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Cushing Syndrome

A: Brief explanation of the disease/lesion:

A rare endocrine condition is Cushing's syndrome, which occurs when the excess cortisol, a hormone created by the adrenal glands, is present. It occurs in neuropsychiatric and cognitive disorders which after the biochemical treatment of the condition are only partly reversible. Cortisol has many important life functions but an excess of this hormone has a detrimental impact on the body. The structure and actions of cortisol, which is also called hydrocortisone, are classified as a glucocorticoid steroid.

The incidence and prevalence of CS are limited in epidemiological data. Every year in the United States, it is historically estimated to affect 10 to 15 patients per million people, which is why the National Institutes of Health's Office of Rare Diseases (NIH) describes it as a "rare disease." Four Studies in Italy, Spain and Denmark have shown that the annual incidence ranges from 0.7 to 2.4 per million population per year. Although the overall population prevalence is stated to be a fraction of a percentage.

B: Etiology:

Excess levels of the hormone cortisol are responsible for Cushing syndrome. Cortisol, which is produced in the adrenal glands, plays a variety of roles in your body.

It helps with several functions of our body, including: regulating blood pressure and the cardiovascular system by maintaining normal functioning of the heart and blood vessels. It reduces inflammation, thereby reducing the inflammatory response of the immune system. It reduces the ability of converting carbohydrates, fats and proteins into energy, and balancing the effects of insulin.

One might have a higher levels of cortisol for a number of reasons, including: high levels of stress, stress associated with an acute infection, surgery, injury, or childbirth, especially in the final trimester, and athletic training. Another reason for higher levels of cortisol may also be malnutrition alcoholism depression panic disorders, or high levels of emotional stress.

C. Clinical presentation: (Objective and Subjective)

Obesity is the most common sign that includes proximal muscle weakness, easy bruising and weight gain. Gonadal dysfunction is also common in both men and women. High blood pressure is another common sign. Hyperandrogenism and Hirsutism(more frequently on face), menstrual irregularities (oligomenorrhea, amenorrhea).

Along with the above symptoms, mild to severe psychic disturbance including: anxiety, depression, irritability is also a sign of Cushing's syndrome. Protein wasting, osteoporosis myopathy, excess body hair and acne (more common in women) and pre diabetics can be seen as well.

D. Age/sex/Race:

An estimated ten to fifteen per million people are affected every year. Cushing's syndrome is most common among adults aged between 20 and 50 years and is more common among women, accounting for about seventy percent of all cases

An estimated 1–1.5 per million children are affected by Cushing syndrome every year; of those cases, 75–80% are caused by an adrenocorticotrophic hormone-secreting pituitary tumor (Cushing disease).

Different studies review that, Hispanic/Latino or African-American are mostly affected in comparison to other races.

E. Biopsy/Lab/Radiology:

Blood and urine tests allow the health care provider to assess the amount of hormones you have within your body, such as cortisol and adrenocorticotrophic hormone (ACTH). For instance, if your body is producing too much cortisol, a hormone released by your adrenal glands, it will show up in your blood and urine tests. The 24-hour urine test for cortisol is a standard urine test.

Another common test is the dexamethasone-suppression test. Dexamethasone is a corticosteroid which is similar to a natural hormone produced by the adrenal glands. A normal body response to dexamethasone is to temporarily stop producing cortisol, because the brain knows that dexamethasone is present and does not need to give the ACTH signals to produce cortisol for the body. And, even if dexamethasone is taken, people with Cushing syndrome still produce cortisol.

The doctor might also recommend additional blood and urine tests that are more specialised in order to determine Cushing's syndrome and help identify underlying source of excessive hormone production. For saliva tests, it is common that cortisol levels vary during the day, being the strongest in the morning, and very low or undetectable at midnight. Nevertheless, people with Cushing's syndrome have lower cortisol levels than they usually do at night.

Specific imaging tests, such as computerized tomography (CT) scans or magnetic resonance imaging (MRI) scans can help doctors spot any abnormalities in pituitary gland and/or adrenal glands.

F: Treatment:

Treatment depends on the root cause, but it may require reducing the dosage of corticosteroid or the surgery of tumour removal. Taking care of one's general health, eating well and exercising regularly are one of the key elements of a treatment plan. The Bones can weaken, however, to reduce the risk of bone break, one must avoid high-impact exercise and sports involving falling.

Making sure that Calcium and vitamin D in the diet are sufficient. This can help the bones to strengthen. One must quit smoking, which reduces the likelihood of surgery problems. Avoiding alcohol is also important.

The doctor will first figure out the source of excess cortisol in your body. This will allow the physician to develop your treatment plan. One might have too much cortisol because they are taking steroid medicines. The doctor will check whether the patient can stop or take a lower dose of the medicine.

If a tumour is causing your Cushing's syndrome, you should typically have further testing before you agree with your diagnosis and find out the tumour's location first. Tumor removal surgery can be the best way to address it. If not, the tumour may be reduced by radiation or medicine by your doctor.

G. Prognosis with and without treatment:

The prognosis varies according to the cause of the illness of those with Cushing's syndrome. Cushing syndrome can be treated in most cases. Many people with Cushing's syndrome show significant improvement in treatment, although some may experience complicated recovery from various aspects of causative disease. Some kinds of tumours may recur.

H. Differential diagnosis:

Cushing syndrome differential diagnosis requires close coordination with several specialties organised across endocrine centres with good knowledge of the condition. Before attempting differential diagnosis, it is important that the diagnosis of Cushing's syndrome is fully determined. The endocrinologist must be aware of the disadvantages and benefits of the tests.

The accurate differential diagnosis of Cushing's syndrome is essential for appropriate and effective treatment. “The initial step in the differential diagnosis of Cushing's syndrome is to distinguish between adrenocorticotrophic hormone (ACTH)-dependent Cushing's syndrome (pituitary or non pituitary ACTH-secreting neoplasm) and ACTH-independent hypercortisolism

(due to a functioning adrenal neoplasm, autonomous bilateral adrenal nodular hyperplasia, or factitious/iatrogenic Cushing's syndrome)” (Findling, 1997).

I. Why this disease/Lesion is relevant to you as a Dental Hygienist:

The dental hygienist should be aware of cognitive impairment associated with untreated Cushing syndrome. Moreover, conditions related to hypertension and diabetes (e.g. blood pressure increase prior to implementation of procedures) should be properly assessed. In general, pain management should not include aspirin or other non steroidal anti-inflammatory medicines (NSAIDs) due to the increased risk of peptic ulcer disease in patients / clients using long-term steroids.

Hypercortisolism can lead to oral manifestations such as Alveolar bone loss (i.e. osteoporosis of the jaw). This can in turn contribute to the loss of the tooth and periodontal disease due to reduced migration of white cells. Oral candidiasis also occurs at elevated rates. Risk of infection may be increased with complex dental procedures.

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