May

Malignant Lymphoproliferative Diseases

Classification

Hunter et al. (Harvard Medical School, Boston, Massachusetts), in an attempt to classify malignant lymphoproliferative diseases according to the number and percentages of peripheral blood T-cells and complement receptor lymphocytes, studied 45 patients with Hodgkin's disease, leukemic reticuloendotheliosis, nodular lymphocytic lymphoma, nodular lymphocytic-histiocytic lymphoma, histiocytic lymphoma, and diffuse lymphocytic lymphoma. In patients with Hodgkin's disease, the relationship of the number of T-cells to the stage of disease is controversial. However, non-Hodgkin's lymphomas appear to have distinctive patterns of distribution of complement receptor lymphocytes and T-lymphocytes. These patterns are associated with certain histologic subdivisions of non-Hodgkin's lymphoma. Their observations suggest that in patients with Hodgkin's disease, leukemic reticuloendotheliosis, and non-Hodgkin's lymphoma, the absolute number of B- and T-cells rather than the percentage may be a better indication of the extent of disease and the effect of treatment on the lymphocyte population.

Differentiation of Childhood Lymphoblastic Malignant Diseases

Evidence that antisera can be used to differentiate childhood acute lymphocytic leukemia (ALL) from lymphoblastic lymphoma (LL) is presented by Raney and colleagues (Children’s Hospital of Philadelphia and the Department of Pediatrics, University of Pennsylvania, Philadelphia, Pennsylvania). Between 1974 and 1976, they studied the reactivity patterns of lymphoblasts from 34 children, three months to 13 years old; 24 patients had been diagnosed with ALL and 10 with LL. With the use of antiserum against chronic lymphocytic leukemia (CLL) antigens and a newly prepared simian antiserum against human leukemia cell antigens, they were able to distinguish childhood ALL from LL. Patients whose lymphoblasts reacted with the CLL antiserum presented with clinical and laboratory features indicative of a good prognosis. However, patients whose cells reacted with the simian antiserum frequently had bad prognostic features.

Despite improvements in therapy for childhood ALL, 50 percent of the patients have relapses within five years of diagnosis. Possibly at least two childhood malignant lymphoblastic diseases are being treated as if they were identi-
cal, when in fact their similarity stops at the light microscope. Use of these antisera for distinction between such diseases is important prognostically and perhaps therapeutically.

Risk of Hodgkin's Disease in College Men

Paffenbarger and co-workers (University of California School of Public Health, Berkeley, California), in searching for support for hypotheses that Hodgkin's disease has an infectious origin, reviewed college entrance health data on 50,000 men who were students at Harvard University between 1916 and 1950 or at the University of Pennsylvania between 1931 and 1940. Their histories were followed through 1974, when 45 cases of fatal adult-onset Hodgkin's disease had been recorded.

Comparison of indicator characteristics of the 45 men who died with those of 180 surviving classmates chosen as controls revealed that the Hodgkin's disease patients had fewer contagious diseases in childhood. Such an inverse relationship may implicate the immune system in the causation of Hodgkin's disease. Risk of Hodgkin's disease was increased if the student had already lost a parent by death, and increased tenfold if the parent had died from cancer. Added risk was also observed for students who smoked heavily, drank coffee or were obese. No relationship was observed with regard to tonsillectomies; sibship size; consumption of alcohol, tea, milk or soft drinks; pulse rate; blood pressure; allergic sensitivity; participation in sports; or income.

Epstein-Barr Virus and African Burkitt's Lymphoma

Further support of the possible etiologic role of the Epstein-Barr virus (EBV) in African Burkitt's lymphoma was reported by Olweny and associates (Uganda Cancer Institute, Kampala, Uganda). Burkitt's lymphoma is the commonest childhood neoplasm in most of tropical Africa.

Biopsy tissue from 29 of 34 Burkitt's lymphoma patients living in Uganda (average age, 7.2 years) was positive for the EBV genome, with 38.8 virus genome equivalents per cell as indicated by tests for the Epstein-Barr nuclear antigen (EBNA) and nucleic acid hybridization results. Tissue from 25 Ugandan patients with diseases other than Burkitt's lymphoma (average age, 16.3 years) all tested negative for EBNA, with less than 2 EBV genome equivalents per cell. This observation confirms the belief that the EBNA tests for Burkitt's lymphoma are reliable if positive, and that the EBV genome can be used to differentiate African Burkitt's lymphoma from other diseases, with a small margin of error.

EPA Assessment of Carcinogenic Risks

The approach recently adopted by the Environmental Protection Agency (EPA) for the assessment of health risks from environmental carcinogens is described by Albert and associates (New York University Medical Center, New York, New York). Evidence shows that many cancers in humans are caused by chemical and physical agents in the environment. Therefore, regulatory action against chemicals having carcinogenic action is urgent. The EPA's position is that any evidence of tumorigenic activity found in tests on animals is a danger signal that the compound is potentially carcinogenic in humans.

In May 1976, the EPA's "Interim Procedures and Guidelines for Health Risk and Economic Impact Assessments of Suspected Carcinogens" was approved, which strengthens the risk-benefit decision process. The portions concerning risk assessment are reprinted in the May issue of the Journal.

The EPA's document is an independent but complementary effort to that
of the National Cancer Advisory Board's Subcommittee on Environmental Carcinogens. Their report, "General Criteria for Assessing the Evidence for Carcinogenicity of Chemical Substances," was printed in the February issue of the Journal. These two documents take similar positions concerning the interpretation of data on carcinogenesis.

Hepatitis B Virus and Primary Hepatocellular Carcinoma

In 58 of 93 patients (62 percent) with primary hepatocellular carcinoma from Uganda, Zambia and the United States, Tabor and co-workers (Bureau of Biology, Food and Drug Administration, Bethesda, Maryland) found serologic evidence of hepatitis B virus infection, as indicated by positive tests for hepatitis B surface antigen and its antibody, as well as antibody to the hepatitis B core antigen. They also found, in contrast, that only nine of 90 African controls (10 percent) and less than one percent of United States adult populations reported in the literature had active infection with hepatitis B virus.

The higher incidence of primary hepatocellular carcinoma in young adults in Africa, where hepatitis B virus is endemic, is consistent with the theory that exposure to this virus before the development of immune competence, in addition to repeated exposure during childhood, could predispose to primary hepatocellular carcinoma. Alternatively, the infrequency of primary hepatocellular carcinoma in other populations where early exposure to hepatitis B virus is also common suggests the operation of other factors in the development of this neoplasm.

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The Use of Risk Factors To Predict Carcinoma

Larouzé and collaborators have contributed additional information on the association between hepatitis B virus and primary hepatocellular carcinoma. Their primary objective was the identification of risk factors by means of a retrospective study. Serologic tests were performed on two groups of patients with primary hepatocellular carcinoma from Senegal and Mali and on one group with chronic liver disease from Mali. Controls were three groups matched by age, sex and ethnic origin.

The relationship among several events associated with hepatitis B infection was considered: presence of the hepatitis B surface antigen and its antibody, presence of antibody to hepatitis B core antigen, chronic liver disease, elevated levels of alpha fetoprotein, and primary hepatocellular carcinoma. The authors calculated the risk factors related to these events and suggested that the risk of an individual developing primary hepatocellular carcinoma can be estimated by studying the interrelationships between these combined events.

Carcinogenic Nitrosamine in Tobacco

Hoffman and colleagues (American Health Foundation, Valhalla, New York) determined that the transfer rate of N'-nitrosonornicotine in a popular U.S. blended cigarette into mainstream smoke was 11.3 percent. From this, they calculated that approximately 46 percent of this tobacco-specific carcinogen in the smoke originates from the tobacco, the remainder being synthesized during smoking.

N'-nitrosonornicotine, which is formed during the processing of tobacco, is the most prevalent carcinogenic nitrosamine found in plant material used by humans. If a method were found to reduce nitrosamine formation during the curing and/or fermentation of tobacco, the risk might be diminished for tobacco users. Thus one of the major goals of tobacco research, the less harmful cigarette, would be reached.