

Hidden histories on death row

The future could hardly be bleaker for juveniles who have committed a murder and been sentenced to death, but their past runs a close second. These young men often have a history of brain damage, psychiatric disorders and physical and sexual abuse that has been either unrecognized or deliberately concealed, says Dorothy Otnow Lewis of New York University School of Medicine in New York City.

Lewis and her colleagues examined 14 of the 37 U.S. males sent to death row as juveniles. Their ages at the time of their offenses ranged from approximately 16 to 18 years. At the time of the evaluations, their ages ranged from 18 to 29.

All of the 14 young men suffered head injuries during childhood, nine of which resulted in at least one of the following: hospitalization, indentation of the skull and loss of consciousness. Neurological abnormalities, including evidence of brain injury, abnormal head circumference and seizure disorders, were documented in nine cases.

Severe psychiatric disorders were evident in all of the youths. Seven were psychotic, with symptoms including auditory and visual hallucinations. Another four had histories of recurrent depression or manic depression, and three experienced bouts of paranoia during which they would assault perceived enemies.

Brutal physical abuse had been meted out in 12 cases, and five had been sexually assaulted by older male relatives.

Twelve subjects had IQ scores below the normal range, and 10 had an impaired ability to think abstractly.

This litany of handicaps would have undermined arguments for the death sentence, said Lewis at the annual meeting of the American Academy of Child and Adolescent Psychiatry in Washington, D.C., last week. But in only five cases were pretrial psychiatric or psychological examinations performed, and those tended to be inadequate, she notes. Even when carefully interviewed, the condemned youths were reluctant to share information, because they feared being labeled "crazy" or "retarded" and were ashamed of their parents' brutality toward them. Parents had vested interests in concealing their own misconduct, adds Lewis, and in several cases cooperated with the prosecution, testified against their own children or urged the judge to impose a death sentence. To top it off, the juveniles' lawyers often had an uneasy alliance with the youngsters' families. "On several occasions," says Lewis, "attorneys requested that we conceal or minimize parental physical and sexual abuse to spare the family any embarrassment."

New look at antipsychotic side effect

Psychiatrists at McLean Hospital in Belmont, Mass., recently reviewed patient records at their facility and found that, over one year, about 1.4 percent of the patients given antipsychotic drugs developed a potentially fatal side effect known as neuroleptic malignant syndrome (NMS) (SN: 10/25/86, p.260). Initial signs of the reaction are fever, severe muscle rigidity and elevated heart rate and blood pressure. In some cases, coma, kidney failure, brain damage or even death can follow.

To check their "retrospective" estimate, the researchers tracked new cases of NMS over 18 months at the hospital. NMS was diagnosed in six of 679 antipsychotic-treated patients, report Paul E. Keck Jr. and his colleagues in the Oct. AMERICAN JOURNAL OF PSYCHIATRY.

Combined data from the prior review and the new survey point to an estimated NMS frequency of about 1 percent, they conclude. Nevertheless, diagnostic criteria for NMS, particularly in its early stages, remain unclear to some investigators. The McLean psychiatrists say NMS may encompass a spectrum of physiological reactions to antipsychotic drugs, with mild and more severe forms.

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End of river blindness in sight?

In the areas of Africa and Latin America nearest the equator, blackflies that breed in river water carry a parasite called *Onchocerca volvulus* from human to human. An estimated 18 million people suffer from the disease onchocerciasis, and the parasite threatens another 85 million worldwide, according to world health officials. When *O. volvulus* invades its human host, the results can be devastating. The adult worms, which can reach 2 feet in length, travel under the skin and cause extremely itchy lumps and thick scars. But it is their millions of tiny offspring, called microfilariae, that cause the eye lesions leading to permanent blindness — giving onchocerciasis its more common name of "river blindness."

The World Health Organization estimates that more than 336,000 people worldwide, and up to 15 percent of the population in heavily infested areas, are blind as a result of the parasite. Local and international agencies spray pesticides in river areas to reduce the number of parasite-carrying blackflies, but the disease persists.

Scientists are looking for ways to stop the spread of river blindness, which has been targeted for global eradication by various health organizations. Adult worms can live in a human for 15 years, shedding millions of microfilariae. So the parasite itself has become the focus of recent research.

The most promising medical tool appears to be ivermectin, a drug already used against other parasites in domestic animals. Subsequent trials in humans with onchocerciasis have shown that ivermectin also can reduce microfilarial counts to under 10 percent of pretreatment levels within days, an effect that lasts for up to a year. It apparently acts by inhibiting parasite reproduction and paralyzing the microfilariae. Developed at Merck Sharp and Dohme Research Laboratories in Rahway, N.J., ivermectin can be given orally, and one or two doses yearly appear to be sufficient. The two drugs presently used as treatment for onchocerciasis are more toxic, and must be administered more frequently.

Last week, Merck officials announced plans, in cooperation with the World Health Organization, to donate ivermectin to interested countries. The announcement follows the approval of ivermectin's use in humans by the Directorate of Pharmacy and Drugs, the French equivalent of the U.S. Food and Drug Administration. Once in place, the program will continue "for the foreseeable future," a Merck spokesman told SCIENCE NEWS. Company and health officials are hoping the program eventually will eradicate river blindness by reducing the number of microfilariae available for transmission by blackflies to humans, the parasite's only known reservoir.

Despite the promising aspects of ivermectin, it does not eliminate the adult worms from the body, nor does it prevent infection. Also, its use in pregnant women is not recommended. An alternative may be antiparasite vaccines, although developing a vaccine against something accepted so readily by the body is a difficult endeavor. Among those looking for a river blindness vaccine is Alan L. Scott of Johns Hopkins Medical Institutions in Baltimore. By using proteins from the surface of *O. volvulus*, Scott hopes to find a mixture of antigens that, when injected, cause the production of protective antibodies against the parasite. He told SCIENCE NEWS that he is trying to clone antigens that look promising. Scott and his co-workers plan to isolate the *O. volvulus* gene that codes for whatever protein elicits antibody production in the host, and then use recombinant DNA technology to make large quantities of the protein. Early vaccines, says Scott, would most likely not be preventive, but rather therapeutic — reducing parasite numbers and the incidence of blindness. A more immediate by-product of his research, says Scott, could be an improved early diagnostic test for river blindness.

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