MEDICINE

Chemicals Fight Cancer

The growing success of drugs, first tried on mice, for treating persons suffering from leukemia emphasizes the important part mice play in cancer research, Faye Marley reports.

➤ LEUKEMIA, cancer of the blood-forming organs, is responding to the same drugs whether given to mouse or man, Dr. J. H. Burchenal of the Memorial Sloan-Kettering Cancer Center, New York, told the International Cancer Congress in Moscow.

This explains why so much research with mice is important. Two sessions on new methods of cancer treatment emphasized the growing success of drugs with humans suffering from leukemia. But the drugs had first been used on mice that had leukemia induced by viruses.

Mitomycin C (MC), a drug widely used in Japan, was reported most effective in combination with 6-mercaptopurine, steroid hormones and other drugs. Dr. Susumi Hibino of Nagoya University School of Medicine said 80% higher frequency of leukemia remission had been found with such combinations.

So far no one has reported a cure for leukemia but remissions appear to grow longer as new drugs are found that do not affect the bone marrow too severely.

Transplantation of living bone marrow cells in leukemic mice was reported by six Moscow scientists, who said the transplant temporarily restored the manufacture of healthy white blood cells and prolonged the animals' life span.

Other experiments on rabbits as well as humans were reported by Drs. M. S. Dultsin and M. O. Rauschenbakh of Moscow who pointed out the possibility of antibody formation as resistance to certain drugs developed.

In Riga, Latvia, Dr. C. Ceplite and others using thio-tepa reported improvement in patients with various types of malignancies. Spreading from breast cancer was reduced in a majority of women. In patients with lung cancer, similarly treated, good results were seen. Thio-tepa is a phosphoramide that has been tested at the National Cancer Institute, Bethesda, Md.

Sarcolysine, successful in the USSR for treatment of testicular cancer, is also being used in the People's Republic of China, four doctors from Peking reported. They used N-formyl sarcolysine on 70 patients suffering from a variety of cancer, and found improvement, if not cure. Their greatest success was with cancer of the testes, but Hodgkin's disease and other cancers of the lymph nodes also regressed. Sarcolysine has only temporary side effects, which are not severe.

Endoxan was reported partially successful in treating 20 cases of leukemia and several hundred other kinds of cancer by Dr. H. Gerhartz of West Berlin. Endoxan, which is a phosphoramide ester, shows little toxicity. It is especially promising because it has little effect on blood platelets. The U.S. name for Endoxan is Cytoxan.

But far more important than treatment, scientists from all over the world at the congress agreed, is early diagnosis. Precancerous lesions, Dr. Y. M. Neiman of Moscow said, can be found in many parts of the body, including so accessible a part as the mouth.

One precancerous lesion is chronic ulceration of the leg, Dr. G. W. V. Greig of Anchorage, North Ireland, said. In ten years at a small provincial hospital he has seen about 200 cases with "gravitational" ulcers. Early treatment consists of surgery unless the ulcers improve quickly.

The all-congress lecture by Dr. Alexander Haddow of the Chester Beatty Research Institute, London, outlined advances in knowledge of the cancer-causing process since the last meeting in London in 1958.

"We have made significant progress," he concluded. "The whole subject is at a more thrilling and exciting stage than at any time in the past."

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US Has More Betatrons

➤ THE U.S. is ahead of the USSR in the number of betatrons for the radiological treatment of cancer, Prof. A. N. Novikov of the Herzen State Institute of Oncological Research in Moscow said.

Soviet cancer detection and control appear to be more thorough, however, the surgeon said. "We screen our entire healthy population in regional dispensaries and organize a medical network on which every doctor is made cancer conscious."

Told that many U.S. patients are examined in the offices of private physicians, Dr. Novikov said he had no criticism of the U.S. system of health care but that obviously record-keeping could be more accurate in the USSR.

Eleven to 17 cancers among 10,000 population are recorded in the USSR, whereas records from one U.S. cancer institute showed 400 out of 10,000 in the U.S. A different basis of record keeping is used in each country.

On a symposium comparing survival of cancer patients with five different types of cancer in the U.S., Denmark, England, France, Norway and Finland, Dr. S. J. Cutler of the National Institutes of Health, Bethesda, Md., said the U.S. was ahead in survival of patients with cancer of the colon.

"Among male patients with localized tumors," Dr. Cutler said, "the survival rate was 66% compared with rates ranging from 49% to 60% in four of the other countries. Women in the U.S. showed 73% survival as opposed to 49% to 60% in the same four other countries."

Dr. W. Haenzel of the National Cancer Institute, Bethesda, said in opening the symposium that cancer registers had been collaborating since 1959 in an effort to straighten out areas of disagreement. Leukemia, tongue, colon, breast and testicle cancers were compared.

Cancer is the No. 2 killer in the USSR

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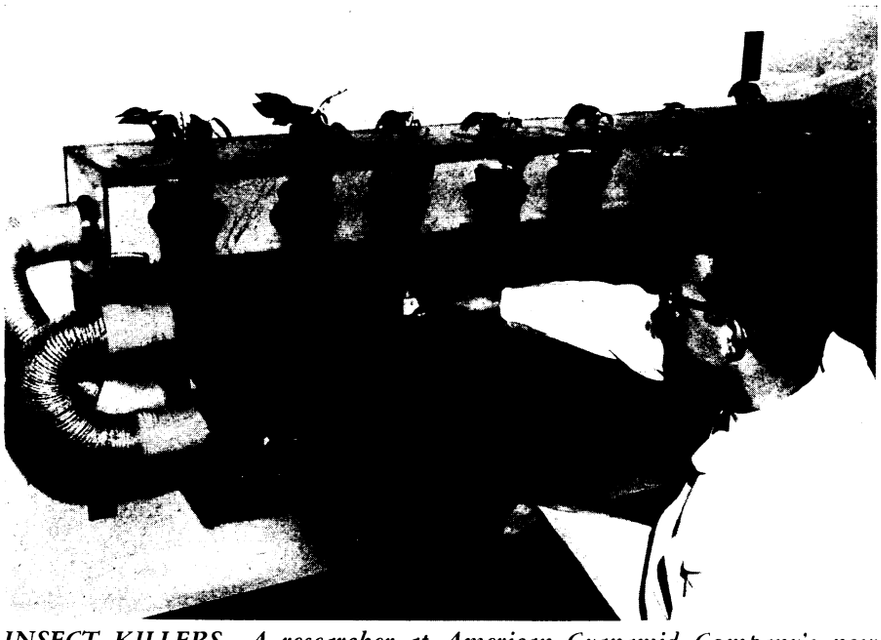

INSECT KILLERS—A researcher at American Cyanamid Company's new Agricultural Research Center at Princeton, N. J., is testing on a new compound to see if it has "systemic" action on plant leaves. Insects are placed on the top of the leaf. If the compound is drawn up through the plant stem and kills the insect when it eats it, the chemical will be tested further.

Cancer Congress Reports

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as it is in the U.S. and other countries, but worldwide figures are inaccurate because of the impossibility of keeping records in some of the underdeveloped nations. The more civilized countries tend to report more cancer cases also because many infectious diseases, including tuberculosis, remain high on the list of killers in many parts of the world.

A flurry over a two-day discussion of the anti-cancer drug cruzin, not announced in the printed program, excited some of the Cancer Congress delegates. Prof. G. I. Roskin and other Soviet researchers in Moscow hold out hope that cruzin may become accepted as a new cancer treatment if proved nontoxic. The drug has been known as an extract of the parasite causing sleeping sickness since before World War II.

Progress in cancer research cannot be defined over-enthusiastically but perhaps most accurately in the words of Prof. L. A. Zilber of the Gamaleya Institute of the Academy of Medical Sciences in Moscow, who said, "We know the questions we have to answer."

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Anti-Smoking Campaign

➤ AN ANTI-SMOKING campaign for school children in Denmark has had almost as much effect on the parents as on children, Thor Cramer of the Danish Cancer Society told the International Cancer Congress in Moscow.

Children ten years old and through high school age have been educated in the dangers of lung cancer through booklets and posters reaching 600,000 youngsters. A general letter to parents was sent which, in many cases, appears to have resulted in less smoking at home.

A U.S. report on an American Cancer Society study of 22,000 high school students by J. W. Leverenz of Washington, D. C., revealed that one out of every four boys and one out of every eight girls smoke regularly.

As might be expected, teen-agers smoke more in families where both parents smoke, and the lowest number was recorded in families with non-smoking parents. The American Cancer Society had distributed a film strip "to smoke or not to smoke" in more than two-thirds of the country's 30,000 high schools and had conducted a youth conference on cigarette smoking.

Cancer education programs telling the public in many countries what research has shown about lung cancer and other forms of malignancy were reported.

Dr. John R. Heller of the Sloan-Kettering Memorial Cancer Center, New York, gave the final all-congress lecture on cancer control. Dr. Heller, who is chairman of the commission on cancer control, said the programs from most of the countries of the world are now available.

Dr. G. A. Zedgenidze of Moscow emphasized the different points of view presented at the International Cancer Congress, saying:

"This is an interesting period in which doctors are working in close cooperation with biologists, physicists, engineers, and specialists in technology. Getting together preeminent specialists from many countries to share their knowledge has been most valuable."

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Cobalt-60 With Surgery

➤ RADIOACTIVE reinforcement of the surgical attack on cancer is proving successful in both Russia and Sweden. Called actinosurgery, radioactive material is implanted during operations on the cancers and allowed to bombard curatively the malignant growth.

Sixty patients have undergone successfully this use of radioactive cobalt, Dr. I. T. Shevchenko, radiologist of Kiev, USSR, reported to the International Cancer Congress. The combination of radiation and surgery was tried on 180 animals before it was used on human patients.

The aim is to prevent recurrences and spreading cancer of the internal organs, including stomach, esophagus and intestine.

Cobalt was applied through special rubber drains, or radium holders, placed in the wound following the operation. The catheter with radioactive substance was removed after 24 to 48 hours and most patients recovered with little complication. During radiation the pancreas, liver and other organs were protected by lead-treated rubber.

A similar technique in Sweden was reported successful by Dr. Folke Jacobsson of the Karolinska Hospital, Stockholm, and a team of Swedish surgeons. Observation of 57 patients in one hospital and 65 in another showed greater success with stomach and rectal cancer than with bladder carcinoma.

Radiotherapy used alone on 241 uterine cancer patients in Sao Paulo, Brazil, was reported by Dr. A. F. Martins and his collaborators. Very few complications were seen, and the complications soon disappeared in most cases.

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MEDICINE

German Measles Virus Found by U.S. Scientist

➤ The virus that causes German measles (rubella), an illness known to lead to severe damage during pregnancy, has been discovered.

The new virus, which appears to be unrelated to any yet identified, was isolated from more than four out of five patients with rubella by Drs. John L. Sever and Gilbert M. Schiff of the U.S. Public Health Service's National Institute of Neurological Diseases and Blindness (NINDB) Perinatal Collaborative Project. When cultivated and administered to volunteers, the virus was found to cause rubella. These findings were reported in Bethesda, Md., at a meeting of the Project Directors of medical centers participating in the Collaborative Project.

Dr. Richard L. Masland, Director, NINDB said: "The isolation and identification of the virus responsible for German measles is an essential step toward the development of an immunization procedure. It has recently been learned that the danger of German measles is far greater than previously recognized since the occurrence of this infection during pregnancy may lead to serious injury of the unborn child." According to recent reports, birth defects occur in some 50% of liveborn babies whose mothers had rubella during the first month of pregnancy and in about 20% of infants if infection occurred during the first three months.

The rubella virus was isolated by Drs. Sever and Schiff from five groups of infected military recruits and children in different geographical areas. In over 90% of these patients, neutralizing antibodies—substances in blood formed in response to the virus—could be identified. Further "double-blind" tests proved that the antibodies could be correctly demonstrated in the vast majority of patients who had had rubella.

The investigators found that the virus, which grows in cultures of monkey tissue, could be detected by its active blocking of Coxsackie A-9 virus, which indicates the presence of the rubella virus. Studies of its characteristics showed that it was resistant to a number of different antibiotics and could be frozen and stored for over a year.

Preliminary studies were conducted with monkeys obtained at the Laboratory of Perinatal Physiology, NINDB, in Puerto Rico. These animals, reared in an isolated environment, were presumed to be nonimmune to the virus. In these animals a mild febrile illness was produced but no rash was observed. Typical antibodies were found in their blood. The virus was subsequently administered to human volunteers who developed rubella after 12 days. It was then isolated from the throats of these patients, proving conclusively that the rubella virus has been identified.

The isolation of a "Rash Agent" from adults suffering with recruit rubella, scarlet fever, and other respiratory diseases, and techniques for its identification, have previously been reported by Drs. P. D. Parkman and E. L. Buescher of the Walter Reed Army Institute of Research.

Because of a close community of interest, the special facilities of the Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases were used for the NINDB studies. These tests now permit only a rough determination of the quantities of both virus and antibody. However, they provide the basis for investigating methods for more direct testing.

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MEDICAL TECHNOLOGY

Mechanical Heart for Ailing Human Heart

➤ A NEW "mechanical heart" which may be substituted up to 24 hours for a seriously injured human heart is being developed by the Swedish Aga Company in collaboration with Swedish surgeons at the Karolinska Hospital in Stockholm. The technique is based on methods resulting from teamwork between Swedish and American surgeons.

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