

Fetal Brain Damage Linked to Schizophrenia

Subtle brain abnormalities that occur in the fetus during the first trimester of pregnancy appear to help trigger chronic forms of disabling schizophrenia in adulthood, a group of California researchers has reported. The minor brain damage may also contribute to a constellation of other afflictions, including childhood schizophrenia, autism and hyperactivity, according to the investigators.

Chief researcher James D. Guy of the Rosemead School of Psychology in La Mirada, Calif., said their results suggest "some kind of organic predisposing factor" makes certain people at risk for such diseases. However, he added, not all persons at risk will actually develop one of these illnesses. "All we can say right now is that there is some type of interruption in the development of the fetus," Guy said in an interview. "Our hypothesis, based on these results, is that there is some kind of causative tie-in with the later development of chronic schizophrenia." Guy and his group presented their report last week in Anaheim, Calif., at the annual meeting of the American Psychological Association.

Numerous studies, as Guy and his colleagues note, have previously suggested a link between schizophrenia and "minor physical anomalies." One recent study at the University of California at Los Angeles linked schizophrenia to the disarray of certain brain cells in the first trimester; however, results of a subsequent study by government scientists failed to replicate those findings (SN: 6/18/83, p. 391).

But as a result of his group's study, Guy says, "we are now not just supposing [a developmental link to schizophrenia] — we *know* that first trimester trauma are involved." But before the results can be put to use, Guy says, scientists must resolve the ethical issues involved in identifying people they believe to be at risk but otherwise appear to be healthy.

The findings of Guy and his group are "fascinating," says Daniel Weinberger of the National Institute of Mental Health (NIMH). Weinberger, who has been studying schizophrenia and the brain for a number of years, said although he is not familiar with this specific study, the results "fit at least in concept" with recent work suggesting a role of subtle, developmental brain problems in schizophrenia. In addition, he notes, "There is a long history of complicated pregnancies and births" as apparent precursors to some forms of schizophrenia. "But," he cautions, "a lot of the evidence has been loose and circumstantial."

The California group studied 40 adult male schizophrenics from the inpatient wards at Camarillo (Calif.) State Hospital and the day hospital program at Harbor-

UCLA Medical Center in Los Angeles. The patients were tested and assessed on a number of measures, including the Waldrop Anomaly Scale, which measures minor physical abnormalities such as "electric hair" (where hair does not stay down after combing), abnormal head size, unusually structured intersection of the eyelids and nose, low-seated ears, malformed or asymmetrical ears, high-steeped palate, furrowed tongue and unusual characteristics of the feet and hands. For the most part, the researchers note, "These minor abnormalities develop during the first trimester."

Because past research had found a relationship between these abnormalities and central nervous system impairment, "and in view of the mounting evidence of the role of organic factors in the development of schizophrenia," Guy and his colleagues hypothesized that their schizophrenic group would have higher Waldrop scores than the general population. Their expectations were borne out in the study. Moreover, they found that the schizophrenics with the highest Waldrop scores had developed schizophrenia earlier in life

than the others and had exhibited significant difficulties relating to people and adjusting to society prior to the onset of schizophrenia. In addition, the results of several neuropsychological tests indicated neurological impairment among the test group subjects.

"A high incidence of minor physical anomalies suggests some form of central nervous system disturbance which may predispose an individual toward poor social adjustment and schizophrenia," conclude Guy and colleagues Lawrence V. Majorski of Huntington Memorial Hospital in Pasadena, Charles J. Wallace of the NIMH Clinical Research Project at the Brentwood VA Medical Center in Los Angeles and Margaret P. Guy of the Tri City Mental Health Center in Pomona. "These results," they add, "lend further support to an interaction model which incorporates both organic and functional factors in the etiology of some forms of schizophrenia."

As for putting the results to use in clinical programs, Guy says, "there are all kinds of ethical issues. Can you identify people with no symptoms as being at risk? What do we do?" —J. Greenberg

Sinister signs of a fearful brain

Because the world is a dangerous place, fear is normal and adaptive. But for some people fear is irrational and overwhelming: crowds, high places, spiders or even the thought of spiders can cause sheer panic and lead to social debilitation. Scientists have long wondered how fear can run out of control, and now there is preliminary evidence that such excessive fearfulness—or phobia—may be linked to incomplete specialization of the brain's two hemispheres.

According to psychologist Claude M. Chemtob of the Veterans Administration Hospital in Honolulu, individuals and groups differ significantly in the degree to which their brains are "lateralized" — the degree, that is, to which the two cortical hemispheres have specialized for different intellectual functions. Males and right-handed people are generally the most lateralized, while females and left-handers tend to be incompletely lateralized. Because phobias are much more common among women (an estimated 95 percent of animal phobias are found among women), Chemtob investigated the possible link between fearfulness and brain organization.

Chemtob studied two groups of phobic patients, looking for a history of left-handedness in their families — an indicator, he says, of incomplete lateralization. In the first study, he recruited phobic women and merely fearful women and

compared them to normal controls; as he reported at the recent meeting of the American Psychological Association, he found that the phobic women had significantly more left-handed relatives than either of the other groups. Then Chemtob studied a group of men and women who were already in treatment for phobias. He found that over 20 percent of both males and females were themselves left-handed (twice the prevalence in the general population), and when he studied the right-handers in the group, he found that they had a significantly greater number of left-handed relatives.

In an earlier research project, Chemtob had found that people with less lateralized brains tended to perceive facial emotion as more intense than did those with fully lateralized brains. The right hemisphere appears to take the lead in processing emotions, Chemtob told SCIENCE NEWS, and it may be that the left hemisphere plays a natural inhibitory role, dampening excessive emotional reaction. In the phobic brain, he suggests, the less specialized left hemisphere appears to be incapable of inhibiting the runaway fear.

Harvard University neurologist Norman Geschwind says that the finding is interesting, but he warns against drawing a causal connection. It is more likely, he says, that brain organization and phobia share a common cause. —W. Herbert