



Fact Sheet: Traumatic Brain Injury

Definition

Traumatic brain injury, also known as brain injury or head injury, is an injury that results in damage to the brain. Brain injury may occur in one of two ways:

- A closed brain injury occurs when the moving head is stopped rapidly, as when hitting a windshield, or when it is hit by a blunt object, causing the brain to smash into the hard bony surface inside the skull. Closed brain injury may also occur without direct external trauma to the head if the brain undergoes a rapid forward or backward movement, such as when a person experiences whiplash, or when babies are shaken.
- A penetrating brain injury occurs when a fast moving object such as a bullet pierces the skull.

Both closed and penetrating brain injuries may result in both localized and diffuse damage to the brain.

Facts

Each year, an estimated two million people sustain a brain injury. About 500,000 brain injuries each year are severe enough to require hospitalization. Brain injury is most common among males between the ages of

15-24, but can strike at any age. Many brain injuries are mild, and symptoms usually disappear over time with proper attention. Others are more severe and may result in permanent disability.

Consequences

Cognitive Deficits include shortened attention span, short-term memory problems, problem solving or judgment deficits, and the inability to understand abstract concepts. Loss of sense of time and space, as well as decreased awareness of self and others, can occur. There may also be an inability to accept more than one- or two-step commands simultaneously.

Motor Deficits include paralysis, poor balance, lower endurance, reduction in the ability to plan motor movements, delays in initiation, tremors, swallowing problems, and poor coordination.

Perceptual Deficits mean possible changes in hearing, vision, taste, smell and touch, loss of sensation of body parts, left or right side of

body neglect. The individual may have difficulty understanding where limbs are in relation to the body.

Speech Deficits most commonly include speech that is not clear as a result of poor

control of the speech muscles (lips, tongue, teeth, etc.) and poor breathing patterns.

Language Deficits can mean difficulty expressing thoughts and understanding others. This may include problems identifying objects and their function as well as problems with reading, writing, and ability to work with numbers. Problems with pragmatic language, decreased vocabulary and word substitution may occur. Speech therapy may be necessary to work with language problems.

Social Difficulties may be apparent, such as impaired social capacity resulting in self-centered behavior in which both empathy and self-critical attitudes are greatly diminished. Brain injury can result in difficulties in making and keeping friends, as well as understanding and responding to the nuances of social interaction.

Regulatory Disturbances include fatigue and/or changes in sleep patterns, dizziness or headache. There may be loss of bowel and bladder control.

Personality Changes may be subtle or pronounced. Changes include apathy and decreased motivation, emotional lability, irritability, or depression. Disinhibition also may result in temper flare-ups, aggression, cursing, lowered frustration tolerance, and inappropriate sexual behavior.

Traumatic Epilepsy

Epilepsy occurs in two to five percent of all people who sustain brain injury, but it is much more common with severe or penetrating injuries. While most seizures occur immediately after the injury or within the first year, it is also possible for epilepsy to surface years later.

Epilepsy includes both major or generalized seizures and minor or partial seizures.

Generalized Seizures, also called "Grand Mal," are the most dramatic type of seizure.

The person falls unconscious to the ground. His or her body stiffens, then jerks convulsively. The mouth, eyes, legs and arms move. Urinary incontinence is common. After several minutes, the jerking movements slow and the seizure ends. The person will likely be drowsy afterwards and may not remember the seizure.

Partial Seizures, also known as "focal," may be simple (during which the person is conscious but temporarily loses control of movements or senses, such as the uncontrollable jerking of an arm or leg), or complex (during which the person appears to be in a trance and may have isolated movements, such as lip smacking or picking at their clothes). About 75% of seizures are partial, although many of these seizures may eventually generalize.

Prognosis

The extent of an individual's enduring problems after a brain injury depend on many factors. Prompt and proper diagnosis and treatment can help minimize some consequences of brain injury. However, it is usually difficult to predict the outcome of a traumatic brain injury in the first hours, days, or weeks. In fact, the outcome may remain unknown for many months or years.

Treatment

Rehabilitation of the individual with a brain injury begins immediately. The initial life-saving treatment may be provided by an EMT, emergency physician, neurosurgeon or neurologist. As the person improves, a team of specialists may be used to evaluate and treat the problems that result. This team may include experts in rehabilitation medicine (physiatrists), psychiatry, nursing, neuropsychology, social work, nutrition, special education, occupational, physical, speech and language therapies, cognitive retraining, pastoral support, activity therapy, and vocational rehabilitation. The individual and his/her family are the most important members of the team, and should be

included in the rehabilitation and treatment to the greatest extent possible.

There are a variety of treatment programs along the continuum of care, including: acute rehabilitation, long-term rehabilitation, coma treatment centers, late rehabilitation, extended intensive rehabilitation, transitional living programs, behavior management programs, life-long residential, day treatment programs, independent living programs, and traumatic brain injury programs within community colleges.

Recommended Readings

Waiting to Clear, Brain Injury: Early Stages of Recovery, Mary M. Castiglione and Cynthia Johnson, 1993, Pritchett & Hull Associates, Inc., 3440 Oakcliff Rd. N.E., Suite 110, Atlanta, GA 30340-3079, (800) 841-4925.

Making Sense Out of Nonsense: Models of Head Injury Rehabilitation, Ruth A. Whitham, 1994. Available from HDI Publishers, 10131 Alfred Lane, Houston, TX 77041, (800) 321-7037.

Sexuality and the Person with Traumatic Brain Injury: A Guide for Families, Ernest R. Griffith and Sally Lemberg, 1993, F.A. Davis Company, 1915 Arch Street, Philadelphia, PA 19103 (also available from the Brain Injury Association).

Head Injury and the Family, Arthur Dell Orto and Paul Power, 1994, G.R. Press, 6959 University Blvd., Winter Park, FL 32793, (800) 438-5911.

The HDI Coping Series and the HDI Professional Series on Traumatic Brain Injury, William Burke, Michael Wesolowski and William Blacker, 1996 (revised), HDI Publishers, 10131 Alfred Lane, Houston, TX 77041, (800) 321-7037.

Through This Window: Views on Traumatic Brain Injury, Patricia I. Felton (Ed.), 1992, Exceptional Brain Trauma Survivors (EBTS), P.O. Box 500, No. Waterboro, ME 04061.

Injured Mind, Shattered Dreams: Brian's Journey From Severe Head Injury to a New Dream, Janet Miller Rife, 1994, Brookline Books, P.O. Box 1046, Cambridge, MA, (617) 868-0360.

Living with Head Injury: A Guide for Families, Richard C. Senelick and Cathy E. Ryan, 1991, Rehabilitation Institute of San Antonio, Rehabilitation Hospital Services Corporation Press, 1010 Wisconsin Avenue, N.W., Washington, D.C. 20007 (also available from the Brain Injury Association).

Traumatic Head Injury: Cause, Consequence and Challenge, Dennis P. Swiercinsky, Terrie L. Price and Lief Erick Leaf, 1993, Head Injury Association of Kansas and Greater Kansas City, 1100 Pennsylvania Ave., Suite 305, Kansas City, MO 64105 (available from the Brain Injury Association office in Kansas and Greater Kansas City, or through HDI Publishers).

Credits

Brain Injury Association, Brain Injury Resource Center, an Interactive Multi-Media Computer-Based Resource Center, 1997.

National Institute of Neurological Disorders and Stroke, February, 1989, Inter-Agency Head Injury Task Force Report, Bethesda, MD.

Soren, S. and Kraus, J.F., 1991, Occurrence, Severity and Outcomes of Brain Injury, Journal of Head Trauma Rehabilitation, 6(2), 1-10.

Resources

Mountain Caregiver Resource Center
2491 Carmichael Drive, Suite 400
Chico, CA 95928
(530) 898-5925
(800) 995-0878
www.caregiverresources.org

Mountain Caregiver Resource Center offers a full complement of family services designed to assist caregivers of adults with brain disorders. Most services are offered free or on a low-cost sliding scale.

Services include: specialized information, family consultation and care planning, support groups, short-term counseling, respite care, legal and financial assistance, in addition to family and professional training.

Family Caregiver Alliance
690 Market Street, Suite 600
San Francisco, CA 94104
(415) 434-3388
(800) 445-8106 (in CA)
Website: <http://www.caregiver.org>
E-mail: info@caregiver.org

Family Caregiver Alliance supports and assists caregivers of brain-impaired adults through education, research, services and advocacy.

FCA's information Clearinghouse covers current medical, social, public policy and caregiving issues related to brain impairments.

For residents of the greater San Francisco Bay Area, FCA provides direct family support services for caregivers of those with Alzheimer's disease, stroke, brain injury, Parkinson's and other debilitating brain disorders that strike adults.

Brain Injury Association
105 North Alfred Street
Alexandria, VA 22314
(703) 236-6000
(800) 444-6443 (Family Helpline)

The Brain Injury Association (BIA) is a national advocacy and awareness organization which develops and distributes educational information on resources, legal rights and services. BIA is a centralized clearinghouse for information of all kinds regarding brain injury and provide referrals for state associations across the United States.

Ontario Head Injury Association
P.O. Box 2338
St. Catharines, Ontario L2M 7M7
(905) 641-8877

The Ontario Head Injury Association maintains TBI INFO, a system of on-line information on traumatic brain injury and community reintegration.

Brown Schools
National Information and Referral Service
P.O. Box 4008
Austin, TX 78765
(512) 329-8821
(800) 531-5305

The Brown Schools offer information and referral for residential and rehabilitation facilities across the U.S.

Brain Injury Policy Institute of California
P.O. Box 160786
Sacramento, CA 95816
(916) 442-1710 (Administrative Office)
(800) 444-6443 (National Family Helpline)

Other established brain injury organizations in California include:

San Diego Head Injury Foundation, Inc.
P.O. Box 84601
San Diego, CA 92138
(619) 268-4432 (Helpline)
(619) 294-6541

The Head Trauma Support Project, Inc.
Sacramento Area
2500 Marconi Ave., Suite 203
Sacramento, CA 95821
(916) 482-5770

Reviewed by Gregory J. O'Shanick, M.D.,
Medical Director, Mary S. Reitter, Vice Presi-
dent of Education and Research, and Sue
Guzman, Director of Communications, Brain
Injury Association, Washington, DC. Prepared
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with California's Caregiver Resource Centers,
a statewide system of resource centers serving
families and caregivers of brain-impaired
adults. Funded by the California Department of
Mental Health. Revised June 1998. © All rights
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