

HYPERVITAMINOSIS AND ANTIHISTAMINES

Introduction

- VITAMIN is an essential substance, needed in tiny amounts to facilitate normal metabolism
- Not synthesized in the body....must be ingested in the diet
- Not provide energy.....BUT....often act as coenzyme in energy producing reactions → هه ما بنشطوا او بعطوا energy الا اذا كانوا ناقصين
- OTC
- large potential for misuse and toxicity.....believes that megadoses of vitamins prevent or ameliorate the effects of aging and cancer
- Only rarely is an acute vitamins toxicity reaction reported, → عاينى حد ياخذ Vitamins عشان عشان يجاوب لينجر فياومع الوقت most cases involved chronic utilization

في ناس
ارزا حسوا
ليحسن عليهم
بهمير ياخذوهم
بكميات

كيرة
L They say
that vitamins in
large quantities
are anti oxidants
→ against
aging
and cancer
which isn't
true

عاينى
حد ياخذ
Vitamins
عشان عشان
يجاوب لينجر
فياومع الوقت

Introduction

قوة الواحد لازم ياخذ من الـ Vitamins كل يوم ←

- **Recommended Daily Allowance (RDA)**.....vit deficiency / hypervitaminosis
- **Megadosing**: a dose that is **10 or more** times the recommended daily allowance (RDA)

Vitamins

→ Soluble in water → excretion in urine → أمين الكثر
↳ Soluble in fats Lipophilic → يتخزن بالجسم

- A, D, E, K
- Vitamin C
- Thiamine (B1)
- Riboflavin (B2)
- Niacin (B3)
- Pyridoxine (B6)
- Cyanocobalamin (B12)
- Folic acid (B9)
- Biotin (B7)
- Pantothenic acid (B5)

Vitamin A...Retinoids

- ❖ First vitamin recognized
- ❑ RDA: 3000IU

TOXICOKINETICS OF VITAMIN A

- ❑ More than 60,000 instances of vitamin toxicity are reported annually to US poison control centers
- ❑ fat-soluble vitamins have a higher potential for toxicity than do water-soluble vitamins (Owing to their ability to accumulate in the body).

↑ Toxicity ← fat-soluble vitamins

VITAMIN A TOXICITY

- Acute ingestion >12,000 IU/kg. Chronic ingestion >25,000 IU/d for 2-3 weeks. symptoms:
 - GI
 - Nausea , vomiting, gingivitis, mouth fissures, wt loss
 - CNS
 - Drowsiness, Headache, irritability, increased intracranial pressure, vision changes, dizziness *بزيادة الضغط بالدماغ*
 - Skin
 - Dry, peeling skin, cheilosis, pruritis, alopecia
 - Muscles and joints
 - Myalgia, arthralgia
 - Other:
 - Hepatic enlargement, ascites, hepatocellular injury, elevated hepatic enzymes, hypercalcemia, bony changes

VITAMIN A TOXICITY

- Teratogenicity:
 - The risk of infant malformations in the first trimester approaches 25-30%....."retinoic acid dysmorphic syndrome":.....
 - CNS defects, *بالعين* optic atrophy, cleft palate small or absent ears, thymic and congenital heart defects

outer part of the ear ←

TREATMENT OF VITAMIN A TOXICITY

- Immediate discontinuation, most S&S will disappear within several weeks
- If very huge dose was taken.....GI decontamination (administration of activated charcoal)
- High intracranial pressure treated with mannitol, hyperventilation → صدر

VITAMIN D TOXICITY

- Vit D acts to maintain serum **calcium** and **phosphate** concentration.....increase Ca levels by acting on its absorption, excretion and bone resorption → بزرگ absorption لہ Ca وال phosph
- Manifestations of **vit D toxicity** are related to the effects of hypercalcemia → ال Ca بروج تزیسہ بال Tissues Haent and lung
- Hypervitaminosis D & hypercalcemia in pregnant women may suppress PTH function in the newborn.....leading to hypocalcemia, tetany and seizures → in the new born ← بصر بال لیسہ

VITAMIN D TOXICITY

- منه نوب
لل
Toxicity
- 4-5 times the RDA can cause toxicity (conc. >200pg/ml)
 - Symptoms
 - Hypercalcemia.....(polydipsia, polyuria, weakness, fatigue, anorexia, headache)
 - Altered mental status
 - GI upset
 - Renal tubular injury
 - Occasionally arrhythmias
 - Calcification of soft tissues (heart and lungs)

TREATMENT OF VITAMIN D TOXICITY

- Immediate discontinuation
- Reducing Ca intake by diet
- If cardiotoxicity due hypercalcemia.....fluids and diuretics
- Administration of glucocorticoids (prednisolone 20-40 mg), inhibit Ca absorption from the gut
- If Ca levels exceed 14mg/dl....Tx with calcitonin (i.m)

↳ reabsorption
of Ca through
the bones

ويخرج ال Ca يطلع
من ال Bones ويزيد
ال excretion ال urine

VITAMIN C-ASCORBIC ACID

- Supplements are available in 100 to 500mg doses and found in high concentrations in green tea
- RDA for ascorbic acid is 60mg/day

VITAMIN C-TOXICITY

- WATER SOLUBLE VITAMIN....WHAT IS NOT UTILIZED WILL BE EXCRETED IN THE URINE..... toxicity is rare
- Toxicity is related to the osmotic effects in the intestine....
nausea and diarrhea
- Chronic excessive use can produce increased levels of the metabolite oxalic acid →
- Urinary acidification promotes calcium oxalate crystal formation..... nephrolithiasis and nephropathy

لها ناحه
بصيان كبره
ال Metabolite
رقبه
↓
oxalic acid
↓
والى بعمل
حصوان
بالكلى

CLINICAL MANIFESTATIONS

- Toxic doses???.....
- Acute IV doses >1.5 g OR chronic ingestion >4 g/d have produced nephropathy
- Decrease abs of vit B12 * ما يصير عند كل الناس *

MANAGEMENT:

← ما يوقفه
فجاءه

- Abrupt withdrawal not recommended....rebound deficiency (scurvy) following prolonged administration of megadose

- So.....gradual withdrawal

لما الواحد

يكون عنده deficiency of Vitamin C

يصير خشنان شديد بالشفايت والشعر والبشر
والتالانجوا ونقبت فلما يوقفه فجاءه يصير
عنده scurvy نفسه ال symptoms ال deficiency



THIAMINE (Vit B1)

- "Antiberiberi"Vit B1.....Thiamine
- Source: rice bran extracts, yeast extracts
- RDA of thiamine is 1.5mg/day.....Most exceed RDA in diet
- Deficiency results from poor dietary intake or more commonly from excess alcohol intake??!!
- Alcohol interfere with gastric absorption of vit B1 and its conversion to the active form

بكمية ناضجة
منه كل

بسريره
ال Toxicity
اذا الح
عابا كل
او من
الركحول

THIAMINE (B1) TOXICITY

- Pain on injection and contact dermatitis → التصلب بالحقن
- Anaphylactic reaction after i.v administration
- Transient vasodilation
- Hypotension.....vascular collapse القلب ← ما يوصل دم للقلب بوقف
- **MANAGEMENT:**
 - Administration of **epinephrine and antihistamines**
 - Pressor agent may be necessary in extreme cases

VITAMIN B₁₂ TOXICITY

- Vitamin B12 is non toxic unless very huge quantities are ingested
- Rare instances of allergic reactions.....pruritis, urticaria, anaphylaxis
- Contact dermatitis
- Management: discontinuation → أقطعه

Handwritten notes in Arabic, partially illegible, located on the right side of the page.

Anti Histamine Classification

- H₁ antagonists are divided into 1st and 2nd generation;
- 1st generation has strong sedative effects (enter the CNS) and can block autonomic receptors
- 2nd generation: incomplete distribution to CNS → less sedation

H₁ Receptor Antagonists

- Competitive antagonists of H₁ receptor found in many OTC and prescription medication alone or in combined formulation

□ Major therapeutic uses:

1. motion sickness,
2. control of allergy-related itching,
3. cough and cold palliation
4. and used as sleep aids

موجودين
كثير OTC
لازهم موجود
بأدوية الرش
والأدوية التي يتساء
للنوم قد يصير
Toxicity
غير مقصودة

Toxicity:

- H1 antagonists are rarely ingested for suicidal purposes and have a **high therapeutic/toxic ratio** → نادر ما حد يمتدده للإنتحار
- Wide spectrum of side effects
- Sedation, antimuscarinic action → most common undesirable actions

Toxicity:

- **Toxic dose.** The estimated fatal oral dose of diphenhydramine is 20-40 mg/kg → 1st gene Toxicity dose
- In general, toxicity occurs after ingestion of 3-5 times the usual daily dose → لتيكون اعلى من ال dose dialy
- ~~Children~~ **Children** are **more sensitive** to the toxic effects of antihistamines than are adults → ب 3-5 مران
- The non-sedating agents are associated with less toxicity

Toxicity:

- CNS: sedation (most common with 1st generation), coma, delirium, hallucinations, psychomotor agitation (myoclonic or choreoathetoid movements), or convulsions
- Anticholinergic effects: hyperpyrexia, tachycardia, HTN, urinary retention, dilated pupils, dry mouth
- Reports of cholinergic toxicity upon stopping taking the drug

لما توقف الدواء بتوقع
Cholinergic symptoms
يكون الـ
↳ such as : ~~diarrhea~~ diarrhea - stomach ache
مع

Toxicity:

- CV effects: massive diphenhydramine overdose has been reported to cause myocardial depression and QRS widening....similar to TCAs overdose

هاد بالاردن
لما موجود
هاد انسحب
Overdosage of astemizole or terfenadine may induce cardiac arrhythmias through QT prolongation (removed from the US market)

Drug Interactions:

- ← ما یتدیجی دوز خاصه بار 2nd دیکون ال Arrhythmia اعلی
Arrhythmia occur particularly when taken with P450 inhibitor (erythromycin, ketoconazole, grapefruit juice....)

 یتدیجی ال P450 inhibition
 یتدیجی ال toxicity
- Significant sedation when taken with alcohol, benzodiazepines → C/I while driving or operating machinery

Treatment

- ما فی antidote antiHistaminic واضح
is supportive.... stabilization and reduce amount absorbable
- بیس ممکن زحطیجی antidote لد Cholinergic side effects
 1. Maintain an open airway and assist ventilation if necessary

 بنعطی Benzodiazepines
 بیس ازا کان باختر مراحل
 و صاف رینا نسیطر علی ال Seizures

 Usually Treatment بکون بیس Supportive
 2. Treat coma, seizures, hyperthermia, and atypical ventricular tachycardia if they occur
 3. Monitor the patient for at least 6-8 hours after ingestion.

Treatment

Decontamination:

- Administer activated charcoal orally
- Gastric lavage not necessary
- N.B: GI decontamination helpful even in late-presenting patients because of slowed GI motility

Enhanced elimination

- Hemodialysis, hemoperfusion, peritoneal dialysis, and repeat-dose activated charcoal are **not effective** in removing antihistamines

ممكن اعمله بس مؤثره
ممكن اعمله
GI decontamination
مؤثره لو كان Late-presenting
تقلل من absorption
تعبه هو سريع

Treatment

- There is no specific antidote for antihistamine overdose

- Physostigmine used for the treatment of severe delirium or tachycardia

- Not recommended routinely! may cause toxic effects as seizures, bronchoconstriction, bradycardia, asystole (may need to be reversed by atropine)

يعطيه بس قصوه
اميل ال
Toxicity
قلزم
بحذر
ممكن
يعمل

بدهطيه لما
anti cholinergic effect
وخلص ال
يعتبر خطره
على المريض