Sheet no. : 6

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Systemic diseases

This lecture will be about the most common systemic diseases, the effect of such diseases on your treatment and how your treatment would affect them .

**Diabetes :**

-it's important because it's very common affecting about 20-3o % of the Jordanian population.

-it's a metabolic disease characterized by disregulation of carbohydrates, protein and lipid metabolism.

-the main feature is : elevated blood glucose level resulting from either a defect in insulin secretion or resistance to the action of insulin or both .

-sustained hyperglycemia is associated with complications affecting many organs like the eye,kidneys,blood vessels and oral cavity.

-types of diabetes :

\*type 1 diabetes :Also called insulin dependant diabetes .it's called so because pts have lack of secretion of insulin and therefore are treated with insulin .

\*type 2 : also called non-insulin dependant because pts are treated by oral hypoglycemic drugs , but very small percentage of pts might need insulin.

\*there are other types of diabetes but are less common like :

1-gestational diabetes :affects females during pregnancy.

2-diabetes secondary to other conditions like :

A\*drug induced diabetes like:corticosteroids.

B\*endocrine diseases like : acromegaly .

\**Type 1 diabetes :*

-it's an immune mediated condition affecting children and young adults.

Main featrure : is impaired secretion of insulin (absolute insulin deficiency ) cause the pancreas isn’t secreting insulin.

-since its an immune mediated condition it might be associated with other immune mediated diseases like Addison's disease and pernicious anemia .

*\*Type 2 diabetes :*

-it’s the most common type of diabetes.

-most old age pts have type 2 .

-unlike type 1 which is immune mediated ,type 2 has an unknown etiology.

-its thought to be an interaction between genetic and environmental factors , so most pts have family history, obese or sedentary life style.

-type 2 has 2 things : 🡪impaired insulin secretion

 🡪and insulin resistance.

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|  |  |  |  |  |  |  |
|  | Symptoms are more severe and obvious | Insulin therapy is always needed | Immune mediated | Thin | <30 years | Type 1 |
|  | Symptoms are less common so it remains undiagnosed in many pts | Insulin might be neede in some pts  | Usually associated with family history(not immune mediated  | Obese | Older age | Type 2  |

\*Classical features of diabetes :

-polyuria.

-polydipsia (thirst)

-rapid weight loss.

-thirst might be explained as xerostomia , and can be the 1st manifestation of diabetes , so you have to take detailed history from your pts to look for other signs of diabetes like :

-fatigue

-blurred vision

-frequent infections

-slow wound healing .

\*diagnosing diabetes is very simple , you just need to ask the pt to do one of the following simple tests :

1.Fasting glucose level :

-the pt has to be fasting for at least 8 hours .

-it measures the blood glucose level:

If it was >126 mg/dl then the pt is diabetic.

2.Random blood glucose :

-pt isn’t fasting.

-if >200 mg/dl then the pt is diabetic.

3.Glucose tolerance test :

-they give the pt a known amount of glucose (75 mg ) and after 2 hours they measure the glucose level in blood , if it was >200 mg/dl then the pt is diabetic.

4.HBa1c or glucated HB :

-give an accurate measure of glucose level over a period of 3 months .

-normal value < 6 ( means that <6% of RBCs are attached to HB)

-(5.7-6.4) is the acceptable range .

-if >6.5 the pt is diabetic .

-the higher the value -🡪 more complications and less control on diabetes.

\*Complications of diabetes :

Classified into acute and chronic .

Acute complications :

1.hypoglycemic coma

2.hyperglycemic coma or diabetic ketoacedosis:

-mainly occurs in type 1 diabetes .

-its diagnosed easily by smelling the pts breath ( the pt's breath smells like acetone due to the production of ketone bodies)

-its serious and can be life threatening .

-its managed by :🡪 iv fluids and insulin therapy

 🡪correction of electrolytes mainly K+

-severe dental infections might cause diabetic ketoacedosis so immediate and good management of dental infections is v.imp. in such pts.

-signs of diabetic ketoacedosis might include nausea, vomiting, confusion and seizures .

3.hyperglycemic hyperosmolar coma :

-occurs with type 2 diabetes.

-unlike diabetic ketoacedosis which develops within hours , this type takes more time for signs to appear up to few days .

-management :🡪insulin therapy

 🡪fluid replacement and correction of electrolytes.

Chronic complications : classified as :

-microvascular (linked to small blood vessels ) like: retinopathy,neuropathy and nephropathy.

-macrovascular (linked to large blood vessels )like : heart diseases, coronary artery disease and heart faiure.

\*The ideal condition for a diabetic pt is to:

- have his pre-prandial blood glucose (before eating ) between (90-130).

-bed time glucose between (100-140)

- post prandial glucose <180

-and HBa1c <7

\*before proceding any dental treatment you need to make sure that the pt has controlled diabetes , because if not then he'll be more susceptible to complications like infections and therefore won’t be suitable for advanced surgeries or difficult procedures.

\*Treatment of diabetes :

-medications. -modification of diet

-modifications of life style -more exercise

-educating pts about chronic complications and side effects.

-early detection and management of diabetes related complications.

\*since it's a common disease , it’s imp. To know the oral manifistations associated with diabetes.

-manifestations of diabetes in the oral cavity are non-specific and include :

🡪xerostomia

🡪syalosis (swelling of parotid glands bilaterally)

🡪lack sensation in tongue and oral mucasa

🡪candidal infection

🡪periodontal diseases are more common and severe

🡪increased susceptibility to infections

\*dental treatment of diabetic pts can be influenced by :

1.Type and severity of the disease : so a pt with severe uncontrolled diabetes will get dental management different than a one with controlled diabetes.

2.The extent of the dental procedure : a simple filling differs from an extraction.

3.Whether a pt has an associated complications or not i.e diabetes +renal failure or diabetes+complications related to heart failure.

-Any non-emergency elective procedure (no pain or swelling ) must be delayed until the pt gets his blood sugar controlled.

-Dental treatment should never interfere with eating and blood glucose control ; meaning that you should never ask your pt not to take his breakfast and medications .why ?

Because dental procedures increase stress 🡪 so the body will demand more glucose 🡪 all the glucose in the blood will get consumed 🡪if the pt ddnt eat and had taken a hypoglycemic drug 🡪 hypoglycemic coma.

-Surgical procedures should be avoided if glucose level is >180mg/dl , because there is an increased risk of infection and delayed wound healing .

-Each pt has a treatment plan that is individualized to perfectly suit his condition depending on : the extent of the procedure, the degree of glycemic control and the type of anesthesia .

-Dental treatment for diabetic pts is best provided early in the morning after the pt has eaten his breakfast and took his medication .and the procedure should be kept short and stress free.

-Odontogenic infections should be treated as early as possible to avoid complications , coz pts with uncontrolled diabetes are considered immune-supressed so they have a rapid spread of infection.

-Emergencies might happen during the treatment of a diabetic pt ,such conditions include :

🡪Hypoglycemic coma :

-it's the most common.

-if not treated immediately might be life threatening

-signs of hypoglycemic coma:

Nervousness, confusion, sweating, tremor, anxiety, knumbness or tangling in the oral cavity .

If severe might cause seizures and loss of consciousness .

-the risk of hypoglycemia is increased if :

🡪pt didn’t eat

🡪 the procedure is lengthy and stressful

🡪pt has previous history of hypoglycemia

🡪pts controlled with insulin

-management of hypoglycemia :

\*\*if the pt is conscious :give him glucose either in the form of juice or sth sweet.

\*\*if the pt is semi or unconscious : give glucose iv or im or subcutaneous.

Ideally we give the pt iv dextrose but its not always available so we give the pt 1 mg glucagon im .

-most pts recover quickly .

-after recovery you need to delay the dental procedure and ask the pt to visit his physician to know the cause of hypoglycemia esp. if it was severe and frequent .

-although most pts recover within (5-10) minutes , sometimes hypoglycemia might last for longer time (several hours ).

-it's very imp. To differentiate between hypo and hyper glycemia , but if any diabetic pt has coma you always manage it as hypoglycemia until proven otherwise.

-it’s said that periodontitis increases the resistance to insulin therapy . so it's imp. To educate your pts about the importance of oral hyegiene (early treatment of gingivitis and periodontitis )in the control of diabetes.

Adrenal glands:

-called so because they are adjacent to the renal glands .

-2 small glands located above each kidney

-it has 2 parts ; cortex and medulla

-cortex 🡪secrets gluco-corticoids and mineralo-corticoids

-medulla 🡪secrets epinephrine and nor-epinephrine.

\*Adreno-cortical insufficiency:

A state of hypo function of the adrenal cortex , can be classified into 1ry and 2ndry .

-1ry 🡪unknown etiology or immune mediated

-2ndr 🡪there's a known cause.

\*Primary insufficiency or Addison disease :

-it's common

-characterized by atrophy of the adrenal cortex , so there's no secretion of cortisol and aldosterone .

-in most cases the cause is immune mediated , but might also be caused by tuberculosis and amyloidosis or pt with adrenalectomy (removal of adrenal glands ).

 \*secondary insufficiency :

-it's more common than primary.

-the most common cause is corticosteroid therapy (because external steroids negative feedback inhibition for the cortex and it stops secreting cortisone )

-it might be caused by deficiency due to hypothalamic or pituitary disease.

-the pituitary gland is the primary gland in the body responsible for regulating the function of all other glands . it secrets a hormone called ACTH responsible for the secretion of glucocorticoids. If any disease occurs in the pituitary gland this will affect the secretion of ACTH and cause secondary adrenocortical insufficiency .

\*Signs of adrenocrtical insufficiency are non-specific and include :

-weakness

-weight loss

-hypotension

-vomitting

-nausea

-fatigue

-mucocutaneous pigmentation. This sign is v. imp. Because it might occur in the oral cavity and be a diagnostic sign of Addison disease or adreno-cortical insufficiency.

\*diagnosing adrenal insufficiency is easy because it depends on the clinical features and by measuring the level of cortisol in blood.

\*How to determine whether the insufficiency is primary or secondary ?

We measure the ACTH , if it was high then it's primary if low then it's secondary.

\*Management of adreno-cortical insufficiency :

Cortisone replacement or if secondary treat the underlying cause .

-sometimes the stress associated with dental procedures makes the pt susceptible to adrenal crisis (also called adrenal insufficiency ).

\*signs of crisis :

-hypotension

-hypoglycemia

-bradycardia

-dehydration

-loss of consciousness

-pts with adrenal insufficiency whether it was1ry or 2ndry or pts on steroid therapy for the treatment of any disease are at a higher risk of adrenal crisis during dental treatment and therefore should be given prophylactic cover before any stressful procedure.

-should an adrenal crisis occur , there's a well known emergency management :

🡪give the pt an emergency dose of steroids (200 mg of hydrocortisone

🡪if the pt is hypoglycemic give him glucose

🡪call the emergency

\*200 mg of hydrocortisone is the emergency dose for adrenal crisis and for pts with any allergic rxn .

-adrenal crisis is associated with a high mortality rate .

\*a prophylactic steroid cover is indicated to prevent adrenal crisis in susceptible pts , recommendations are variable but :

-in general , if the procedure was long and stressful or if the pt is on steroids or was on steroids anytime through the past year , then he must be given a steroid cover .

-the cover dose differs ; either :🡪 200 mg of iv hydrocortisone before the procedure or

🡪 you ask the pt to double the daily dose at the day of the procedure

\*mucocutaneous pigmentations that appear in elderly pts due to 2ndry insufficiency are similar to smoking melanosis or racial pigmentation .but with recent onset , and with association of systemic features of adrenal deficiency like hypotension, weakness and abdominal pain.

\*Cushing disease or syndrome :

--excess cortisol

-causes :

🡪drugs including systemic steroid therapy (most common cause )

🡪pts with pituitary adenoma (excessive production of ACTH)

🡪pts with adrenal hyperplasia or adrenal tumor (excessive production of glucocorticoids )

🡪ectopis production by tumors like lung cancer.

\*systemic steroids are imp. Because many pts use it for the treatment of variety of conditions like : asthma, RA, lymphoma, SLE, kidney transplant and can be used for the treatment of oral conditions.

\*Side effects of systemic steroids :

-weight gain -central obesity

-hypertension -diabetes

-osteoporosis

-peptic ulcer

-increased susceptibility to infections

-dental treatment might be complicated by associated diseases for ex. A pt with peptic ulcer you can't prescribe NSAIDs for him .

\*pts on long term steroids have an increased risk of malegnancies like lymphoma and squamous cell carcinoma.

\*oral manifestations of excessive steroid therapy :

-moon face

-oral candidiosis (the main oral side effect of steroids whether it was topical or systemic )

\*steroids in oral medicine are used for the treatment of severe oral ulcerations, vesiculobollus diseases, facial palsy and herpes zoster, giant cell arteritis and before surgical procedures like wisdom extractions (we give dexamethasone to reduce post operative edema ).

\*Pheochromocytoma :

It’s a tumor of adrenal medulla, causing excessive production of epinephrine and nor-epinephrine.

-might be associated with neuorofibromatosis or multiple endocrinoplasia

-signs : similar to conditions were there's excessive production of epi and nor-epi , including :

🡪anxiety

🡪palpitation

🡪sweating

🡪HTN

🡪headache

-any pt with untreated pheochromocytoma should have their elective dental treatment delayed .

-dental treatment might be complicated by arrhythmia, HTN and anxiety .

Management : removal of adrenal glands , so should be given steroid replacement therapy.

good luck

done by : $husain^{2}$ (minor and major)

ياجماعة عشان تكونون بالصورة هذا اول شيت نكتبه (وأخر شيت طبعا :p) فاسمحولنا اذا في اي خطأ ولاتستحون بالسؤال .

ولا تنسونا بالدعاء