BIOMEDICINE

Hodgkin's patients and reproduction

During the past few years Hodgkin's disease has become one of the most curable kinds of cancers. And now still another chapter is being added to that success story: Many young women with Hodgkin's are able to reproduce and have healthy children.

Because 70 percent of Hodgkin's patients can today expect a long-term survival or total cure, young women with Hodgkin's not only look forward to being among the 70 percent but are concerned about their ability to reproduce and have healthy children. So Sandra J. Horning and colleagues at Stanford University Medical Center in Stanford, Calif., attempted to determine the chances such women have of reproducing and having healthy offspring. They examined the reproductive outcomes of 103 women 40 years old or younger who had undergone treatment for Hodgkin's with total-lymphoid irradiation, drug therapy or irradiation plus drug therapy.

As they report in the June 4 NEW ENGLAND JOURNAL OF MEDICINE, 26 of the 103 women tried to have children after their cancer treatment, and 20 of the 26 succeeded in becoming pregnant. What's more, none of the 20 women's pregnancies ended in miscarriage, and none of the children they gave birth to had birth defects. Those women who were not able to reproduce tended to be those who had received irradiation plus chemotherapy, not one or the other.

Synthetic vaccines

The creation of vaccines from synthetic chemicals instead of from disease-causing organisms or parts of such organisms is the goal of a research program being started by the Scripps Clinic and Research Foundation in LaJolla, Calif., with financial aid from Johnson and Johnson.

Scripps scientists will first read the genetic code of a pathogen against which they hope to produce a vaccine. From the code they will be able to predict the proteins the pathogen produces and also which of the proteins, or parts thereof, will be displayed on the outside of the pathogen and thus stimulate a host's immune defenses. Then they will attempt to make the critical proteins from off-the-shelf chemicals and see whether the synthetic proteins can stimulate the body's immune system as the pathogen or its natural proteins would.

If synthetic vaccines prove to be as effective as vaccines made from pathogens they could overcome some drawbacks that are present with use of the latter. For instance, when a vaccine is made from a pathogen or pathogenic material, a vast amount of the pathogen must be obtained to make enough vaccine for wide-scale use. But with the synthetic vaccine approach, only enough pathogen would be needed to carry out the gene-reading of the pathogen's proteins.

Migraine weather

Migraine victims often claim that low barometric pressure triggers their attacks. But after studying the migraines of 44 patients over a six-month period and observing the barometric pressure on the days of the patients' attacks, R.E. Cull of the Royal Infirmary in Edinburgh was not able to link low pressure with onset of migraines. In fact, he found just the opposite — fewer attacks occurred when the atmospheric pressure was low.

"This is a surprising finding," he admits in the May HEADACHE, and suggests that his study's linkage of fewer migraines, not more, with low pressure may have been due not to the low pressure itself but rather to the cloudy weather that often accompanies low pressure. This is because clouds block the sunshine and visual glare that are known to trigger migraines.

SPACE SCIENCES

Sun over Venus: Restrained response

The dayside temperature of the upper atmosphere of Venus, like that of earth, rises and falls in close correlation with variations in solar activity, according to measurements from the Pioneer Venus orbiter, which has been circling the planet since December of 1978. Over a full 11-year solar-activity cycle, however, says Gerald M. Keating of the NASA Langley Research Center in Hampton, Va., the *range* of upper-atmospheric temperatures produced at Venus is likely to be far smaller than in the terrestrial case, covering as little as 24K compared to 400K for earth. The earth's upper atmosphere, in other words, is far more responsive to solar-activity changes than is that of Venus, a difference that is even more pronounced on the nightsides of the two worlds, where the Venus temperature probably cycles through as little as 8K, versus about 320K at earth.

The reason, Keating suggested in describing the findings at the recent American Geophysical Union meeting in Baltimore, Md., may be that Venus is simply better equipped than earth to get rid of the heat produced by incoming extreme-ultraviolet radiation from the sun. The major constituent of the Venus atmosphere is carbon dioxide, which, Keating reasons, is broken down by the EUV into excited atomic oxygen, whose energy is then transferred back to the remaining CO_2 and radiated into space at infrared wavelengths as heat. Excited oxygen, $0(^1D)$, is also produced in earth's upper atmosphere, but with no efficient radiator such as CO_2, the heat that it generates remains to drive up the temperature.

Yet despite the efficient heat-loss made possible by the CO_2, the dayside neutral upper atmosphere of Venus, about 150 kilometers above the surface, hovers around a relatively warm 300K (27°C). Since significant solar activity changes produce only small changes in that temperature, says Keating, some other major heat source must be keeping the mean temperature as high as it is. That source, he says, may well be the atmosphere itself, where the temperature only 50 km down is about 175K. This would in effect buffer the temperature overhead, making any EUV-wrought changes a small percentage of the whole.

Solar flares as trouble-spotters

Solar flares are sometimes associated with sudden increases in the speed of the solar wind, which can wreak various kinds of havoc on earth such as disruptions of radio communications, surges on power lines and more. At other times, however, seemingly identical flares presage no such disturbances. Now three researchers have reported what seems to be a way of telling the two kinds of flares apart, potentially offering a three-day advance warning — roughly the time required for the accelerated solar wind to reach earth — for emergency measures.

The difference, according to Henrik Lundstedt, John M. Wilcox and Philip H. Scherrer of Stanford University, is that flares erupting where the sun's magnetic field is oriented southward often tend to disrupt the solar wind, while those born in northward fields do not. Of the 80 major flares (those of "importance 2" or greater) logged between Aug. 24, 1978, and Nov. 9, 1979, the scientists told the recent AGU meeting, 39 came from southward fields and were clearly associated, on the average, with high-speed solar wind (as measured four days later by the ISEE-3 satellite), while the 32 from northward fields showed no such link. The reason for the correlation is unknown, but the authors found "very similar results" when they expanded their survey to include hundreds of flares between early 1968 and August 1972, and from June 1977 to August 1978. (In earlier data, going back to May 1967, the north-south correlation was reversed, says Wilcox, possibly due to the 22-year cycle of changes in the magnetic field of the sun's corona.)