



The University Of Jordan
Faculty of Dentistry
fourth Year
2016-2017



slides

handout

sheet

Website
:
<http://dentistry2018.weebly.com/>

LECTURE # :

DOCTOR :
NAME

DONE BY :
NAME

CORRECTED BY :
NAME

DAY & DATE :
DAY, MONTH, DATE, 2015

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مكتبة تلاع العلى – ABC Books

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هاتف :

0797121818
06/5336475

Contact Us:

 **Ljnehan**
 Dental.c2013@gmail.com

 **Dental Correctionn**
 D.correction2013@gmail.com

We will continue talking about **endocrine diseases** (diabetes and adrenal glands).

Diabetes mellitus:

It`s a metabolic disease characterized by hyperglycemia (increased blood sugar).

Either because reduced secretion of insulin or increased the resistance.

It could cause some **complications** like:

*Retinopathy (eye)

*Nephropathy (kidney)

*Bone diseases

Type 1: insulin dependent

Type 2: non-insulin dependent

Least common type is gestational diabetes.

There`s some drugs that cause diabetes { steroids , cortisone }.

Also **diabetes** could be **secondary** to **endocrine diseases**.

Type 1 is an **immune mediated** disease so it could be associated with another auto immune diseases and it`s characterized by insulin deficiency in young people. **[LESS COMMON]**

Type 2 ---> insulin resistance mutli factorial disease. [MOST COMMON TYPE]

It affect *elderly people. *positive family history.

Risk factors:

- life style

-obesity

-lack of exercises

There will be reduced insulin secretion and increase in peripheral resistance to insulin that will cause hyperglycemia.

CLINICAL FEATURES :

***polyuria , polydipsia , polyphagia.** Those features are Less common in type 2 so some people have diabetes but they don`t know of its existence.

***weight loss , fatigue , irritable.**

Patients with chronic hyperglycemia have slow wound healing and frequent infections.



| Type 1 | Type 2 | Gestational |
|---------------------------------|--|--|
| Usually young | Usually older | First detected in pregnancy |
| Short history- acute onset | Insidious onset | Routine testing |
| Not overweight | Often overweight | Often overweight |
| Insulin deficiency | Insulin resistance | Usually insulin resistance - placental hormones |
| Rare | Common | Becoming more common |
| Requires insulin from diagnosis | Diet and lifestyle change can reverse it Then add oral medications May require insulin | Diet and lifestyle plus medications to limit effects on the growing baby |
| Often random | Strong family history | Family history of T2DM |

Criteria for diagnosis of diabetes:

* Fasting blood sugar... If glucose level $> \text{or} = 126 \text{ mg/dl}$ { 110 – 126 mg/dl prediabetic }.

*Random blood sugar... $>200 \text{ mg/dl}$.

*Glucose tolerance test : they give the patient certain amount of glucose and he will stay for 2 hours in the clinic then they do the test.

*Hemoglobin A1c (glycated hemoglobin): which provides information about a person's average levels of blood glucose over the past 3 months, reported as a percentage, $\geq 6.5 \%$ is considered diabetic.

Glucose molecules found on RBC's in normal status $< 6 \%$ of RBC's have glycated hemoglobin. { 5-6.5 prediabetic }.

If the patient have >10 so it's poorly controlled and more susceptible to complications { acute or chronic }

(we have to do glucose test for patients with oral manifestation and systemic symptoms)

It could be measured by millimole \ liter.

If Patient tell you that his sugar level is 8 or 9 he don't mean the (glucose tolerance) التراكمي

He means the fasting blood sugar but in another measuring unit.

doctor said (read about how to convert from millimole\liter to mg/dl)

To convert mmol/l of glucose to mg/dl, multiply by 18

1 mg/dL =18.0mmol/L (google)



COMPLICATIONS OF DIABETES:

Acute ;

*hypoglycemia

*diabetic ketoacidosis

Chronic;

*nephropathy

*retinopathy

Diabetic ketoacidosis it occurs because of severe hyperglycemia that will cause acidosis in blood and over production of ketonbodies so that the patient will have halitosis (bad breath) also acidosis will cause dehydration, usually this is preceded by infection or truma. (there`s a patient who have a severe dental infection but he didn`t treated well, so that it causes diabetic ketoacidosis)
it`s very important in diabetic patient to prevent dental infection because it`s easily spread and it may cause complications.

hyperglycemic hyperosmolar coma it`s same as ketoacidosis, it occurs in type 2 diabetes, both are the same in causing severe hyperglycemia and dehydration but the first one doesn`t cause over production of ketonbodies .
hyperglycemic coma---→ chronic ketoacidosis --→ acute (sudden)
so that when a diabetic patient fainted in the clinic we directly assume that it`s hypoglycemia because hyperglycemic coma takes more time to occure (days to weeks).

MANEGMENT:

-insulin therapy

-fluid replacement

-correction of electrolytes

He must enter the hospital for treatment.

Chronic complications: it`s very important especially in cases of neuropathy and nephropathy.

13:00

Diabetic patients are at risk of coronary artery diseases,,,,,,,,,

DONE by Soaad Al-Kiki



The diabetic patients become at risk of coronary artery disease, atherosclerosis and cerebrovascular accident (CVA) .

The management, in general, diabetic patients have to control the diabetes to avoid the risk factors by exercise to increase the sensitivity to insulin and medications (insulin or oral hypoglycemic drugs) to control the level of glucose within a normal level . we have to measure the preprandial (before the meal) & bed time glucose level

bed time glucose level is higher than the preprandial so we have to give the patient slightly elevated level of glucose at bed time to avoid hypoglycemia.

The postprandial glucose is <180 and the hemoglobin A1C <7 indicate well controlled diabetic patient, Hg A1C (7-8) moderately controlled and Hg A1C >8 poorly controlled .

The Diabetes has a non specific oral manifestation that can be seen with other diseases, the most common one is the xerostomia (dryness of the mouth) , cyanosis (bilateral enlargement of the parotid gland) , burning sensation in mucosa & the tongue , lichenoid reaction (from the medications) and the patients become more susceptible for the infections like candida and (...) .

So, if we see a patient has a periodontitis with good plaque control , we think about diabetes.

The dental treatment is affected by the severity of diabetes, degree of glycemic control, the dental procedures that we will do and any complications of diabetes, we should think about all these points when we treat a diabetic patient .

In general when the diabetic patient is uncontrolled (from the symptoms or the blood results) any elective procedures should be delayed because the patient is more susceptible to complications such as hypoglycemia , infection & delayed wound healing .

The treatment shouldn't affect the food intake (e.g. if we give the patient an ID block and extract 2 teeth the patient will not eat up to 2 hrs and will have hypoglycemia) so, the treatment should be after the breakfasts or in some case we instruct the patient to stop the morning dose of the insulin or hypoglycemic drug before the procedure if it's extensive.

In general any diabetic patient with glucose level >180 we prefer to delay the surgical procedure or the extraction. If we have patient with glucose level 180 , need a traumatic or difficult procedure we will not do it.

If the diabetic patient has 190 glucose level and need simple extraction (painful mobile tooth) we will extract .

So, we depend on the clinical evaluation. We prefer to treat the diabetic patient in the morning with escort and we should have glucose or any sugar in the clinic to give the patient if he has hypoglycemia.

We should ask the diabetic patient if he is fasting or not (especially in Ramadan) to avoid hypoglycemia.



The dental procedures should be short and stress free as possible as we can, so if we have a patient that needs clearance, we should avoid to extract all of them in one clinic , we can extract only one quadrant especially for the elective procedure (extraction , perio treatment) .

The infection should be treated early because the patient is immunosuppressed especially uncontrolled diabetic patient may has complicated infections.

The symptoms of hypoglycemia :

1-confusion. 2-anxiety. 3- tingling or numbness (especially after the ID block>> numbness on upper lip) .

The hypoglycemia is higher if the patient is fasting or in stressful lengthy procedure or had a previous history of hypoglycemia (so, we should ask the patient in medical history if he had a previous or recent hypoglycemia) .

The diabetic patients that controlled by insulin is at higher risk for hypoglycemia.

The management of hypoglycemia :

❖If the patient is conscious he should take a sweet (chocolate or juice) .

❖if the patient is unconscious we do ID access and give him dextrose saline or we give him glucagon (IM or SC) or sublingual glucose gel for rapid absorption.

Most of the patients will recover within 15 min, after that we can't complete the dental procedure because the patient is stressed, it's better to leave and consult the doctor before the next procedure .

The hyperglycemic coma : Takes days to occur but it's can start before the clinic and occur in the clinic , we should use the glucometer to measure the blood glucose level . But in general we treat the patient as he has hypoglycemia not hyperglycemia, Because if we treat a patient as hyperglycemia but he had hypoglycemia and take insulin we could kill the patient.

The adrenal gland:

Ad : above, renal : kidney (above the kidney)

e.g. (Adenoids , noids: lymph nodes)

The adrenal gland is composed of Two parts :

1- adrenal medulla v secrete the adrenaline and noradrenaline

Adrenaline >> synthetic (because it's produced by the adrenal gland)

Epinephrine (the old name)>> inside the body (because it's produced by gland above the kidney)

2- cortex : secrete the corticoids (glucocorticoids or mineralocorticoids)

Done by : ASMAA NASR



Here, we have reduced production of hormones produced by adrenal cortex (Addison's disease) characterized by atrophy of the adrenal cortex and failure in secretion of cortisol and aldosterone. Has many etiological factors, primary, like:

- trauma
- infection
- autoimmune disease
- adrenalectomy (surgical removal of adrenal gland)
- amyloidosis

Or the cause may be secondary, like a problem in the pituitary gland, decreased production of ACTH (the hormone in charge of the adrenal cortex).

Symptoms: none specific

the patient has a lack of cortisol so he would most likely develop signs opposite to the effect of cortisol : weakness, fatigue, weight loss, hypotension, hypoglycemia, pigmentation.

Pigmentation might be evident in the oral cavity and oral pigmentation is the first manifestation of Addison's



sometimes disease.

Diagnosis:

features: none specific

but upon tests of serum cortisol, patient may show a reduced level which suggests adrenal cortex insufficiency. Also ACTH test, if level was reduced then it's secondary but if it was increased then that means it's primary adrenal insufficiency.

Management:

giving the patient cortisol. And if there was an underlying cause like an infection it should be treated.

Dental Aspect:

Mucosal pigmentation-

-susceptible to adrenal crisis (important) as a result to stress during dental procedures which may result in adrenal crisis(which is characterized by bradychardia, hypotension, hypoglycemia, weakness, dehydration and sometimes loss of consciousness.)

adrenal crisis is very rare, but if it happens then the patient should be admitted to the hospital and given IV cortisol and glucose.

so our duty is to avoid the adrenal crisis, by giving the patient prophylactic steroids since dental treatment is stressful.

For simple procedures, patient who is under treatment should be asked to double the dose before treatment.



Some dentists give their patients cortisol by IV (in extensive surgical procedures) preferably in the hospital. In this case patient is given 200 mg hydrocortisone IV (standard for surgical procedures). Sometimes the patient needs post-operative recovering steroids in major surgeries that involve trauma/fracture.

If you encounter a patient with oral pigmentation which is not racial pigmentation, it would be useful to ask him if he has symptoms related to Addison's disease like weakness, measure his blood pressure to see if he has hypotension and check for hypoglycemia.

CUSHINGS DISEASE

excess cortisol either endogenous (adrenal gland produces extra cortisol) or exogenous, as a result to cortisone treatment of different diseases. Another cause is excessive production of ACTH by the pituitary gland. Sometimes there are cancers such as lung cancer that produce cortisol.

*steroids are immunosuppressants (a treatment for autoimmune diseases such as: asthma, rheumatoid arthritis, SLED, kidney transplant patients)

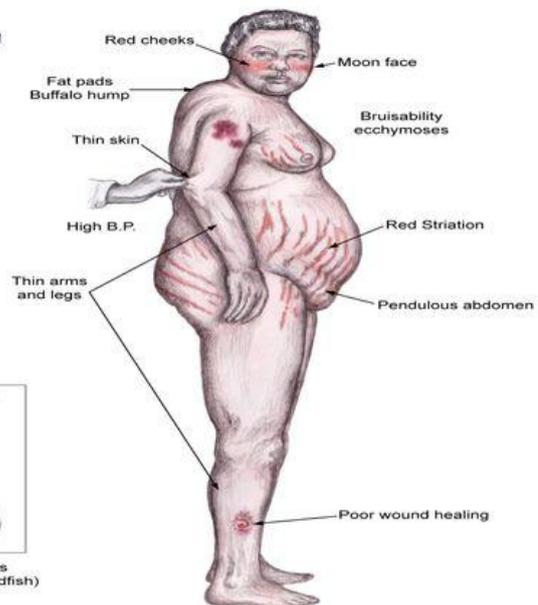
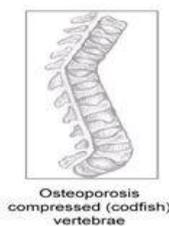
Side effects of steroids are:

- weight gain (most important to people) due to fat redistribution and fluid retention.

- moon face
- buffalo hump
- suppressant for the adrenal gland
- diabetes
- hypertension
- osteoporosis
- mood change
- peptic ulcer
- excessive growth of hair
- acne
- increased susceptibility to infection.

CUSHING Syndrome

Background
Cushing syndrome is caused by prolonged exposure to elevated levels of either endogenous glucocorticoids or exogenous glucocorticoids



More issues:

-Patients take exogenous steroids, as well as prophylactic steroid cover before procedures that induce stress since the adrenal cortex got used to external steroids and isn't able to produce its own upon stress anymore. Patients in this case aren't as much in need as patients with Addison's disease. Also, steroids patients may have complications related to diabetes, hypertension, osteoporosis (from medications that produce this kind of effects).

-Patients under long term immunosuppression are at a higher risk of malignancies e.g: if a patient



has been taking immunosuppressants for 20 years and came with a mass on the palate we would assume that it's a tumor or lymphoma.

Increased susceptibility to infection i.e: candidiosis-
or post operative infection in the case of a difficult tooth extraction (where a prophylactic antibiotic is usually given to prevent infection)

Steroids are very frequently used in oral medicine to treat immune mediated diseases such as:

-vesiculobullous disorders(a type of mucocutaneous disease that is characterized by vesicles and bullae/blisters)

severe aphthous ulcer -

herpes zoster -

facial palsy-

Giant cell arteritis (temporal arteritis): a type of facial grain -

Before extraction of wisdom teeth or more serious procedures as well, to minimize swelling-

Here in the picture, the patient has a moon face. He intakes steroids and upon intraoral examination he showed to have candida. Sometimes the patient doesn't remember the name of the medication he takes but you can somehow tell from his/her features.

-theochromocytoma (very rare): excessive production of catecholamines (epinephrine/norepinephrine). Here the patient develop signs of irritability, bradycardia, palpitation, sweating, hypertension, headache.



—conn's disease (Dr asked us to look it up!) "know about it"

Primary aldosteronism, also known as **primary hyperaldosteronism** or **Conn's syndrome**, is excess production of the hormone aldosterone by the adrenal glands resulting in low renin levels. Often it produces few symptoms.^[1] Most people have high blood pressure which may cause poor vision or headaches.^{[1][2]} Occasionally there may be muscular weakness, muscle spasms, tingling sensations, or excessive urination.^[1] Complications include cardiovascular disease such as stroke, myocardial infarction, kidney failure, and abnormal heart rhythms. (-Wikipedia)

