The Causes, Incidence, And Risk Factors Of The Cushing Syndrome

Posted on October 2, 2018

Outline the causes, incidence, and risk factors of the identified condition and how it can impact the patient and family (400 words).

Cushing syndrome is a condition caused by prolonged exposure of the body to the cortisol hormone. Also referred to as hypercortisolism, Cushing syndrome can also result from the use of oral corticosteroid medication (Berman et al., 2014). When the body produces too much cortisol on its own, the condition can occur. Overall, excess levels of cortisol hormone are the major cause of Cushing syndrome. The hormone is secreted in the adrenal glands and plays numerous roles in the body. For instance, the hormone cortisol helps keep the cardiovascular system functioning normally while also regulating blood pressure. What is more, the hormone helps the body respond to stress besides regulating the way the body metabolizes fats, carbohydrates, and proteins in the diet into usable energy (Farrell & Dempsey, 2014). Despite the numerous important roles of the cortisol hormone, excess levels of the hormone in the body may lead to Cushing syndrome.

The incidence of Cushing syndrome in humans is 10 to 15 for every 1,000,000 people (McCance & Huether, 2014). In most cases, Cushing syndrome occurs in individuals aged between 20 to 50 years. Additionally, Cushing syndrome has been found to be more prevalent in females compared to males. There are various risk factors associated with Cushing syndrome. These include obesity, high blood pressure, type 2 diabetes, poor control of blood glucose, pituitary or adrenal tumors, and prolonged use of corticosteroids.

Cushing syndrome affects both the patient and the patient's family. Patients suffering from the condition often describe the emotional, physical, and mental effects of the syndrome, thereby affecting their everyday lives. To begin with, the disorder causes the patients' physical appearance to change (Tiziani, 2013). Such changes in appearance, for instance, acne, weight gain, and hair loss can make the patients withdraw from their friends and families and hence feel isolated. Moreover, fatigue and muscle weakness make it difficult for Cushing syndrome patients to perform simple tasks such as walking a flight of stairs or unloading dishwashers (Nursing and Midwifery Board of Australia, 2016). The condition, hence, limits the ability of the patients to have fun because they lack the required energy to have an active life, go shopping, or walk outdoors. Some patients have been found to exhaust their limited energy by performing basic tasks such as bathing and getting dressed.

Cushing disorder affects more than the individual afflicted with it. The condition affects patients' families and their performance at school or work. The fatigue, mood swings, and loss of muscle often demand some adjustments from friends and family pertaining to housework and planning of leisure activities (Forbes & Watt, 2012). The families also suffer financial burdens due to the treatment expenses of the condition.

1. List five (5) common signs and symptoms of the identified condition; for each, provide a link to the underlying pathophysiology (350 words)

2. This can be done in the form of a table –each point needs to be appropriately referenced.

Sign and Symptom	Underlying Pathophysiology
Muscle weakness	The legs and arms may become skinny due to muscle wasting, arising from loss of protein in body tissues. Muscle weakness is a common symptom of Cushing's syndrome. It has been established that muscular weakness, as well as the atrophy that is sometimes experienced, are a result of increased breakdown of proteins or reduced protein synthesis (Tollefson, 2012). The increased production of corticoids also leads to muscle weakness.
High blood pressure	A high level of cortisol enhances epinephrine's vasoconstrictive effect, causing high blood sugar and further contributing to high blood pressure (Nursing and Midwifery Board of Australia, 2013). Additionally, cortisol may unveil mineralocorticoid activity when it is excess in the body, consequently worsening the degree of hypertension to cause hypokalemia.
Purple or pink stretch marks on the skin of arms, thighs, abdomen, and breasts	This symptom, generally referred to as hyperpigmentation, is caused by excess ACTH, arising from the production of Melanocyte-Stimulating Hormone and as a byproduct of the synthesis of ACTH (Forbes & Watt, 2012). What is more, insulin resistance among Cushing syndrome patients leads to skin changes, for instance, acanthosis nigricans around the axilla, and around the neck region.

Compromised immune system	Patients suffering from Cushing disorder are increasingly susceptible to infections as a result of reduced lymphocyte production as well as suppressed antibody formation (Martini, Nath & Bartholomew, 2012). Moreover, excessive cortisol can cause gastrointestinal disturbance, impaired wound healing, and opportunistic infections as a result of cortisol's suppression of inflammatory responses and immune suppression.
Memory and attention dysfunction	Memory dysfunction among patients with Cushing syndrome is often associated with areas of high concentration of glucocorticoid receptors, such as the hippocampus (McKenna & Lim, 2012). Memory and attention dysfunction correlate significantly with changes in psychopathological personality.

3. Describe two (2) common classes of drugs used for patients with the identified condition, including the physiological effect of each class on the body (350 words)

a. This does not mean specific drugs but rather the class that these drugs belong to.

Various drugs initially designed to treat other conditions are increasingly being used in the treatment of Cushing syndrome. The most common classes of drugs used are antibiotics that act as inhibitors of steroidogenesis and glucocorticoid receptor antagonists (McKenna & Lim, 2012). The antibiotics block the production of cortisol by adrenal glands and include ketoconazole. Ketoconazole is the most commonly used antibiotic medication in this category. Approximately 50-70% of patients with Cushing syndrome treated with this class of medicine have seen their cortisol levels significantly normalized (Farrell & Dempsey, 2014). However, the effectiveness of this antibiotic is considerably limited by its numerous side effects, such as liver damage. According to McCance & Huether (2014), the Food and Drug Administration recently established that the use of ketoconazole may lead to liver injury that can ultimately cause death or the need for liver transplantation. What is more, the effect of the medicine on the liver can occur at any dose and may be irreversible even when the patients stop using the drug. As a result, the FDA recommends frequent blood testing aimed at monitoring liver function for the period of treatment using ketoconazole.

The second class of drugs used for patients with Cushing syndrome is those that suppress the secretion of cortisol hormone, with mitotane being the most commonly used medication in this category (Berman et al., 2014). While mitotane is basically used in the treatment of individuals

suffering from adrenal gland cancer, it is effective in lowering cortisol levels. Mitotane achieves this by blocking cortisol production. However, when taken in higher doses, mitotane can have numerous side effects. For instance, it may destroy adrenal cells. Moreover, research findings have indicated that while the use of mitotane is effective in over 80% of Cushing syndrome patients, many patients may develop gastrointestinal problems while taking the drug (Farrell & Dempsey, 2014). Additionally, some patients may develop impaired mental function as well as problems with confusion while using mitotane. While there are effective drugs that can reverse clinical and biochemical manifestations of Cushing's syndrome, new drugs are necessitated to address the problem at the pituitary level.

4. Identify and explain, in order of priority, the nursing care strategies you, as the registered nurse, should use within the first 24 hours post-admission for this patient (500 words).

As a registered nurse, the nursing care strategies to use within the first 24 hours post admission for Cushing syndrome, in order of priority, include:

Decreasing Risk of Injury:

To minimize the risk of injury, nurses should provide protective environments for the purposes of preventing falls, fractures, as well as other injuries to soft tissues. Nurses should also assist patients who are weak in ambulating to ensure that they do not fall or collide with furniture (Nursing and Midwifery Board of Australia, 2016). What is more, nurses should recommend foods high in vitamin D, protein, and calcium to reduce osteoporosis and muscle wasting.

Reducing Risk of Infection:

To decrease the risk of infection, nurses should frequently assess the patient for subtle signs of infection. Particularly, nurses should diagnose the patient for the presence of corticosteroid mask signs of infection (Nursing and Midwifery Board of Australia, 2016). The nurses should also ensure the patient avoids unnecessary exposure to individuals with infections.

Preparing Patient for Surgery:

Nurses have a critical role in preparing patients with Cushing syndrome for surgery. To achieve this, they have to monitor the patient's blood glucose level and check their stools for blood since peptic ulcers and diabetes mellitus are common problems among such patients (Martini, Nath &

Bartholomew, 2012).

Encouraging Rest and Activity:

To prevent mobility complications and boost the patient's self-esteem, nurses need to promote moderate activity among Cushing syndrome patients (Forbes & Watt, 2012). For instance, they should plan rest periods every day and promote a quiet and relaxing environment for sleep and rest.

Promoting Skin Integrity:

For purposes of avoiding traumatizing fragile skin, nurses need to use meticulous skin care for Cushing syndrome patients. Additionally, nurses should avoid adhesive tape that may irritate and tear skin (McKenna & Lim, 2012). Besides frequently encouraging and assisting patients to change positions, nurses need to frequently assess skin and bony prominences.

Improving Body Image:

Improving the body image of patients with Cushing syndrome is a key nursing care strategy. To realize this, nurses need to discuss the impact that body changes may have on the self-concept of patients and on their relationships with others (Forbes & Watt, 2012). Assuring them that major physical changes will disappear after the cause of the condition is treated will further improve their body image. Nurses can also modify edema and weight gain by recommending a low-sodium and low-carbohydrate diet while encouraging a high-protein intake to reduce some troublesome symptoms.

Improving Thought Processes:

Nurses have the moral responsibility of explaining to patients and their families the cause of emotional instability for the purpose of helping them cope with depression, mood swings, and irritability. In light of this, nurses should report any psychotic behavior among patients suffering from Cushing syndrome (Farrell & Dempsey, 2014). Importantly, nurses need to encourage patients and the members of their families to verbalize concerns and feelings.

Checking and Managing Complications

Nurses should frequently monitor patients for hypotension, weak, rapid pulse, extreme weakness, pallor, and rapid respiratory rate. It is also important for nurses to note the factors that may have contributed to the crisis, for instance, trauma, stress, and surgery (Berman et al., 2014). Importantly, emphasizing the significance of regular medical follow-up, and making sure that the patient is cognizant of the toxic and side effects of medications is a vital nursing care strategy.

References

Berman, A., Snyder, S. J., Kozier, B., Erb, G. L., Levett-Jones, T., Dwyer, T., ... & Parker, B. (2014). *Kozier & Erb's Fundamentals of Nursing Australian Edition* (Vol. 3). Pearson Higher Education AU.

Farrell, M., & Dempsey, J. (2014). *Smeltzer and Bare's textbook of medical-surgical nursing* (3rd Australian and New Zealand ed.). Sydney: Wolters Kluwer Health/ Lippincott Williams & Wilkins.

Forbes, H., & Watt, E. (2012). *Jarvis's Physical Examination and Health Assessment*. Elsevier Health Sciences.

Martini F., Nath J & Bartholomew E. (2012). *Fundamentals of anatomy and physiology*. (9th edn). San Francisco: Pearson.

McCance, K., & Huether, S. (2014). *Pathophysiology: The biologic basis for disease in adults and children* (7th ed.). St. Louis: Elsevier/Mosby.

McKenna, L. & Lim, A. G. (2012). *Pharmacology for nursing and midwifery*. (1st Australian and New Zealand Edition). Broadway: Lippincott Williams & Wilkins

Nursing and Midwifery Board of Australia. (2016). Registered nurse standards for practice. Retrieved from http://www.nursingmidwiferyboard.gov.au/CodesGuidelinesStatements/Professional-standards.aspx

Nursing and Midwifery Board of Australia. (2013). Codes and guidelines. Retrieved from http://www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/CodesGuidelines.aspx

Tiziani, A. (2013). *Havard's nursing guide to drugs*. (9th edn). Sydney: Mosby/Elsevier

Tollefson, J. (2012). *Clinical psychomotor skills: Assessment tools for nursing students* (5th ed.). South Melbourne: Cengage Learning