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كليـــة الصيدلـــة

Amnesia

Amnesia is partial or total inability to recall past experiences. It refers to the loss of memories, such as facts, information and experiences. Though having no sense of who you are is a common plot device in movies and television, real-life amnesia generally doesn't cause a loss of self-identity. Instead, people with amnesia also called amnestic syndrome are usually lucid and know who they are, but may have trouble learning new information and forming new memories. Processing of memories involves registration (taking in new information), encoding (forming associations, time stamps, and other processes necessary for retrieval), and retrieval. Deficits in any of these steps, and any disorder or disturbance that can cause damage to areas of the brain that are vital for memory processing, can cause amnesia. Amnesia, by definition, results from impairment of memory functions, not impairment of other functions (eg, attention, motivation, reasoning, language), which may cause similar symptoms. In other words, memory deficits more commonly involve facts (declarative memory) and, less commonly, skills (procedural memory).

Amnesia can be classified as follows:

- Retrograde: Amnesia for events before the onset of amnesia.
- Anterograde: Inability to store new memories after the onset of amnesia.
- Global: Amnesia for information related to all senses and past times.
- Sense-specific: Amnesia for events processed by one sense—eg, an agnosia.

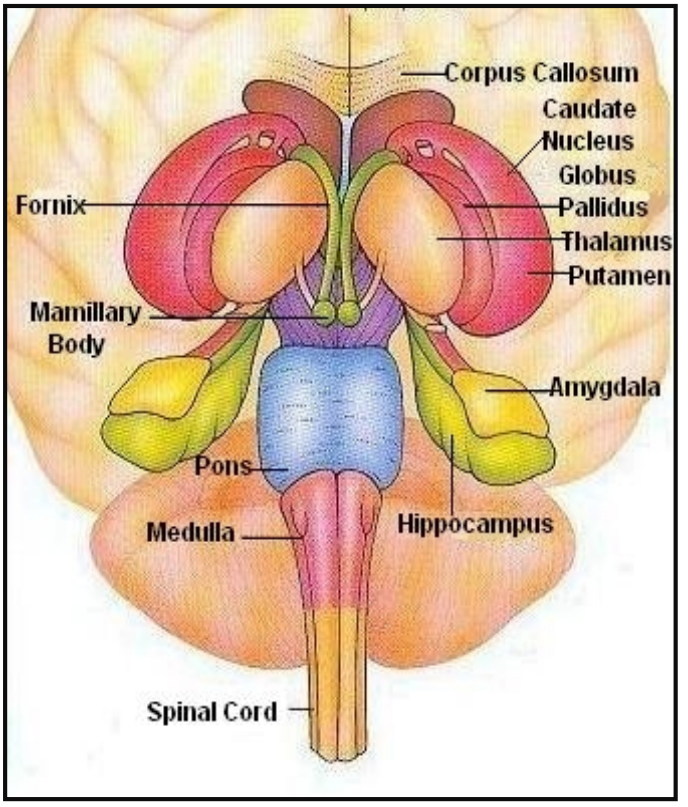
Amnesia may be transient (as occurs after brain trauma), fixed (as occurs after a serious event such as encephalitis, global ischemia, or cardiac arrest), or progressive (as occurs with degenerative dementias, such as Alzheimer's disease).

In This Issue

Etiology

Amnesia can result from diffuse cerebral impairment, bilateral lesions, or multifocal injuries that impair memory-storage areas in the cerebral hemispheres. Predominant pathways for declarative memory are located along the medial parahippocampal region and hippocampus as well as in the inferomedial temporal lobes, orbital surface of the frontal lobes (basal forebrain), and diencephalon (which contains the thalamus and hypothalamus). Of these structures, the hippocampal gyri, hypothalamus, nuclei of the basal forebrain, and dorsomedial thalamic nuclei are critical. The amygdaloid nucleus contributes emotional amplifications to memory. The thalamic intralaminar nuclei and brain stem reticular formation stimulate the imprinting of memories. Bilateral damage to the mediodorsal nuclei of the thalamus severely impairs recent memory and the ability to form new memories; the most common causes are

- Thiamin deficiency
- Hypothalamic tumors
- Vertebrobasilar ischemia



Other causes of amnesia include the following:

- Bilateral damage to the medial temporal lobes (especially the hippocampus)
- Brain inflammation (encephalitis) resulting from infection with a virus such as herpes simplex virus or as an autoimmune reaction to cancer somewhere else in the body (paraneoplastic limbic encephalitis)
- Degenerative dementias, such as Alzheimer's disease
- Severe brain trauma such as those sustained in car accidents, can lead to confusion and problems remembering new information, especially in the early stages of recovery — but usually don't cause severe amnesia. Another rare type of amnesia, called psychogenic or dissociative amnesia, stems from emotional shock or trauma, such as being the victim of a violent crime. In this disorder, a person may lose personal memories and autobiographical information, usually only briefly.
- Global brain anoxia or ischemia
- A distinct benign form of transient global amnesia can follow excessive alcohol ingestion, moderately large sedative doses of barbiturates, use of several illicit drugs, or sometimes relatively small doses of benzodiazepines such especially midazolam and triazolam.
- Alcoholic-nutritional disorders (eg, Wernicke's encephalopathy, Korsakoff's psychosis)
- Electroconvulsive therapy, a procedure in which electrical currents are passed through the brain, sometimes used to treat certain mental illnesses
- Various drug intoxications (eg, chronic solvent sniffing, amphotericin B or lithium toxicity)

Posttraumatic amnesias for the periods immediately before and after concussion or more severe head trauma seem to result from medial temporal lobe injury. More severe injuries may affect larger areas of memory storage and recall, as can many diffuse cerebral disorders that cause dementia.
With aging, many people gradually develop noticeable problems with memory, often first for names, then for events, and occasionally for spatial relationships. This widely experienced so-called benign senescent forgetfulness has no proven relationship to dementia, although some similarities are hard to overlook. People who have a subjective memory problem, who do worse on objective memory tests, but who otherwise have intact cognition and daily function may have amnestic mild cognitive impairment (amnestic MCI). People with amnestic MCI are more likely to develop Alzheimer's disease than age-matched people without memory problems.

Symptoms
Most people with amnesia have problems with short-term memory — they can't retain new information. Recent memories are most likely to be lost, while more remote or deeply ingrained memories may be spared. Someone may recall experiences from childhood or know the names of past presidents, but not be able to name the current president or remember what month it is or what was for breakfast.

Isolated memory loss doesn't affect a person's intelligence, general knowledge, awareness, attention span, judgment, personality or identity. People with amnesia usually can understand written and spoken words and can learn skills such as bike riding or piano playing. They also may understand they have a memory disorder.

Amnesia isn't the same as dementia. Dementia often includes memory loss, but it also involves other significant cognitive problems that lead to a decline in the ability to carry out daily activities. A pattern of forgetfulness is also a common symptom of mild cognitive impairment (MCI), but the memory and other cognitive problems in MCI aren't as severe as those experienced in dementia.

Additional signs and symptoms
Depending on the cause of the amnesia, other signs and symptoms may include:

- False recollections (confabulation), either completely invented or made up of genuine memories misplaced in time
- Neurological problems such as uncoordinated movements, tremors or seizures
- Confusion or disorientation

When to see a doctor
Anyone who experiences unexplained memory loss, head injury, confusion or disorientation requires immediate medical attention. A person with amnesia may not be able to identify his or her location or have the presence of mind to seek medical care. If someone you know has symptoms of amnesia, help the person get medical attention.

Diagnosis

Diagnosis is clinical but often includes neuropsychologic testing and brain imaging (eg, CT, MRI). Simple bedside tests (eg, 3-item recall, location of objects previously hidden in the room) and formal tests (eg, word list learning tests such as the Buschke Selective Reminding Test) can help identify verbal memory loss. Assessment of nonverbal memory is more difficult but may include recall of visual designs or a series of tones. Clinical findings usually suggest causes and any necessary tests.

Complications

Amnesia varies in severity and scope, but even mild amnesia takes a toll on daily activities and quality of life. The syndrome can cause problems at work, at school and in social settings. It may not be possible to recover lost memories. Some people with severe memory problems need to live in a supervised situation or extended care facility.

Treatment

Treatment directed at the cause
Any underlying disorder or psychologic cause must be treated. However, some patients with acute amnesia improve spontaneously. Certain disorders that cause amnesia (eg, Alzheimer's disease, Korsakoff's psychosis, herpes encephalitis) can be treated; however, treatment of the underlying disorder may or may not lessen the amnesia. If it does not, no specific measures can hasten recovery or improve the outcome. Researchers are investigating several neurotransmitters involved in memory formation, which may one day lead to new treatments for memory disorders. But the complexity of the brain processes involved makes it unlikely that a single medication will be able to resolve memory problems

Occupational therapy

A person with amnesia may work with an occupational therapist to learn new information to replace what was lost, or to use intact memories as a basis for taking in new information. Memory training may also include a variety of strategies for organizing information so that it's easier to remember and for improving understanding of extended conversation.

Technological assistance

Many people with amnesia find it helpful to use a PDA. With some training and practice, even people with severe amnesia can use these electronic organizers to help with day-to-day tasks. For example, they can program the PDA to remind them about important events or to take medications.
Low-tech memory aids include notebooks, wall calendars, pill minders and photographs.

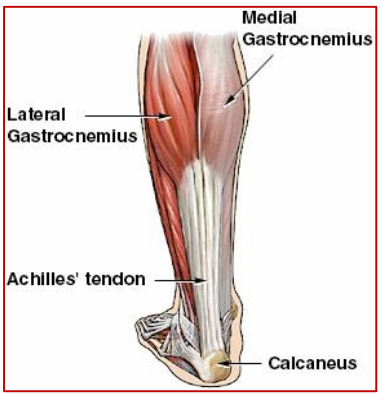
Prevention

Because damage to the brain can be a root cause of amnesia, it's important to take steps to minimize your chance of a brain injury. For example:

- Wear a helmet when bicycling and a seat belt when driving.
- Treat any infection quickly so that it doesn't have a chance to spread to the brain.
- Seek immediate medical treatment if you have any symptoms that suggest a stroke or brain aneurysm, such as a severe headache or one-sided numbness or paralysis

References:

1) ***Stuart J. Eisendrath MD, Jonathan E. Lichtmacher MD: Psychiatric Disorders. In Lawrence M. Tierney Stephen J. McPhee, Maxine A. Papadakis: Current Medical Diagnosis & Treatment, 45th Edition, 1045, 1080, 1084, and 1092. University of California, San Francisco, McGraw-Hill, 2006***
2) ***merckmanuals.com***
3) ***mayoclinic.com***



Terminology

Achilles Tendon

A thick tendon that joins the calf muscles to the heel bone (calcaneus) and pulls up that bone. The tendon is prone to rupture in middle-aged people playing vigorous sports such as squash or tennis. Named after the classical Greek hero Achilles, who was reputedly vulnerable to his enemies only in his heel.

Reference: Harvey Marcovitch: Black's Medical Dictionary, 41th ed, page 8. London, A & C Black Publishers Limited, 2005.

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Drug- Drug Interaction

Statins + Macrolides

Cases of acute rhabdomyolysis have been reported between lovastatin and azithromycin, clarithromycin, or erythromycin and between simvastatin and clarithromycin or
Roxithromycin Macrolide antibacterials have also been potentially implicated in
cases of rhabdomyolysis with atorvastatin and pravastatin.
Pharmacokinetic studies suggest that the macrolides increase the levels of the statins metabolised by CYP3A4 (namely atorvastatin,lovastatin and simvastatin).

Mechanism

Most macrolides inhibit the cytochrome P450 isoenzyme CYP3A4, by which lovastatin, simvastatin and, to some extent,atorvastatin are metabolised. Hence the concurrent use of a macrolide raises the levels of these statins, leading in some instances to toxicity (myopathy and rhabdomyolysis).No interaction would be expected with pravastatin because it is not metabolised by CYP3A4, (although a moderate effect has been found with clarithromycin) and no interaction would be expected with azithromycinas it does not appear to inhibit CYP3A4.

Management: Due to the potential for severe interaction, concomitant use of simvastatin or lovastatin with potent CYP450 3A4 inhibitors is considered contraindicated. Fluvastatin, pravastatin, pitavastatin, and rosuvastatin are probably safer alternatives, since they are not metabolized by CYP450 3A4. All patients receiving statin therapy should be advised to promptly report any unexplained muscle pain, tenderness or weakness, particularly if accompanied by fever, malaise and/or dark-colored urine. Therapy should be discontinued if creatine kinase is markedly elevated in the absence of strenuous exercise or if myopathy is otherwise suspected or diagnosed.

References: 1) Karen Baxter: Stockley's Drug Interactions, 8th edition, Page 1104-1105. UK, William Clowes Ltd, Beccles, Suffolk, 2008.
2) Drugs.com

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Ask the expert
What is radiofrequency ablation?

Radiofrequency ablation of nerves is a procedure that may be used to reduce certain kinds of chronic pain by preventing transmission of pain signals. It is a safe procedure in which a portion of nerve tissue is heated to cause an interruption in pain signals and reduce pain in that area. This procedure is sometimes called radiofrequency lesioning. The doctor will first identify the nerve or nerves that are sending pain signals to your brain. You will have a test that uses a nerve block, which numbs specific nerves. X-rays may be helpful for the doctor to pinpoint where to direct the radiofrequency probe. After you receive a local anesthetic, the doctor places an instrument under the skin through which electrical stimulation heats the surrounding tissue. This may cause a feel of buzzing or tingling sensation. The heat "stuns" the nerves, blocking them from sending pain signals to the brain. But the nerve often tries to grow back. If it does, the results are only temporary and usually last for around 6 to 9 months. This procedure is done in an operating room and takes between 20 minutes to 1 hour or longer depending on how many, and which, nerves are being blocked. If the nerve that is blocked is not the nerve that is causing the pain, your pain will not be reduced. Radiofrequency ablation is not effective for everyone. If you have not responded well to other treatment, such as diagnostic local anesthesia nerve blocks, radiofrequency ablation will probably not work for you.

Source: health.msn.com

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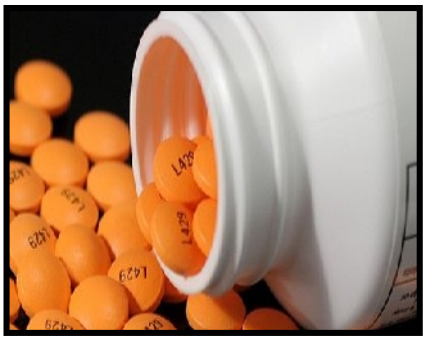
New Aspirin Breakthrough In Cancer Research

Taking a low dose of aspirin every day can prevent and possibly even treat cancer, fresh evidence suggests.



The three new studies published by The Lancet, researchers in the United Kingdom, add to mounting evidence of the drug's anti-cancer effects.

Many people already take daily aspirin as a heart drug.

But experts warn that there is still not enough proof to recommend it to prevent cancer cases and deaths and warn that the drug can cause dangerous side effects like stomach bleeds.

Prof Peter Rothwell, from Oxford University, and colleagues, who carried out the latest work, had already linked aspirin with a lower risk of certain cancers, particularly bowel cancer.

But their previous work suggested people needed to take the drug for about 10 years to get any protection.

Now the same experts believe the protective effect occurs much sooner - within three to five years - based on a new analysis of data from 51 trials involving more than 77,000 patients. And aspirin appears not only to reduce the risk of developing many different cancers in the first place, but may also stop cancers spreading around the body.

The trials were designed to compare aspirin with no treatment for the prevention of heart disease. [(1)]

According to the analysis, taking a low-dose aspirin every day reduced the risk of death from cancer by 37% after at least five years of use.
Taking a daily aspirin for at least three years reduced cancer incidence by close to 25% in both men and women.
In a second study, the researchers examined the impact of daily aspirin therapy on cancer metastasis, or spread, by analyzing newly published data from five other large trials.
Among the findings:

- Over an average follow-up of six-and-a-half years, daily aspirin use was associated with a 36% reduced risk of cancer with distant spread.
- Colorectal cancer patients with localized disease had a 74% reduced risk for having their disease spread when they took a daily aspirin.
- Daily aspirin use was associated with a 35% reduction in cancer deaths among patients with solid tumors, but not blood cancers such as leukemia.

A third analysis of trials also showed that regular aspirin use seemed to reduce the long-term risk of developing colorectal cancer, as well as cancers of the esophagus and breast.[(2)]

References: 1) bbc.co.uk/news/health
2) webmd.com

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Test Your Knowledge

1) Which of the following drugs is generally considered a drug of choice in treating status epilepticus?

(A) Phenobarbital
(B) ethosuximide
(C) buspirone
(D) lorazepam
(E) phenytoin

2) The antiparkinson effect of levodopa may be inhibited by:

(A) niacinamide
(B) d-alpha tocopherol
(C) pyridoxine HCl
(D) dihydrotachysterol
(E) riboflavin

3) The pharmacist should advise a patient that he or she may experience dizziness and syncope after taking the first dose of:

(A) trandolapril
(B) fosinopril
(C) clonidine
(D) terazosin
(E) labetalol

4) All of the following may be symptoms of a myocardial infarction EXCEPT

(A) myalgia,mydriasis, and nocturia
(B) agitated behavior and ashen pallor
(C) nausea, sweating,and dyspnea
(D) heartburn,fainting,and skipped beats
(E) dental and neck pain, no relief from nitroglycerin

Real Enquiries

At the "Drug Information Center", we respond to enquiries from the professional health team as well as from others. Here's one of the enquiries received at the center!

Enquiry received from Heba Belal, Pharmacist at Assiut University Pediatrics' Hospital

Enquiry: What is the stability of digoxin ampoule?

Summary of Answer:

Before IV administration, digoxin injection may be diluted with ≥4-fold volume of sterile water for injection, 5% dextrose injection, or 0.9% sodium chloride injection; use of < 4 fold volume of diluent may result in precipitation of digoxin, Diluted solutions of digoxin should be used immediately

From a microbiological point of view, should be used immediately; however, prepared infusions may be stored at 2—8 C and infused (at room temperature) within 24 hours.

Answers:

1- (D) When administered parenterally, lorazepam is a rapidly acting anticonvulsant with fewer tendencies to produce respiratory depression than the barbiturates. It has become a common choice for initial therapy of status epilepticus.

2- (C) Vitamin B6 (pyridoxine) use by patients using levodopa may decrease the effectiveness of levodopa by promoting the peripheral decarboxylation of levodopa.

3- (D) Terazosin is an alpha1-adrenergic blocker that causes peripheral vasodilation. Side effects may include a precipitous fall in blood pressure, possibly accompanied by tachycardia and syncope following the first dose. The initial dose of terazosin is usually 1mg at bedtime and may be increased slowly to 20 mg daily if required.

4- (A) Patients experiencing myocardial infarction usually have severe chest pain that may radiate to the left arm, neck and jaw. Muscle aches and frequent urination at night are not considered common sign of a myocardial infarction.

Sleep Pillows

Pillows made with herbs, used either singly or in combination, are a long-standing remedy to facilitate a good night's sleep.

Traditionally used herbs include *Matricaria recutita, Nepeta cataria, Humulus lupulus, Lavandula* spp*., Melissa officinalis, Tilia platyphyllos, Citrus aurantium* var. *amara blossoms,* and *Galium odoratum.*

Make a pillowcase lining out of linen or burlap, leaving it open at one end. Make up the herb stuffing by mixing dried herbs in the following proportions:

2 to 3 handfuls each of peppermint, sage, and lemon balm

1 to 2 handfuls of lavender, dill, lemon thyme, tarragon, woodruff, red bergamot and rosemary

1 to 2 tablespo ons of valerian

Fill the pillow loosely with the herbs; sew closed, and put inside a soft, pretty pillowcase before use. Many other herbal combinations are possible. This is an appropriate place to experiment to find the combination and aroma that suits the individual.

Reference: David Hoffmann: Medical Herbalism The Science and Practice of Herbal Medicine, page 360. Rochester, Vermont, Healing Arts Press, 2003

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