Viewing the Journal of the National Cancer Institute

Commentary on the October, November and December 1970 (Volume 45, Numbers 4, 5 and 6) issues of the JOURNAL of the NATIONAL CANCER INSTITUTE

Mearl F. Stanton, M.D.
Scientific Editor, JNCI

McKissick and associates (Department of Veterinary Pathology, Ohio State University, Columbus, Ohio) transmitted the Rauscher murine leukemia virus (RMLV) to BALB/c mice by exposure of RMLV as an aerosol. Mice in contact with aerosol-exposed cagemates also developed leukemia, which indicated horizontal transmission of the virus. The leukemic response of the exposed mice was characterized by a diffuse neoplastic infiltration of the spleen and liver and dissemination of leukemic cells in the circulatory vascular system. The fact that aerosols of a leukemogenic virus are infectious emphasizes the potential hazards of laboratory infections to animals and man. [October]

When human WI-38 cell lines were released from growth inhibition under conditions of cell crowding by medium renewal, Garcia-Giralt and co-workers (Institut de Cancérologie et d'Immunogénétique, Hôpital Paul Brousse, Villejuif, France) found that (1) many cells responded to the first medium change; (2) cell population increased, though eventually some cells were detached; (3) the capacity to be stimulated was progressively exhausted after repeated renewals of medium; (4) only part of the cell population responded to further stimulation. The exhaustion of the division potential could be delayed if the cell layer was washed before fresh medium was added. Supernatants of cultures no longer responding to medium renewals inhibited culture growth. The findings suggest that the exhaustion of the division potential after repeated stimulations was due to the progressive accumulation of an inhibitor. [October]

From a twenty-year experiment involving 435 range beef cattle, Anderson and co-workers (The University of Texas M. D. Anderson Hospital and Tumor Institute at Houston, Texas) reported that animals on a high feeding level had a greater incidence of ocular squamous-cell carcinoma (“cancer eye”) than
those on a low level of feeding. More animals with a greater number of advanced lesions were observed at earlier ages in the higher feeding level than in the medium or low level. With cessation of a feeding trial, the lesions decreased as compared with those in animals remaining on trial. The authors demonstrated a definite association between nutrition and tumorigenesis. [October]

At the Pritzker School of Medicine, University of Chicago, Coppleson and associates reviewed the evaluations of 3 pathologists who used 358 lymph node biopsy specimens obtained from the University of Chicago hospitals and clinics between 1931 and 1964 for the histologic classification of Hodgkin's disease. The report analyzed the disagreements in the classificatory and histologic data, and the authors concluded that consensus findings of a panel of pathologists are more accurate than those of individual observers in the diagnosis of the disease. [October]

Huang and associates (Roswell Park Memorial Institute, Springville, New York) studied the relationship between C chromosome markers and the Epstein-Barr virus (EBV) in 16 hematopoietic cell lines. Four lines were established from Burkitt lymphoma biopsies taken from four Nigerian children, and twelve lines from leukocytes of eight patients with acute infectious mononucleosis (IM). The chromosomes from Burkitt lymphoma were pseudodiploid and those from IM, diploid. By an indirect fluorescent technique, a low percentage of cells containing EBV was detected in all but one IM line. Cells with one or more C chromosomes possessing a subterminal secondary constriction (associated with EBV) were found in three IM lines (one percent in two and four percent in the third). The study suggests that EBV can induce chromosome injuries in certain hematopoietic cell lines and that the terminal and subterminal areas of the chromosomes are vulnerable to infection with the virus. But there seems to be no association between the presence of EBV and the C chromosome marker. [October]

Treating neonatal hamsters with 2-acetylaminofluorene and indole, Oyasu and co-workers (Northwestern University Medical School, Chicago, Illinois) induced transitional cell carcinomas of the bladder in 26 animals surviving 10 to 12 months. All but 2 tumors were invasive. No malignant neoplasms were found in the liver. Seven hamsters developed peliosis of the spleen. [November]

The occupational histories of 1,030 patients (812 men and 218 women) in Leeds, England, with papilloma and carcinoma of the bladder were analyzed by Anthony and Thomas (School of Medicine, Leeds). Bladder tumor patients were matched with surgical controls and other cancer patients for sex, age, habitat and smoking habits. The matched pairs in different occupations were compared for predominant vocations of 20 years or more. Results were confirmed from the distribution of employment among the unmatched bladder tumor patients and from a comparison of expected and observed numbers in various occupations for patients living in Leeds. The results verified the risk to dye workers and revealed risks to medical workers (mainly nurses), tailors, tailors' pressers, some groups of engineers and textile workers and possibly also hairdressers and tailors' cutters. Tumors occurred in men at younger ages who had been employed as dye workers, tailors' cutters or hairdressers, but not in the other suspect occupations. Over 20 percent of bladder tumors in men in this series could be occupational in origin. [November]
Barron and Richart (Rockefeller University, New York, New York) estimated the transition probabilities and transition times from dysplasia to carcinoma in situ of the uterine cervix. These estimates, based on a statistical model of the natural history of the disease, were obtained from a longitudinal study of 557 women (patients at the Medical College of Virginia, Richmond, Virginia and the Columbia-Presbyterian Medical Center, New York, New York) contrasted with prevalence rates of 11,814 women in Barbados, West Indies. The two sets of estimates agreed. The transition times and probabilities were associated with the total number of pregnancies, but did not depend on age at first coitus or at first pregnancy. The results of this study provide an index of the history of cervical neoplastic disease that may be useful in contrasting the experience of different subsets of the population with respect to their transition probabilities and transition times through the stages of the disease process. [November]

Using human sera from patients with Burkitt’s lymphoma, nasopharyngeal carcinoma and infectious mononucleosis as the sources of antibody, Pearson and co-workers (Children’s Hospital of Philadelphia and School of Medicine, University of Pennsylvania) studied the relation between neutralization of Epstein-Barr virus (EBV) and antibodies to cell-membrane antigens induced by this virus. The work was done with experimentally infected Raji and RPMI 64-10 cells. Antibodies against EBV-induced, cell-membrane antigens were apparently responsible for neutralization of viral infectivity. Antibodies against EBV capsid antigens and EBV-induced early antigens were not involved. [November]

Wepsic (National Cancer Institute, Bethesda, Maryland) separated viable tumor cells from nonviable tumor cells by flotation on bovine serum albumin. Tumor cell suspensions from two adenocarcinomas, one hepatocellular carcinoma, and one carcinosarcoma, induced in strain-2 guinea pigs by the addition of diethylnitrosamine in the drinking water, were 95 percent viable. The method did not require the use of enzymes, and the yield of tumor cells was about 50 percent. [November]

Hussa and associates (Marquette School of Medicine, Milwaukee, Wisconsin) used the filter disc method to measure incorporation of thymidine-methyl-3H into DNA in cultured choriocarcinoma cells (BeWo cell line) and in other tumors and tissues actively synthesizing DNA. This rapid, simple method was as precise as other techniques. The rate of thymidine-methyl-3H incorporation into DNA in BeWo was at least 10 times greater than the rate in rapidly growing solid tissues (human placenta, human fetal liver, regenerating rat liver and rapidly growing rat hepatoma), but did not differ significantly from the rate in HeLa cells. The number of cells per unit weight in BeWo was 1 1/2 to 2 1/2 times less and the cellular DNA content 2 to 5 times greater than in all other tissues examined, which indicated the larger size of these embryonic cells. Incubation of BeWo cells with actinomycin D inhibited DNA synthesis and caused dose-dependent necrosis. Thus Be-Wo is an ideal, homogeneous cell line with which to study the action of chemotherapeutic agents on DNA synthesis and cell viability in malignant cells. [December]

With mouse interferon preparations, Gresser and co-workers (Institut de Recherches Scientifiques sur le Cancer, Villejuif, France) inhibited the multiplication of Li210 and Ehrlich ascites cells in stationary suspension cultures. This suppression was expressed as a decreased rate of cell multiplication and a
lower final cell density. The usual growth rate of the cultured cell was restrained if cells were (1) seeded at low density, (2) cultivated in medium supplemented with 5 percent horse serum and (3) cultivated in agitated suspension cultures, but the presence of interferon in the nutrient was necessary for maximal inhibition. Continued exposure of L1210 cells to interferon resulted in the selection of an L1210 subline resistant to the repressive effect of interferon on cell multiplication. [December]

Hanes and associates (University of California School of Medicine, Los Angeles) conducted two household questionnaire surveys to ascertain the degree of human exposure to cats, dogs and parakeets in selected “index cancer” (leukemia, lymphoma and sarcoma) households and control households. Since 70 percent to 80 percent of the “index” families did not own cats, no evidence of a relationship between exposure to these animals and leukemia, lymphoma and sarcoma could be found. A substantial number of “index cancer” households did have dogs or parakeets, but no significant increase in these diseases could be noted in the pet-associated group over families without these pets. [December]

In 12 experiments, Rosen and co-workers (National Cancer Institute, Bethesda, Maryland) evaluated the proliferative capacity of small AKR leukemic cells of mice after cell separation in a sucrose density chamber. On transplantation, the separated cells, which were unlabeled by H-TDR and had a 2 c (normal complement) content of DNA, produced leukemia as readily as larger labeled cells. The authors concluded that the small cells were not end-stage cells, but were in the G, or G, phase. [December]

HEALTH—A RESPONSIBILITY OF THE INDIVIDUAL

For too many people regard health as being "doctored." They therefore hope that with universal access to physicians and hospitals, they will all be healthy. Surely "doctoring" is a necessary element in health, but it is not sufficient. The provision of health service to all citizens will result in some improvement in our national figures on morbidity and mortality. However, that improvement may be disappointingly small, for the same stubborn fact of human behavior operates in both education and health. The fact is that there are large contributors to morbidity and mortality about which physicians and hospitals can do little. Accidents are the greatest cause of both morbidity and mortality for Americans between the ages of one and thirty-seven years. Other important causes for all age groups are obesity, smoking, abuse of alcohol, abuse of drugs, environmental pollution and a life style that leads to organic and psychosomatic disease and disability. With the exception of environmental pollution, there is very little that society can do to control these causes except through intolerable restrictions on personal liberty. Rather, the control can come only through the behavior of the individual. Only his decisions and his actions can eliminate these causes of disability and death.

My conclusion is that we accept the concept that health is a necessity, but realize that we, as a society, can guarantee access to health service but not health itself. Personal health must remain a personal responsibility. Thus, as we work to provide for more health professionals and a more efficient system for the delivery of health service, we must also convince people that the achievement of health demands responsibility and action on the part of every individual.

—John S. Millis, Ph.D., "Wisdom? Health? Can Society Guarantee Them?" [Editorial] New Eng. J. Med. 283: 260-261, 1970.