

Autonomic Dysreflexia

Autonomic dysreflexia, also known as hyperreflexia, is a dangerous condition unique to spinal cord injury survivors and is considered a medical emergency. Defined as an over activity of the autonomic nervous system, autonomic dysreflexia occurs in individuals whose spinal cord injury is at or above the level of Thoracic 6 and is unique only to this patient population. Due to the seemingly small population of persons at risk, many health care providers are not familiar with this condition. Hyperreflexia results in a quick onset of elevated blood pressure, which, if not treated immediately, may lead to intracranial hemorrhage, stroke, seizures, cardiac arrest or death.

What is Autonomic Dysreflexia?

Autonomic dysreflexia (AD) is defined as an over activity of the autonomic nervous system. It can occur when an irritating stimulus is introduced to the body below the level of a spinal cord injury, such as an overfull bladder. The stimulus sends nerve impulses to the spinal cord, which travel upward until blocked by the lesion at the level of injury. Since the impulses cannot reach the brain, a reflex is activated that increases activity of the sympathetic portion of the autonomic nervous system. The increased activity results in spasms and a narrowing of the blood vessels, causing a rise in blood pressure. Nerve receptors in the heart and blood vessels detect this rise and send a message to the brain. The brain then sends a message to the heart, causing the heartbeat to slow down and the blood vessels above the level of injury to dilate. However, the brain cannot send messages below the level of injury, due to the spinal cord lesion, and therefore blood pressure cannot be regulated.

Typically, the onset of the first incidence of AD occurs about four to six months after injury. Recent literature suggests episodes may occur earlier than six months and possibly within the first few days or weeks of the injury.

In healthy people, with intact spinal cords, their nervous systems normally respond to harmful stimuli. As a result, blood pressure is regulated and automatically re-balanced within a normal range. When a person's spinal cord is damaged, the automatic regulation mechanism cannot respond appropriately, leaving blood pressure unchecked. The result is a sharp rise in blood pressure until the stimulus is removed.

Early recognition of AD symptoms is essential for successful



treatment with minimal consequences. These symptoms are unique depending on the individual but remain fairly consistent. An early indicator may be a general "bad feeling," but often a predominant symptom is a severe pounding headache in the forehead. The headache is typically accompanied by one or more of the following symptoms:

- Flushing and/or blotching of the skin above the injury
- Profuse sweating above the injury
- Goose pimples
- Pale skin below the injury
- Nasal congestion
- Lack of urinary output
- Sudden and severe hypertension greater than 200/100
- Slowing heart rate to less than 60 beats per minute
- Chest tightness
- Nausea
- Restlessness
- Cold clammy skin below level of injury

In order for health care professionals and caregivers to quickly respond to potential changes in a client's condition, they must become acquainted with persons in their care and learn their particular conditions and the associated symptoms. In general, any stimuli that would cause pain or discomfort in an uninjured person will trigger autonomic dysreflexia in spinal cord injury survivors at or above the T-6 level. The most common cause of AD is urinary obstruction with others being distended bladder and/or

Autonomic Dysreflexia *continued*

Thoracic Vertebrae

There are 12 thoracic (chest) vertebrae. They compose the middle segment of the vertebral column, located between the cervical vertebrae and the lumbar vertebrae. The thoracic vertebrae are represented by the symbols T1 through T12.

Thoracic vertebrae increase in size as they proceed down the spine, with upper vertebrae being much smaller than those in lower regions. The segments of the thoracic vertebrae are defined by those that have a rib. These segments are unique because they form the back wall of the pulmonary cavity and ribs.

Who is at risk for Autonomic Dysreflexia (AD)?

Individuals with spinal cord injuries at:

- Thoracic 5 (T-5) level and above are very susceptible
- Thoracic 6 -10 (T6-T10) may be susceptible
- T-10 and below are usually not susceptible

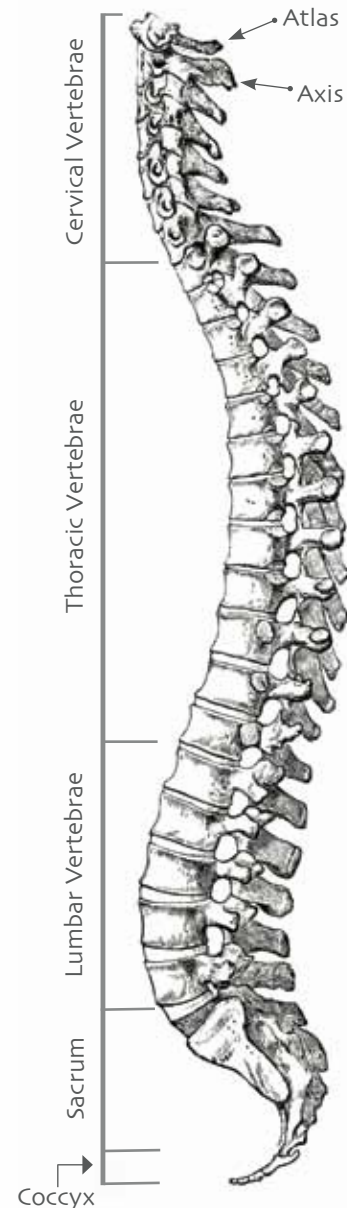
It is important to note that the older the injury, the less likely the person is to experience autonomic dysreflexia.

bowel, urinary tract infections or bladder spasms, a fracture below the injury, pressure sores, contact burns, scald or sunburn, an ingrown toenail, pain, trauma or anxiety.

When symptoms are present, the first response should be to remove the source or cause. In most cases, the cause is non-drainage of urine due to a kinked catheter, urinary tract infection, or overfilled collection bag. If the problem is unknown and the person does not have an indwelling catheter, catheterization is recommended. Another common cause is bowel distention due to constipation, anal fissures/hemorrhoids or an infection, which may require intervention.

It is important to know the patient's normal blood pressure to establish a baseline for reference. The baseline is typically lower in the spinal cord injured population compared to the general population. During an episode, a blood pressure reading should be taken and compared to normal baseline readings. Subsequent readings are taken frequently throughout the episode and for two hours after symptoms have resolved. In relation to the baseline, a small elevation of blood pressure may be dangerous and as blood

Spinal Column



Autonomic Dysreflexia *continued*

pressure rises, headache intensity usually increases.

Emergency medications, such as nitroglycerin paste, should be kept on hand to quickly lower blood pressure. It is recommended to carry an emergency kit at all times.

In summary, a strict regime of care to reduce the incidence of AD episodes is the primary preventative measure. Mainstay protocols are good bladder and bowel programs, avoiding sunburn / scalds, frequent pressure relief, a well-balanced diet, proper fluid intake and the correct dosage / timing of medications. Education for the individual and their caregivers is paramount to successful management of this condition. Due to the small population of people at risk for autonomic dysreflexia, many in the health care industry are not familiar with this condition, making it more important than ever to be able to recognize the symptoms of AD and be able to respond appropriately. ❖

About the Author...

Jane DeLancey, RN, is the director of nursing at Rainbow's NeuroRehab Campus. Jane received her bachelor's degree in nursing from Northern Michigan University. She has more than 30 years of health care experience, including extensive experience in human resources and recruiting, nursing clinical instruction, nursing management and administration, program development and varied clinical experiences. She has worked for The Detroit Medical Center, Harper Hospital School of Nursing, Henry Ford Health Care System, Oakland Community College, Schoolcraft Community College, Ambulatory Surgery Consultants, Northville Public Schools Special Education Program, Northville Psychiatric Hospital, St. Mary's Hospital and Hospice of Michigan. Jane is a member of the Michigan Organization of Nurse Executives.

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