3% of the world

population. The chronic inflammation caused by Hepatitis C infection is responsible for carcinogenesis.^[9] Since Hepatitis C virus is an emerging infection in India, its contribution to the “epidemic” of lung cancer will have long-term public health implications in the coming decades.

We draw attention to the need for multicenter studies on Indian patients with HCV infection to clarify its association with lung cancer.

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