

Childhood Maltreatment and Migraine

Gretchen E. Tietjen, MD

University of Toledo College of Medicine and Life Sciences, Toledo, OH

Dawn C. Buse, PhD

Albert Einstein College of Medicine, Montefiore Headache Center, Bronx, NY

Definitions and Prevalence. Maltreatment in childhood, also referred to as “adverse childhood experiences” (ACEs) has been characterized as:

1. Abuse (Emotional Abuse, Physical Abuse, Sexual Abuse)
2. Neglect (Emotional Neglect, Physical Neglect)
3. Household Dysfunction (Mother Treated Violently, Household Substance Abuse, Household Mental Illness, Parental Separation or Divorce, Incarcerated Household Member).

Maltreatment is confirmed in one out of every eight children, but it is likely significantly underreported and in survey studies has been recalled by about 40% of adults.

Epidemiological evidence. Four large non-clinic based studies (Adverse Childhood Experiences [ACE] Study, American Migraine Prevalence and Prevention [AMPP] Study, the Canadian Community Health Survey—Mental Health [CCHS-MH], and the National Longitudinal Study of Adolescent to Adult Health [ADD Health]) each demonstrate an association of childhood maltreatment and migraine in adults. Studies of migraine/headache and abuse are more difficult to conduct in children and adolescents, but results suggest a similar association with physical and sexual abuse, and with bullying. Limitation of the literature are that maltreatment is self-reported after the fact, without corroborating evidence, although in the ADD Health study young adults reporting emotional abuse, the type of maltreatment most strongly associated with migraine, were also more like to have experienced homelessness, running away from home, having been in a home investigated by Social Services, and having been removed from the home.

Childhood maltreatment has also been shown to be associated with migraine comorbidities, including medical conditions (headache, migraine, fibromyalgia, chronic pain conditions, cardiac conditions, irritable bowel disease) and psychological/behavioral disorders (depression, anxiety, borderline personality disorder, panic disorder, obsessive compulsive disorder, dissociative disorder, substance abuse disorders,).

Mechanisms. Potential mechanisms linking maltreatment and migraine include stress-induced dysregulation of the hypothalamic pituitary adrenal (HPA) axis, as well as disruption of other stress-mediating homeostatic systems, including those involving endocannabinoids, monoamine neurotransmitters, oxytocin, and inflammation. Stress also effects the immune, metabolic and autonomic (sympathetic) nervous systems. Prolonged elevation of glucocorticoids alters the neural architecture of the limbic system resulting in the structural as well as functional changes that have been described in both maltreatment and in migraine. Certain polymorphisms within genes that code for proteins affecting HPA axis function predict vulnerability early adverse experiences. In addition, epigenetic modifications are likely key mechanisms by which early life stress effects neurobiology and disease vulnerability throughout the lifespan.

Treatment. Therapies modulating the endocannabinoid, serotonergic, oxytonergic, and inflammatory systems are under investigation for migraine. Anti-epileptic drugs such as valproate and topiramate, which are FDA approved for migraine treatment, are also histone de-acetylase (HDAC) inhibitors and interfere with epigenetic changes induced by stress. Aerobic exercise enhances endorphins, decreases inflammation, increases serotonergic activation and neurogenesis and has at least modest benefit on migraine frequency and intensity with episodic migraine. Individuals who experience childhood maltreatment and/or abuse in later life are at risk for

developing posttraumatic stress disorder (PTSD). There are psychological/behavioral therapies with empirical efficacy, which can be useful both during and immediately following a traumatic experience, or even years later. These treatments include relaxation therapies, biofeedback, and cognitive behavioral therapies (CBT). Subtypes of CBT with evidence of benefit in PTSD include cognitive therapy, exposure therapy, stress inoculation therapy, and eye movement desensitization and resensitization (EMDR) therapy. Dialectic behavior therapy (DBT), which combines the basic principles of CBT with relaxation training, mindfulness mediation, and other proven interventions, is indicated for individuals who engage in self-harm behaviors such as cutting or suicidal thoughts or actions.

Clinical Care of Victims of Current or Previous Abuse.

Assessment and Discussion. The majority of abuse and violence is perpetrated by persons known to the victim (e.g., parent, caregiver for children and spouse or partner for adults). Assessment of abuse in the clinical setting may be conducted as part of written questionnaires or direct questioning. Well-validated questionnaires for childhood maltreatment include the Childhood Trauma Questionnaire and the Adverse Childhood Experiences study questionnaire. All assessment and discussion should be conducted in private, away from family members or others accompanying the patient. Many victims of childhood maltreatment are re-victimized in adulthood. At the outset, clarify limits of confidentiality and legal reporting requirements with patients. Providers should provide local resources and options in case the patient feels it is too dangerous to return home. Local and national resources such as the Domestic Violence Hotline number can be posted in waiting rooms and in bathrooms. See the National Consensus Guidelines on Identifying and Responding to Domestic Violence Intimidation in Health Care Settings¹ for more information and suggestions.

Documentation and Mandated Reporting. HCPs should comply with their healthcare facility and/or state requirements for documentation of physical injuries. If physical signs such as bruising or other injuries are present, obtain consent and document with photographs. In the U.S. each state has mandatory child abuse and neglect reporting laws that require providers and institutions to report suspected maltreatment to a child protective services (CPS) agency. Abuse of elders and disabled persons is also required by law in most locations. Some states require reporting injuries which are suggestive of abuse. Refer to your state medical board for regulations in your state.

Resources for Health Care Providers

- American Academy of Neurology "Position Statement on Abuse and Violence", *Neurology*, 78, 2012, 433-435. www.aan.com/view/abusestatement.
- Tietjen GE. Office assessment for abuse and management of the battered patient. *Neurology: Clinical Practice*, 2012, 5-12.
- National Consensus Guidelines on Identifying and Responding to Domestic Violence Victimization in Health Care Settings available at <http://www2.aap.org/pubserv/PSVpreview/pages/Files/Consensus.pdf>. This excellent resource provides suggestions on indicators of abuse, sample safety plans, validated assessment tools, confidentiality procedures, and links to resources including posters, handouts, pocket cards, and other items.
- National Clearinghouse on Child Abuse and Neglect Information: <http://nccanch.acf.hhs.gov>
- Child Welfare Information Gateway: www.childwelfare.gov/responding/reporting.cfm
- National Clearinghouse on Abuse in Later Life: www.ncall.us
- National Center on Elder Abuse: Tel: 302-831-3525, www.ncea.aoa.gov

Resources for Patients

- AHS Headache Toolbox: Schulman EA. Abuse and Maltreatment: Their Effect on Headache. *Headache*. 2011; 51:1579-1580. http://www.americanheadachesociety.org/assets/1/7/Abuse_and_Maltreatment_Nov-Dec_2011.pdf

- National Domestic Violence Hotline: Tel: 1-800-799-SAFE (7233), www.ndvh.org
- National Sexual Assault Hotline: Tel: 1-800- 656-4673, www.rainn.org
- National Organization for Victim Assistance (NOVA): Tel: 1-800- 879-6682, www.trynova.org
- Futures without Violence: www.futureswithoutviolence.org/section/_get_help, Tel: 1-800-799-SAFE (7233)
- Manweb: (a website with information for battered men): www.batteredmen.com.
- To find a mental health care professional:
 - American Psychological Association (APA): www.apa.org
 - Association for Behavioral and Cognitive Therapies (ABCT): www.abct.org
 - American Headache Society (AHS): Perform provider search by type: “psychologist” or “psychiatrist”: www.americanheadachesociety.org

References

1. Tietjen GE, Buse DC, Collins SA. Childhood Maltreatment in the Migraine Patient. *Curr Treat Options Neurol*. 2016 Jul;18(7):31. doi: 10.1007/s11940-016-0415-4. Review.
 2. Tietjen GE. Childhood Maltreatment and Headache Disorders. *Curr Pain Headache Rep* 2016; 20:26. Review
 3. Tietjen G, Karmakar M, Amialchuk Aliaksandr. Emotional abuse history and migraine among young adults: Results from the Add Health dataset. *Headache* 2017; 57(1):45-59.
 4. McEwen BS, Bowles NP, Gray JD, Hill MN, Hunter RG, Karatsoreos IN, Nasca C. Mechanisms of stress in the brain. *Nature Neuroscience*. 2015;18(10):1353-63.
 5. Leenarts LE, Diehle J, Doreleijers TA, Jansma EP, Lindauer RJ. Evidence-based treatments for children with trauma-related psychopathology as a result of childhood maltreatment: a systematic review. *Eur Child Adolesc Psychiatry*. 2013;22(5):269-83.
-