

Defending Insulin.....

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(The Insulin Man)

Overview

- Endocrine Fun Facts
- Insulin Facts
- Control your weight/Fuel Metabolism

Endocrine Education

- Endocrine education was always under-rated
- Average fellowship will take between 2-5 years
- Only 4 weeks needed in the Internal Medicine Program
- In Family Medicine.....1-2 weeks (if any)
- The Endocrine chapter comes 8th or 9th in medical text books
- Endocrine fellowship ranked 8th most desired in 1980
- Currently first with Cardiology and before GI

Endocrine Organs

- The most abused in clinical medicine
- 50% of Thyroids removed for NO clear indication
- Only 1% of amputations are done too soon/no indication
- 22% of patients with Diabetes didn't know they have a Pancreas
- 37% of them didn't know where is it located
- Fat cells, Testicles and Ovaries are Endocrine glands

Endocrine Therapy

The most famous for ALL the wrong reasons !!

Facts

- Thyroxine , # 1 Rx drug in North America
- Insulin , # 1 drug for human errors in a hospital setting
- 64 % of Insulin orders are incorrect (less than 5% for antibiotics)
- 72 % of Insulin orders are in the form of a Sliding scale
- Sliding scales don't exist in the medical text books !!!!
- Insulin is the most common drug patients tend to adjust themselves
- on the contrary.....Patients never adjust antibiotics on their own
- CRA will give you disability credit if on Insulin

Endocrine Diseases

Have the most bizzare names and description in clinical Medicine

Examples

- Grave`s
- Conn`s
- Addison`s
- Cushing`s
- Goitre
- Hashimoto`s
- Acromegaly/Gigantism
- Type 1 , Type 2..... (Type one and a half)

Endocrinologists

- Eccentric.....(unpleasant training/fellowship)
- Underweight
- Have a Self inflated ego
- When you control Hormones.....you control everything !!
- They think all orders should be done over the phone !

Other Facts

- George Bush had Grave's Disease
- Halle Berry has Type 1 Diabetes
- Rod Stewart had Thyroid cancer
- The giant Goliath had Acromegaly/Pituitary tumor
- The Ancient Egyptian king Tut had Gynecomastia

Insulin Facts

Insulin is the most important hormone of the human body

Humans can not survive without Insulin for more than 1-2 days

Physicians occasionally hold Insulin not knowing it is a life sustaining therapy

Lack of Insulin

- Will shift fuel metabolism to fats
- Glucagon will take over energy production
- Ketone bodies
- Acidosis
- Cardiac Arrest

Insulin

- Glucagon
- Catecholamines
- Thyroxine
- Growth Hormone
- Cortisol

Insulin

- A storage Hormone
- Glycogen storage
- Protein synthesis
- Fat storage

Insulin

- Is a KEY
- Insulin receptor..... Is a LOCK
- Key/Lock.....open Glucose Gates at the cell membrane
- Glucose goes in and used for energy production

Insulin

- Humans use about 40-50 units of Insulin/day
- Can you do with less ?
- Glucose is the most potent stimulus for Insulin release
- Excess Glucose is toxic to the B cells

Insulin Receptors

Up-regulation

- Exercise
- Low CHO diet

Down-regulation

- High Insulin levels
- Obesity
- High CHO diet

Obesity

- Starts in Intra-uterine life
- Overweight Moms with Diabetes
- High Glucose in utero and high Insulin levels
- Large babies

Infancy/Childhood

- **Formula**
- **Excess dairy**
- **Pizza lunches**
- **Cereals**
- **Shelf foods**
- **Soft drinks**

Obesity

- Chronic Glucose stimulation
- Excess Insulin
- Down-regulation of Insulin receptors
- Lipogenesis/Storage
- Obesity

Solution

- Control your own fuel metabolism
- Use the least amount of Insulin
- Muscle building excercises

Meal distribution

- 25-50% Vegetables/greens/Fibres
- 25% Proteins
- 25% fats
- 25% complex CHO

Endocrine Fun Rounds

- General Internal Medicine
- VS
- Cardiologists/Nephrologists

Question 1

- A 24 year old W came to your office with throat discomfort and an ultrasound report showing a nodule measuring 2 cm... what's the best next step
- A) Repeat U/S
- B) Thyroid uptake/scan
- C) FNA
- D) Surgical consultation

Question 2

- A 31 year old W , 16 weeks pregnant presented with weight loss and fatigue.. Blood sugar was 21 mmol/l with no family history of Diabetes.... What's the diagnosis
- A) Type 2 Diabetes
- B) Type 1 Diabetes
- C) Gestational Diabetes
- D) Secondary Diabetes

Question 3

- The best next step in treatment would be
- A) Diet counseling
- B) Metformin and diet
- C) Once a day Insulin
- D) Multiple daily injections of Insulin or MDI

Question 4

- The most (immediate) danger if the last case left untreated or treatment delayed is
- A) Fetal malformation
- B) Early Labor
- C) DKA
- D) Fetal Death

Question 5

- The most common type of Thyroid cancer is
 - A) Papillary
 - B) Follicular
 - C) Medullary
 - D) Follicular Variant of Papillary

Question 6

- Most common cause of Hyperthyroidism in a normal pregnancy is
- A) Toxic nodule
- B) Graves Disease
- C) Gestational Transient Thyrotoxicosis (GTT)
- D) Multiple gestations

Question 7

- Gestational Transient Thyrotoxicosis (GTT) is related to excess production of this hormone
- A) hCG
- B) T₄
- C) T₃
- D) TSH

Question 8

- A 27 year old women , 12 weeks pregnant had suppressed TSH and wt loss
- Best next step in diagnosis is :
- A) Thyroid U/S
- B) Thyroid Uptake
- C) Thyroid Scan
- D) TSH receptor antibodies (TRAB) and FT₄

Question 9

- The Fetal Thyroid starts to produce Thyroxin at
 - A) 10 weeks
 - B) 5 weeks
 - C) 3 months
 - D) 6 months

Question 10

- The most common cause of Hypothyroidism in pregnancy is
- A) Iodine deficiency
- B) TSH Deficiency
- C) Previous surgery
- D) Hashimoto Thyroiditis

Question 11

- The most important step(s) in treating Thyroid cancer is
- A) Iodine ablation
- B) Surgical Removal
- C) Thyroxin therapy
- D) All of the above

Question 12

- The 2 Differentiated Thyroid cancers are :
- A) Papillary and Follicular
- B) Follicular and Anaplastic
- C) Anaplastic and Papillary
- D) Medullary and Follicular

Question 13

- Differentiated Thyroid cancer points to the following
- A) Cancer cells are different from follicular cell
- B) Cancer cells are similar to para follicular cells
- C) Cancer cells are similar to follicular cells
- D) Cancer cells are more aggressive

Question 14

- A 45 year man sent to ER by family MD for a sugar of 32 mmol/l , weight loss and family history of Diabetes
- Whats the diagnosis
- A) Type 2 Diabetes
- B) Type 1 Diabetes
- C) Secondary Diabetes
- D) Pancreatic Cancer

Question 15

- Best treatment option(s) :
- Sliding scale as per Dr Vertes
- Metformin alone
- Fasting schedule as per Dr Fung
- Metformin and once a day Insulin