

## Review Paper

# A Nursing Diagnosis: Autonomic Dysreflexia

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### Abstract

Autonomic dysreflexia (AD) is a common problem in patients with spinal cord injury (SCI) above the T6 neurologic level and may cause serious medical complications if untreated. Autonomic dysreflexia is a nursing diagnosis in North American Nursing Diagnosis Association' Taxonomy. Health care professionals' responsibility to have a basic understanding of the pathophysiology of the condition and the simple steps required to treat it. Many health care professionals are unfamiliar with either symptoms or causes of autonomic dysreflexia or its appropriate management. Patient and family education about Autonomic dysreflexia is the most important.

**Key Words:** Autonomic dysreflexia, nursing diagnosis, spinal cord injury.

### Introduction

Autonomic dysreflexia (AD) is a common acute problem in patients with spinal cord injury (SCI) at or above the T6 (thoracic 6<sup>th</sup> vertebrae) which is caused as a result of an intense afferent stimulant, characterized by uncontrolled sympathetic discharges which can be vital (Akyüz, 2006).

The vitality of this disease can be prevented if early diagnosis is made and required intervention is made. Increase in blood pressure is a significant symptom that is life threatening. Autonomic hyperreflexia or autonomic dysreflexia terms are used frequently for this syndrome. It was first defined by Guttmann and Whitteridge (1947). Autonomic dysreflexia is included in NANDA's (North American Nursing Diagnosis Association) nursing diagnosis classification as a nursing diagnosis which can be prevented or intervened by nurses (Carpenito, 2006).

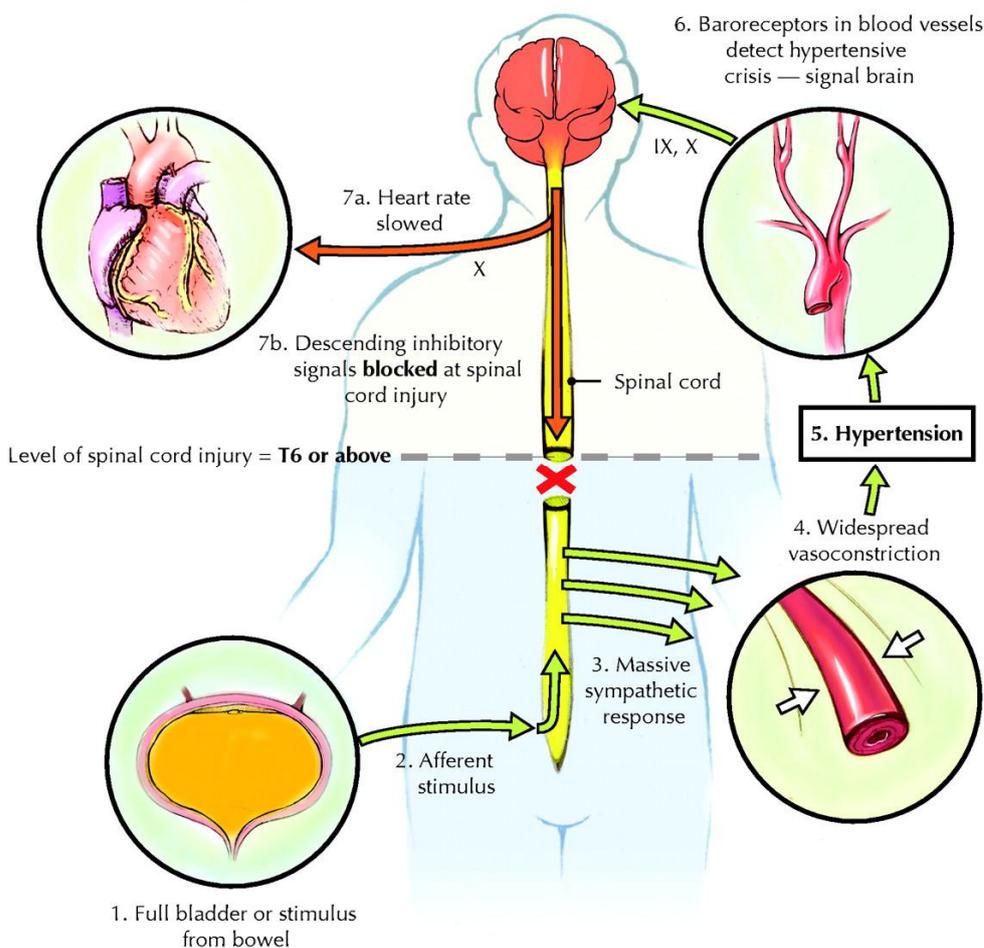
Even though autonomic dysreflexia prevalence is not very high in patients with spinal cord injury, it is stated that symptoms of autonomic dysreflexia are observed in about % 50-70 of patients with injuries in T6 and above. Nevertheless, patient records indicate a much lower ratio (Bycraft, Shergill, Choong et.al. , 2005). Lindan et.al. (1980) have carried out a study in which they have observed the development of autonomic dysreflexia in 48 % of the 213 patients who were accepted to spinal cord trauma center with complete spinal cord injury in T6 or above. Autonomic dysreflexis is observed more frequently in tetraplegic patients in comparison with paraplegic patients and in patients with complete spinal cord injury in comparison with patients with incomplete spinal cord injury (Helkowski, Ditunno ve Boninger, 2003; American Spinal Cord Injury Association, 2000). Even though autonomic dysreflexia is observed more in people with spinal cord injury, it can be observed more frequently in people who have undergone spinal surgery above T6 or those

with spinal cord tumor (Furlan, Fehlings and Halliday 2003).

The researchers believe that autonomic dysreflexia is observed in the chronic phase of spinal cord injury. However, many recent studies have reported that autonomic dysreflexia can be observed in the early stage of spinal cord injury

as well (Silver, 2000; Krassioukov, Furlan and Fehlings 2003; Krassioukov et.al.,2007).

Autonomic dysreflexia is very important for two reasons. The first reason is the insufficiency of health professionals in this issue and the second reason is the fact that it can cause fatal complications in patients (Bycraft, Shergill, Choong et.al., 2005).



**Figure 1: Formation mechanism of autonomic dysreflexia (Blackmer, 2003) (IX. cranial nerve-N. Glossopharyngeus, X. cranial nerve - N. Vagus).**

<p><b><u>Urinary system</u></b></p> <ul style="list-style-type: none"> <li>-Bladder distension</li> <li>-Bladder and intestine stones</li> <li>-Urinary catheter blockage</li> <li>-Urinary system infection</li> <li>-Urinary catheterization</li> </ul>	<p><b><u>Gastrointestinal system</u></b></p> <ul style="list-style-type: none"> <li>-Intestinal distension</li> <li>-Fecal impaction</li> <li>-Gall stones</li> <li>-Gastritic ulcer or gastritis</li> <li>-Appendix</li> <li>-Hemorrhoid</li> </ul>
<p><b><u>Skin</u></b></p> <ul style="list-style-type: none"> <li>-Tight clothes/shoes</li> <li>- Contact with hard and sharp objects</li> <li>-Burns, sunburn</li> <li>-Insect bite</li> <li>-ingrown toenail</li> <li>-Pressure ulcers</li> </ul> <p><b><u>Other reasons</u></b></p> <ul style="list-style-type: none"> <li>-Deep vein thrombosis</li> <li>-Excessive alcohol intake</li> <li>-Excessive caffeine intake</li> <li>-Fractures or other trauma</li> <li>-Surgical or invasive diagnostic applications</li> </ul>	<p><b><u>Reproduction system</u></b></p> <ul style="list-style-type: none"> <li>-Sexual activity</li> <li>-Sexually transmitted diseases</li> </ul> <p>For Women</p> <ul style="list-style-type: none"> <li>-Menstruation</li> <li>-Pregnancy or birth</li> <li>-Vaginitis</li> </ul> <p>For Men</p> <ul style="list-style-type: none"> <li>-Ejaculation</li> <li>-Epididimitis</li> <li>-Scrotal compression</li> </ul>

**Table 1: Main Reasons for Autonomic Dysreflexia**

### Reasons for Autonomic Dysreflexia

Even though there are many different reasons for autonomic dysreflexia, intestine and bladder problems are the most common. The development of autonomous dysreflexia is 90 % due to genitourinary system, 8 % due to gastrointestinal system and the remaining 2 % due to other reasons (Karlsson, 1999). The reasons that cause autonomic dysreflexia can also be handled according to systems (Blackmer 2003,

Consortium for Spinal Cord Medicine, 2001, Carpenito 2006, Krassioukov et.al.,2009):

Studies carried out indicate that invasive operations carried out via urinary tract may also cause autonomic dysreflexia and that the use of flexible cystoscopes decrease this risk. Chancellor et.al. have carried out a study (1993) in which they applied cystoscopy on 39 patients with a flexible cystoscope after which they observed that autonomic dysreflexia developed in only 6 patients.

### **Symptoms and Findings of Autonomic Dysreflexia**

One or more symptoms of autonomic dysreflexia can be observed in patients. In addition, “silent autonomic dysreflexia” might also occur in which there are very little or no clinical symptoms other than blood pressure increase. Frequently observed symptoms and findings are as follows;

-Sudden increase in blood pressure. The systolic and diastolic blood pressure values are above the normal values of the patient and it is generally accompanied by bradycardia. The normal systolic blood pressure values of individuals with T6 or above spinal cord injury are generally between 90-110 mm Hg. That is why, a 20-40 mm Hg increase in blood pressure may be a symptom of autonomic dysreflexia (Consortium for Spinal Cord Medicine, 2001).

-Throbbing type of headache

-Bradycardia

-Cardiac arrhythmia, atrial fibrillation

-Blurred vision

-Excessive sweating above the injury level especially in the face, neck and shoulders (diaphoresis).

-Redness, piloerection above the injury level

-The patient being nervous and restless

-Nasal congestion (Colachis, 1992).

### **Treatment and Care in Autonomic Dysreflexia**

Even though dysreflexia is an emergency, it is a disease that the nurse or the patient can prevent or intervene. Medical treatment is obligatory if the first intervention of the nurse does not decrease or remove the symptoms. Dysreflexia is not observed in a continuous manner in the individual, however there is a risk of dysreflexia and when it is observed the intervention should be carried out immediately. If it is not diagnosed and the blood pressure reaches critical values, intracranial hemorrhage, encephalopathy, seizures or cardiac arrhythmia may be observed in the patient (Akyüz 2006; Carpenito, 2006).

When dysreflexia symptoms are observed, the patient is made to sit straight or the

head section of the bed is raised and the legs are dangled down. This will help in reducing the blood pressure while trying to determine the reasons for autonomic dysreflexia. The tight clothes of the patient as well as all accessories or tools are either removed or are loosened. Blood pressure and heart rate are observed for 2-5 minutes. The systolic pressure of individuals with T6 and above spinal cord injury are generally between 90-110 mmHg. That is why, an increase of over 20-40 mmHg in blood pressure might be a symptom of autonomic dysreflexia (Consortium for Spinal Cord Medicine, 2001).

Reasons that might cause this are examined starting from the urinary system. If the patient does not have a urinary catheter then one is attached. Prior to the catheterization procedure, a lidocaine gel is applied to the urethra and is left to wait for 2 minutes. First, 500 ml urea is discharged and the catheter is clamped for 15 minutes; this procedure is continued until the urinary bladder is emptied. Blood pressure is evaluated throughout the drainage procedure. If the patient already has a urinary catheter, it is evaluated in terms of blockage. If there is blockage, the catheter is slowly irrigated using 10-15 ml saline solution at body temperature. The catheter should be irrigated with 5-10 ml of saline solution for children under the age of two and with 10-15 ml. saline solution at body temperature for older children and adolescents. If the patient has a urinary catheter but if it cannot be drained or it cannot be drained despite irrigation; the catheter is removed and a urethral catheter is placed. A 2 % lidocaine gel should again be applied to the urethra and should be left to wait for 2 minutes prior to the catheterization procedure. Pressure should not be applied to the bladder and the irrigation fluid should not be cold. Dysreflexia is strengthened in case pressure is applied to the bladder or in case the irrigation fluid is cold (Blackmer, 2003; Dunn, 2004 ; Karlsson, 1999; Consortium for Spinal Cord Medicine, 2001).

If autonomic dysreflexia symptoms persist and if the blood pressure continues to increase, the patient is evaluated in terms of fecal impaction. If the systolic blood pressure is above 150 mmHg, a pharmacological treatment that does not cause hypotension should be applied prior to fecal

impaction evaluation in order to decrease the systolic blood pressure. Nifedipine (nidilat) and nitrates are commonly used drugs. The studies carried out have determined no significant side effect of nifedipin usage in the treatment of autonomic dysreflexia. However, sildenafil (Viagra) can also be used in male patients for erectile dysfunction in cases of spinal cord injury. Since sildenafil increases the hypotensive effects of nitrates, the use of nitrates on patients who use sildenafil is contraindicate. The patient should be asked if he used sildenafil or not prior to the use of nitrates such as nitroglycerine, isosorbide dinitrate or sodium nitroprusside (niprus). If the patient has used this drug (sildenafil) within the past 24 hours, alternative antihypertensives such as prazosin (pratsiol) and kaptopril should be used (Middleton, 2005; Dunn, 2004, Karlsson, 1999; Consortium for Spinal Cord Medicine, 2001).

If there is a suspicion of fecal impaction and if the systolic blood pressure is below 150 mmHg a topical anesthetic agent such as % 2 lidocain gel is applied inside the rectum (2,54cm) and is left to wait for 2 minutes. Afterwards, a finger with Vaseline glove is moved towards the rectum and fecal impaction is removed. The patient is evaluated with regard to other aspects of autonomic dysreflexia. A topical anesthetic agent (spray) is sprayed on the lesion that causes stimulation on the skin. Urea sample is taken for culture. The existence of objects that make pressure on the skin is evaluated (Bycraft, Shergill, Choong et.al., 2005; Blackmer 2003; Consortium for Spinal Cord Medicine 2001; Helkowski, Ditunno and Boninger, 2003).

The goal in dysreflexia treatment is prevention and early diagnosis. Hence, it is important that the healthcare professionals give information to the patient and his/her family with regard to the situation. The nurse should inform the individual and his/her relatives about the symptoms and findings of autonomic dysreflexia and should give information about its treatment as well. The nurse should explain the possible reasons that might have triggered dysreflexia. If the individual has an inclination, a long term pharmacological method might be necessary to prevent dysreflexia. The individual should be advised to document the frequency of dysreflexia and the

factors that trigger it. The nurse should state the importance of keeping a dysreflexia diary and to carry his/her autonomic dysreflexia card with him/her at all times. The patient should be provided with printed/written teaching material to show other health professionals (dentists, gynecologists etc.) to serve as a guide as to what should be done in case autonomic dysreflexia develops (Carpenito 2006; Consortium for Spinal Cord Medicine, 2001).

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