

## MEDICINE

# Dangers of Steroid Use

► BECAUSE of the hazards of steroids (chemical substances of hormone origin) in the treatment of rheumatoid arthritis and intractable asthma most doctors prescribe them only when all other measures have failed.

Five articles in the *British Medical Journal*, June 9, 1962, analyze the reasons for dangerous side effects. However, the "benefits of well-managed corticosteroid therapy far outweigh the risks involved," two investigators from St. David's Hospital, Cardiff, Wales, concluded.

Dr. D. A. Williams and Harry A. Rees (now of Llandough Hospital, Cardiff) reported long-term treatment results to be mainly favorable after a study of 317 outpatients whose asthma was chronic and unmanageable without steroids.

Prednisone was used in varying dosage of 279 patients, while 13 others were given cortisone or hydrocortisone and others took triamcinolone in preference to prednisone because of excessive gain in weight. There were no deaths directly attributable to steroid or corticotrophin (ACTH) therapy, the researchers reported.

One of the dangers of prolonged use of steroids is that the patient's adrenal glands will not function properly.

This is especially hazardous if an operation has to be performed, but the Welsh scientists said seven major and 24 minor operations were successfully performed under increased steroid dosage. Four minor

operations were successful without increased dosage.

Peptic ulcers are sometimes considered due to over-dosage with steroids, but no cases of perforation occurred in patients studied at St. David's. Similarly, allergies, osteoporosis (loss in bony substance producing brittle bones) and suppression of natural adrenal output were found to be minimal.

The dangers of over-dosage of steroids for rheumatoid arthritis were reported by Dr. William Tegner of the department of physical medicine, London Hospital. He said that one patient who took a large dose of prednisone daily for 18 months was free of pain in his joints but became extremely obese and lost height. His face was red and swollen and his arms tingled. He also had partial collapse of several vertebrae in the dorsal spine.

Some unfortunate patients become "addicted" to steroids because the initial effect is one of well-being, Dr. Tegner explained. Then they rely on the drugs beyond their real need for them.

"Since these drugs have become available through the National Health Service," Dr. Tegner said, "it has been our experience that on the whole general practitioners have been very cautious about their administration." On the other hand, he pointed out, a number of patients have not been adequately supervised and have been permitted, if not encouraged, to take large doses of these potentially dangerous drugs.

• *Science News Letter*, 81:390 June 23, 1962

## CYTOLOGY

# Role of Mast Cells

► MAST CELLS are now believed to play an important part in allergic reactions, the changing physiology of the aging, antibody formation, fat metabolism and atherosclerosis (hardening of the arteries), a New York Academy of Sciences conference was told.

Whether these cells inhibit or enhance tumor development is not known, but increased numbers of the mast cells in pre-cancerous states have been reported.

After 1937 when the mast cell had been classified as a secretor of heparin (the anti-clotting agent), and as having a direct role in the state of the circulatory system, research virtually stopped for 15 years.

Since 1952, however, a variety of research has shown that the mast cell has other functions. Although it manufactures heparin, it is now believed that this cell does not release heparin into the blood stream.

The cell's functions definitely include releasing histamine, which is a powerful stimulant of gastric secretion, dilating capillaries and lowering blood pressure.

Basophils are distinct cells that occur in the blood and appear to be related to mast cells. Nevertheless, the two cells are signifi-

cantly different. Basophilia, in which there are abnormal numbers of basophils in the blood, is a feature of a variety of diseases. The finding of increased numbers of basophils is a useful diagnostic sign.

Dr. W. L. Simpson of the Detroit Institute of Cancer Research, who was co-chairman of the conference on mast cells and basophils at the Academy, said that multiplication or proliferation of mast cells in regions adjacent to tumor sites was "one of the marks of a preneoplastic (tumorous) transformation in such a tissue." The findings were made in studies on chemically induced cancer in mice.

The usefulness of mast cell changes as a measure of the effect of anti-cancer drugs also was noted.

• *Science News Letter*, 81:390 June 23, 1962

## MEDICINE

# Viral Cancer Linked To Gene Mechanism

► ABILITY of certain viruses to turn normal cells into cancerous ones by interfering with the hereditary mechanism has been suggested by experiments conducted in the

Laboratory of Nuclear Medicine at the University of California, Los Angeles, Medical Center.

Dr. Esther F. Hays and Jeanne A. Carr of the laboratory have found that genetic material (DNA) from cancer cells apparently can cause cancer when injected into animals.

The experiments were conducted with a viral tumor of the mouse parotid gland, a gland corresponding to one of the salivary glands in which mumps occurs in man. The virus was polyoma virus.

When DNA obtained from parotid gland cancers was injected into mice, tumors were produced in 65% of the animals. The tumors were apparently identical with those originally caused by the virus. Yet there was no evidence that there was virus in the DNA extracts from the cancer cells.

To determine whether DNA was involved in the cancer-producing process, the enzyme DNase, which destroys DNA, was added to the extract. It was found that DNase abolished the tumor-producing effects of the DNA from the cancer cells.

This suggests the following picture: the virus, after infecting a cell, enters certain of the cell's chromosomes and in some way causes a malignant transformation of the cell. Subsequent generations of the transformed cell produce the tumor.

The virus, which itself consists of DNA surrounded by a protein coat, sheds its protein coat and becomes a permanent part of the cellular DNA. Thus the hereditary mechanism is altered so that a malignant potential is transmitted to daughter cells.

The altered hereditary code of the DNA is also capable of transmitting its malignant potential when the DNA is isolated from the cancer cells and injected into susceptible host animals.

• *Science News Letter*, 81:390 June 23, 1962

## OPHTHALMOLOGY

# Eye Inflammation Helped By Promising New Drug

► A PROMISING new drug has been reported successful in preliminary trials of treatment for eye inflammation called corneal keratitis.

Herpes simplex virus attacks the corneal covering. Three ophthalmologists working at the University of Rochester, N. Y., reported in *Nature*, 194:986, 1962, that since the drug inhibits the virus, it should be valuable in treating this eye ailment.

Like 5-fluorouracil (5-FU), which has been used in cancer treatment, 5-fluorodeoxyuridine (5-FDU), which has been successful against herpes simplex virus, is one of the fluorinated pyrimidine compounds.

But 5-FU had no apparent effect on virus growth in experiments with herpes simplex virus, whereas 5-FDU use resulted in marked decrease of pock-forming units of this virus.

Herpes simplex is characterized by one or more groups of watery vesicles such as fever blisters at the border of the lips or external nose or other sensitive areas.

• *Science News Letter*, 81:390 June 23, 1962