

PKU in autistic and atypical children

Not all infants who have classic phenylketonuria (PKU)—the inability to convert the amino acid phenylalanine to tyrosine—have elevated blood phenylalanine concentrations within the first few days of life. This observation has led to much controversy in the design of neonatal screening programs for the detection of metabolic disorders. Now, researchers at Yale University School of Medicine in New Haven, Conn., have added a new chapter to the controversy.

Donald J. Cohen and his colleagues report in the Jan. 11 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* the discovery of three phenylketonuric children among 65 autistic and atypical psychotic children screened by standard urinary amino acid test methods for the detection of metabolic disorders. Interestingly, at least one of the three children had tested negatively for PKU in her neonatal period.

The children with phenylketonuria were treated with low-phenylalanine diets and have shown improvement in functioning and developmental level since treatment. Because dietary phenylalanine restrictions benefit children with PKU, even when diagnosed later in childhood, Cohen and his colleagues point to the importance of PKU retests for high-risk patient groups.

Telemetering the human intestine

Radiotelemetry, an increasingly valuable tool in biology and medicine, is offering insights into the irritable colon condition, according to a report in the Dec. 22/29 *LANCET*.

A man with a long history of abdominal pains had never shown any colon abnormality, although his symptoms suggested an irritable colon. D. G. Thompson and co-workers at the London Hospital Medical College suspected that the abnormality might lie in the small intestine and tested that possibility. The patient swallowed a pressure-sensitive radio pill, to which a thread was attached. The thread was adjusted so the pill was situated in his small intestine. An ariel array was fastened around the patient's waist and connected to a receiver. The output of this receiver was a voltage proportional to the pressure exerted on the pill by the patient's small intestine, and the voltage was recorded.

The researchers then compared the patient's pressure traces (small intestinal contractions) to those of healthy persons and found they were abnormal. What's more, the patient's pain coincided with abnormal contractions. So the patient's symptoms were due to an abnormality of the small intestine rather than the colon, the scientists conclude.

Allergy: Endodermal cancer defense?

The results of studies investigating the coexistence of allergy or asthma with one or more types of malignant tumors are conflicting: One study suggests that allergy is more frequent in cancer patients, while another study shows a decreased history or normal incidence of allergy among other cancer patients. Now, D. W. Cockcroft and his colleagues at St. Paul's Hospital in Vancouver, British Columbia, have reported in the December 1979 *ANNALS OF ALLERGY* a possible explanation for some of the discrepancies observed in previous studies: Differences in the type of tumor could account for the conflicting results.

Cockcroft and his colleagues sought the allergy history of patients with endodermal, mesodermal and ectodermal malignancies, along with the allergy history of control patients. The researchers found a significantly lower frequency of respiratory allergy in patients with endodermal malignancy when compared with their controls but found no significant differences among any of the other groups. The reason for the negative link between endodermal cancers and allergy is unknown.

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Assessing flood potential

Part of the tragedy of floods such as the 1972 Rapid City, S.D., and the 1976 Big Thompson, Colo., floods that killed 236 and 139 people, respectively, is that their occurrence was not expected from the rainfall and stream flow records. Such records date back only about 100 years for most of the United States and only about 50 years for the western U.S. Longer records however, may be found by looking for the sediments left by an area's highest flood, two University of Texas scientists told the recent meeting in San Francisco of the American Geophysical Union.

Victor Baker and Peter Patton explained that the highest deposits found near tributaries of a river flood plain must mark the height of the record flood for that basin. In addition, the interval between floods can often be figured by radio-dating the leaves and twigs found on top of a flood deposit, Patton says. Depending on the area, sediments can be found that date back hundreds or thousands of years. In this way, an area's potential for a very large, very rare flood can be estimated, they say.

Patton cautions, however, that the method is not predictive and cannot replace statistical means of assessing flood potential. The technique is best suited, he says, for semi-arid regions such as the basins they have studied in west Texas and south central Utah where deposits form by back-flooding into tributaries. "We are only looking for a way to get long-term data," he says. "This information is most valuable from a structural, planning awareness point of view."

Better Great Lakes

Skeptics scoffed when the United States and Canada limited phosphates in detergents in order to save the Great Lakes; estimates showed it would take centuries for them to improve. But new calculations show Lake Ontario is already improving and, with proper controls, the other lakes will respond to decreased phosphate within decades. (Phosphates stimulate algae growth, which in turn depletes the lake of oxygen. Detergent phosphates were found to be about half the wastewater phosphate put into the lakes.)

Earlier models considered only flushing—pollution removal by water flowing into and out of a lake. But a model proposed by Steven Chapra of the National Oceanic and Atmospheric Administration in Ann Arbor, Mich., also includes the pollution removed as it settles into sediments.

The phosphorus added to Lake Ontario, for example, has dropped from 16,500 tons per year in 1972 to about 11,000 tons per year currently. Based on this change, Chapra's model shows the lake will make a 90 percent recovery in about eight years. With similar controls, he estimates Lake Superior will improve 90 percent in 32 years, Michigan in 3, Huron in 8 and Erie in 1.

Nile River climate barometer

For some, the Nile River conjures images of Cleopatra and ancient Egypt. For Herbert Riehl and José Meitín, it represents a possible barometer of climate. River stages of the Nile have been measured at Roda Island at Cairo since 622 and at Aswan since 1870. Meteorologists Riehl and Meitín of the Cooperative Institute for Research in Environmental Sciences in Boulder, Colo., found that the record showed episodes of increased or decreased flows that lasted on the order of 100 years. The fluctuations, they suggest in the Dec. 7 *SCIENCE*, may be a response to changes in the global atmospheric circulation pattern, which determines the amount of rainfall in the Ethiopian Plateau where the Nile originates. "[S]omeone with hindsight, imagination and creativity ... may be able to see things signaled there that can predict something about climate," says Meitín.

43