We as dentist have to know about some of the systemic diseases in order to treat our patients properly.
Endocrine diseases is of the most common (i.e diabetes), it is called endocrine because the secretion is done through duct (hormone); which is a substance that is excreted in the blood stream and exert an effect on distant organs. (Growth hormone is secreted from the pituitary gland and the effect is distant from the gland on the whole body.
symptoms of endocrine disease are multiple it's not confined to one symptom, so it has general non specific symptoms.
Endocrine system: Glands + Hormones

Glands; the main ones are the hypothalamus and pituitary glands, pituitary gland secretes the main hormone as the prolactin, TSH and growth hormone and many others, then these hormones go to affect other small glands and control areas under its control:
\* Adrenal medulla is responsible about the secretion of epinephrin and adrenalin ,
\* Parathyroid secretes PTH.

when the damage is in a higher gland (pituitary orhypothalamus) , the patient will have more severe symptoms .

Endocrine diseases are either hypofunction or hyperfunction.
most common diseases we will face are diabetes and thyroid and adrenal gland.

***1) Pituitary Gland***: the main gland located in the sella turcica and connected directly to the hypothalamus. it has ant. and post. lobes
posterior lobe excretes only ADH and oxytocin; so the anterior lobe is more important as it secretes GH, ACTH, TSH and FSH, LH.

\*Acromegaly or Giantisim : a disease caused by excessive secretion of GH because of (consequence of ) pituitary adenoma.
if it occurred before the fussion of bone (childhood) giantism occurs, if after acromegaly occurs which is more common.
symptoms: headache, sweating . It is easy to diagnose because it has distinct features; as enlargement of skeletal and soft tissues, deepening of the voice and enlarged head, thick oily skin, enlargement of tongue, spacing of teeth and mandibular prognathism (class 3).
**Investigations used**: GH levels, scull imaging , glucose level.-
-management aim: to normalize GH levels, to control other complications like hypertension, diabetes and cardiomegaly.
- **Management**: surgery or radiotherapy or growth hormone antagonists and suppressants.
**- Dental treatment** may be complicated by hypertension. GA is avoided.
maxilla is not affected because the mandible has the condyle which is an active center and maxilla doesn't have one.

***2) thyroid Gland***: situated anterior to the thyroid cartilage

it secretes thyroxin T4 and T3.
enlargement of thyroid is known as goiter.
*\*\*****-Hypothyroidism***: reduced production of thyroid hormones; it could be primary due to a problem in the thyroid gland or secondary due to a problem in the pituitary in TSH.
the causes are : congenital or autoimmune disease as iodine deficiency and post thyroidectomy.
**-Symptoms**: weakness, tiredness, cold intolerance, hair loss , pallor, constipation, doesn't concentrate, always sleepy, low metabolic function, enlarged tongue.
**-diagnosis**: by clinical features and thyroid function test, thyroid antibodies in autoimmune diseases.
primary hypothyroidism: low T4 and high TSH (to compensate)
secondary hypothyroidism: low T4 normal or low TSH; the problem is in the pituitary.
**-treatment** : thyroxin supplements, each 6 months patients measure the thyroid hormone to see if the treatment is effective.
-Dental aspects: if the patient is controlled the treatment under local anesthesia is safe, but if he is not controlled infections or drugs (anxiolytics, GA) may cause coma (myxodema coma) after hypertension and hyperthermia.
\* it may be associated with poor wound healing and susceptible infections.
oral manifestations are uncommon but include: dry mouth, enlarged tongue and facial puffiness.

***\*\*-hyperthyroidism***: increased metabolic functions
Thyrotoxicosis is a clinical manifestation due to excessive thyroid hormone.
Same as before there is primary and secondary.
-Most common cause is Grave's disease; autoimmune disease. other causes are Hashimoto's, thyroid adenoma, thyroiditis and multinodular goitre.
-Symptoms: weight loss, heat intolerance, sweating, anxiety, led lag, led retraction and exophthalmous.
**-Diagnosis**: Clinical features, High T3 T4 and low TSH in primary but high TSH in the secondary.
**-TTT**: medications (anti thyroid drugs) and B blockers for hypertension, or removal of thyroid and giving the patient radioactive iodine.
**- Dental ttt** is safe under local anesthesia for controlled patients. but they may have irritability so it's preferred to give them sedatives before dental ttt.
GA or trauma may cause thyroid crisis; which is the production of thyroid hormone in an excessive manner in a short period that causes tachycardia, hypertension and vomiting, fever and death.
antithyroid drugs may cause agranulomatosis which affect the WBC so the patient becomes more susceptible to infections and oral ulcerations.

***3) Parathyroid Glands***: 4 glands situated on the posterior part of the thyroid gland, they secrete parathyroid hormone which promotes Ca absorption from the bone, and from the renal tubules. So increased parathyroid hormone causes hypercalcemia.
PTH also triggers Vitamin D3 function, and inhibits phosphorous absorption from renal tubules.

\****Hypoparathyroidism***: reduced production of PTH
**- Causes**: idiopathic or removed glands by mistake when thyroid was removed.
**- Clinical features**: (hypocalcemia) excitability or irritability, convulsion, psychosis, cataracts, limb parasthesia, trosse\* signs (contracture of hands when occluding the arm with cuff) schpostick sign( when tapping the facial nerve contraction of facial muscles occur)
**-Diagnosis**: Clinical features or tests; low serum Ca level, low PTH, serum P is high
- **TTT**: calcium and vitamins supplementations, or sometimes PTH is given
- **dental ttt** is safe under LA if the pt is controlled, epilepsy and psychosis and dysarrythmias may complicate the dental ttt.
facial parasthesia is a complication of hypoparathyroidism.

idiopathic congenital hypoparathyroidism is associated with enamel hypoplasia, short roots, delayed eruption and mucocutaneous candidiosis, it's part of the polyendocrinopathy syndrome which includes mucocutaneous candidiosis.

\****Hyperparathyroidism***: is more important in teeth, excessive production of parathyroid hormone
primary: adenoma in PT gland or hyperplasia
secondary: renal failure or calcium abnormal absorption.
tertiary: autonomous PTH secretion because of persistent secondary hyperparathyroidism.

**-symptoms**: weakness, thirst, dry mouth, nausea, vomiting, renal stones, peptic ulcers and bone diseases.
-**Diagnosis**: 1.clinical features, 2.high Ca, high PTH and high alkaline phosphatase and low phosphorous, 3. bone scan; it shows demineralization .
but in the secondary type there is low calcium and high PTH
-**Management**: surgical, correction of hypocalcemia.
\*erupted teeth are not affected.

-**Dental ttt**: the patient may not be able to take medications because of peptic ulcers
susceptibility to fractures after extractions and cardiac dysarrhythmias.
**-Oral manifestations**: loss of lamina dura, generalized bone verification and giant cell lesions.(brown tumor of hyperparathyroidism) as multiple radiolucencies especially in middle aged women.
in this case if the patient was treated from hyperparathyroidism the cyst will fade away.

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