Editorial

AFLATOXIN AND LIVER DISEASE

In recent years there has been a considerable interest in the contamination and adulteration of food and its effect on human health.

The discovery of aflatoxins, which are a group of compounds produced by the mould, Aspergillus Flavus and its relation to liver cancer has been a tremendous stimulus for research on contamination of food by mycotoxins (Wogan 1972). These fungi are widely prevalent in nature and in the presence of humidity and high temperature the toxins are capable of contaminating all types of food. Products of metabolic hydroxylation of aflatoxin B and B are isolated from human milk and urine as aflatoxin M_1 and M_2.

Contamination of food with aflatoxins is higher in the areas of high frequency for liver cancer. Sixty-five per cent of ground nuts and 30 per cent of rice samples were found to be contaminated with these toxins in Africa and Thailand (Shank et al., 1972; Alpert et al., 1971).

Two other factors which need consideration in relation to primary liver cancer are cirrhosis and Hepatitis Bs antigen.

Cirrhosis predisposes to hepatoma. Experimental studies have shown that aflatoxin B, administered to rats causes inhibition of precursor incorporation into R.N.A. especially in nuclei of regenerating liver cells (Lafarge et al., 1965). It is possible that toxins similarly affect regenerating liver cells in cirrhosis. Hepatoma was discovered in 12.3% of 520 cases of cirrhosis at autopsy in a British series (BMJ 1975).

There is a strong evidence that both hepatitis virus and aflatoxins are important etiological factors of liver cancer. In countries where carrier rate for HBsAg is high, its incidence is greater in patients with hepatoma than in the general population (Vogel 1970; Nishioka 1973).

Lutwick (1979) postulated that aflatoxins rather than acting as a primary carcinogen suppress the cell mediated immunity and this allows hepatitis B virus in certain endemic populations to maintain itself more easily in the liver and produces chronic infections, cirrhosis of the liver and after a certain length of time carcinoma of the liver.

Epidemics of acute toxic hepatitis due to ingestion of aflatoxins have also been reported (Tandon et al., 1977). Onset of illness was acute with fever, jaundice, high coloured urine, vomiting and progressive ascites within one to two weeks of onset of illness. Three-fourths of patients had hepatic enlargement and one-third splenomegaly.

Investigations in acute cases revealed leucocytosis, raised conjugated bilirubin, alkaline phosphatase and serum globulins. Marked hypo-albuminaemia was observed in these cases.

Histological examination of the liver revealed centrizonal scarring and cholangiolar proliferation. Hepatic veins showed severe perivenous collagenosis with varying degree of luminal obliteration. Bands of scar tissue fanned out from the central areas limiting the neighbouring afferent veins. Reverse lobulation was observed. Extensive sequestration of liver cells with fibrosis was also seen. Moderate to severe hepatocyte damage with giant cell transformation and cholestasis with proliferation of cholangioles was seen.

In Pakistan where the climate mainly in the south is hot and humid and food storage conditions are not ideal a high rate of contamination with aflatoxin is possible and with the frequency of carrier rate of HBsAg being high (Zuberi et al., 1978) it is likely that the frequency of liver cancer will increase over the year if preventive measures have not been adopted from now.

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