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January

Mirex: Shown Carcinogenic in Rats

The carcinogenicity of Mirex in Charles
River CD rats was ascertained by Ulland
et al. (Hazleton Laboratories America,
Inc., Vienna, Virginia). This environ-
mentally persistent insecticide, used
widely in the southeastern United States
to control the red fire ant, has been found
to be toxic to other species also. Charles
River CD rats given Mirex mixed with
their feed at levels of 50 and 100 ppm
for 18 months developed a spectrum of
liver lesions from fatty metamorphosis
and megalocytosis of hepatocytes, cystic
degeneration and necrosis and biliary
hyperplasia to circumscribed areas of
cellular alteration, neoplastic nodules
and carcinoma. In the male rats given
high doses of Mirex, the numbers of
neoplastic nodules were statistically
significant.

Chromosome Identification Staining
Techniques

The most frequently used staining tech-
niques for identification of chromo-
somes and some of the abnormalities of
chromosomes in patients with a wide
spectrum of myeloproliferative and lym-
phoproliferative disorders are discussed
in a Guest Editorial by Whang-Peng
(Medicine Branch, National Cancer In-
stitute, Bethesda, Maryland). Proce-
dures for determination of banding pat-
terns of chromosomes in living cells
have produced new information that can
be used for diagnosis of various dis-
ases. For example, the Ph1 chromo-
some in the hematopoietic cells of pa-
tients with hematologic disorders is vir-
tually diagnostic of chronic myeloge-
 nous leukemia. When no clinical or he-
matologic symptoms are evident, the
presence of the Ph1 chromosome indi-
cates a preleukemic state.

Several technical difficulties have
been encountered in studies of patients
with leukemia: the abnormally small
number of cells undergoing mitosis in
bone marrow samples, the predomi-
nance of hyperdiploid or near-tetraploid
cells and “stickiness” of chromosomes.
Improvements in techniques used to ob-
tain samples will help to resolve these
problems.

Gastric Ulcer and Gastric Cancer

Stemmerman and associates (Kuakini
Medical Center, Honolulu, Hawaii)
note the similarities in the epidemiology
of gastric cancer and gastric ulcer in the
proximal portion of the pyloric antrum
in a case-control study of 133 Hawaiian-
Japanese patients with gastric ulcer and
244 patients with gastric cancer. Ulcer
patients were found to have an excess of
blood type O, but type A predominated
in gastric cancer patients. Histories of
the gastric ulcer patients revealed a
higher incidence of diabetes and duo-
denal ulcers and a greater association with the lower socioeconomic classes than did those of gastric cancer patients.

Examination of the types of food consumed revealed that stomach cancer patients ate more salt-pickled vegetables and salted dried fish (both components of a Japanese-style meal) than did ulcer patients; however, the ulcer patients had a high intake of salt. The greater risk for ulcer in patients who consistently used salt or salty condiments raises the question whether this high intake of salt may promote ulceration of the intestinalized gastric mucosa or act as a synergistic agent with the mutagen that causes the metaplasia to develop. Environmental exposure plays a more important role than inherited traits such as blood type; however, blood type may be one component of an inheritance pattern that evokes an ulcerogenic or carcinogenic response to environmental stimuli.

Higher Lung Cancer Rates in Female Beauticians

Garfinkel and co-workers (School of Public Health, University of California, Berkeley, California) suggest that female beauticians have a substantially increased risk of lung cancer. Between 1958 and 1962, there were 3,460 cancer deaths among females living in Alameda County, California. Among these, 24 women were listed as beauticians, six of whom had died with primary lung cancer. Of the 3,436 cancer deaths in adult females with other occupations, 170 had lung cancer. The risk of lung cancer among beauticians was found to be 6.92 times greater than among non-beauticians of the same age distribution. Further investigations with the use of controls matched for race, age and date and cause of death indicated that the approximate relative risk for lung cancer in female beauticians was 6.0, and that such an odds ratio was unlikely to have occurred by chance.

February

Benign Liver Tumors Among Women on Oral Contraceptives

The abrupt increase in benign liver tumors recently observed in young women suggests a causal relationship with the use of contraceptive steroids, according to a Guest Editorial by Christopherson and Mays (Department of Pathology, University of Louisville, Louisville, Kentucky). Oral contraceptives are or have been taken by an estimated 35 million American women. The estrogen component rather than the progestin is the major concern. Evidence shows that risk increases with duration of usage and possibly with the potency of the estrogen in the oral contraceptives. Potency is said to depend on the type and dose of estrogen and progestin. Thus, a pill with less estrogen may not have less estrogen potency.
At this time, the risk of liver tumors in users of oral contraceptives appears to be very small and should be considered in terms of the benefits derived. Careful surveillance for symptoms of liver tumors in women using this medication is a logical regimen.

Survival in Japanese Women with Breast Cancer Superior to U.S. Rates

Survival of Japanese women surgically treated for breast cancer was found to be superior to that of American women in a study by Nemoto et al. (Roswell Park Memorial Institute, Buffalo, New York). Comparisons were made for 375 Japanese patients treated between 1957 and 1968 in Osaka, Japan, and 352 American women receiving mastectomies at Roswell Park Memorial Institute between 1957 and 1968. Of the American group, a small number of patients were black, and none were Orientals. The Japanese patients (average age, 46 years) were given either radical or modified radical mastectomies. All axillary nodes and the pectoralis major were removed; the pectoralis minor was left intact. The American patients (average age, 55.5 years) were treated by radical mastectomies. Both groups were observed for five-10 years post-treatment.

Examination of the influence of age on recurrence-free survival revealed that Japanese "menopausal patients" (ages 40-54 years) had significantly better survival rates than did "young" (39 years or less) or "old" (55 years or older) Japanese patients. American menopausal women did not show this advantage. The breast cancer in Japanese women tended to metastasize less frequently to axillary nodes and to disseminate less often; thus it is more likely to be cured. The reasons for differences in breast cancer survival in Japan and the United States cannot yet be explained; the evaluation of the endocrine status of the host and the biochemical characteristics of the tumor must be made.

Testing Carcinogenicity of City Air

To explore whether the chemical carcinogens in the particulate matter of city air are present in amounts sufficient to affect cancer risk in man, Talcott and Wei (Department of Biomedical and Environmental Health Sciences, University of California, Berkeley, California) assayed particulate airborne pollutants collected in 2,500 air samples from Buffalo, New York and one from Berkeley, California.

Using the test system developed by Ames et al. for measurement of mutagenic activity of organic extracts in various strains of Salmonella typhimurium, they detected mutagens requiring liver enzymes for activation in addition to direct-acting mutagens in the Buffalo samples; the Berkeley sample revealed only direct-acting mutagens.