الهيئة السعودية للتخصصات الصحية
Saudi Commission For Health Specialties

THE IDEAL REVIEW FOR

Authorized PROMETRIC TESTING CENTER™

Authorized PROMETRIC TESTING CENTER™

اختبارات الهيئة

للصيادلة

بكالوريوس – دبلوم

Table of Contents

Introduction

Pharmacokinetics

Is movement of drug over time through the body?

It is the way that body deal with the drug تأثير الجسم على الدواء

It composed of 4 stages

A	absorption	الامتصاص	mainly through intestine	الأمعاء	وسيلة دخول الدواء إلى الدم
D	Distribution	التوزيع	Through blood	الدم	توزيع الدواء من خلال الدم
M	Metabolism	الاستقلاب	Through liver	الكبد	استقلاب الدواء في الكبد
E	Excretion	الإخراج	Through kidney	الكلى	إخراج الدواء من خلال الكلى (البول)

Drug absorption: The transfer of a drug from its site of administration to blood stream

The drug may be absorbed from the GIT tract either by

1- Passive diffusion

2- Active transport

يحدث الامتصاص من خلال الامعاء لانها اكبر مساحة امتصاص

Drug distribution: the drug leaves the bloodstream and enters the cells of tissues

It depends on 1- blood flow

2-Capillary permeability:

Only lipid –soluble drugs in small particles can penetrate the BBB

بمعنى ان الدواء الزيتى هو فقط الذى يستطيع المرور عبر الحاجز المخى ولكن يكون الدواء ذو جزيئات صغيرة

3-binding of drugs to plasma- albumin

4-Volume of distribution

Drug metabolism: elimination of drug and excreted into the urine or bile

Liver is the major site for drug metabolism

الكبد هو اكثر مكان يحدث فية عمليات الايض للدواء

Occurs in two phases

1- Phase 1 : oxidation –reduction-hydrolysis

2- Phase 2 : conjugation reaction

Drug excretion: kidney is the most important organ for excreting drugs

الكلى هى اكثر الاعضاء المسئولة عن اخراج الأدوية

Pharmacodynamics

What a drug does to the body تأثير الدواء على الجسم

Drug desired action (uses) and undesired action (side effect)

Drug drug interaction:

Any interaction between drugs when they are used for the same patient in short duration of time that will affect **Pharmacokinetics or Pharmacodynamics.**

- pharmaceutical interaction

  بمعنى ان يحدث تفاعل مع دوائين خارج الجسم مثل الادوية التى توضع على المحاليل الوريدية
- pharmacokinetic interaction

  بمعنى ان يؤثر دواء على دواء اخر من حيث(الامتصاص –التوزيع- التمثيل الغذائى –الاخراج)
- Pharmacodynamics interaction

  *synergism (1+1≥ 2)

  *addition or summation (1+1=2)

  *potentiation (0+1≥ 1)

  *antagonism

بمعنى ان يؤثر دواء على فاعلية دواء اخر اما يزيد اويقلل من تأثيره

Bioavailability

الاتاحة الحيوية

The fraction of administered drug that reach the systemic circulation

كمية الدواء التى تصل سليمة الى الدم

*If 100 mg of a drug are administered orally & 70 mg are absorbed unchanged

So the bioavailability is 70 %

Dosage calculation

Example

You find 10 ml vial of aminophylline with supply label 10 mg per ml. how many mg in the vial?

لحساب الجرعة الدوائية في أي مسألة يمكن إتباع الخطوات التالية

1- -أي رقم في المثال لابد من كتابته وكتابه وحدته خارج المسألة

10 ml vial

10 mg per ml

2- -أي صوره من صور النسبة لا بد من تحويلها إلى صورة بسط ومقام

10 mg per ml will convert to $\frac{10\ mg}{1\ ml}$

3- عمل تناسب (تساوي أكثر من نسبة) بشرط تناسب الوحدات (البسط مثل البسط) والمقام مثل المقام

$$\frac{10\ mg}{1\ ml} = \frac{\quad mg}{\quad ml}$$

4- انظر أين السؤال وضع علامة استفهام في المكان المطلوب

$$\frac{10\ mg}{1\ ml} = \frac{?\ mg}{10\ ml}$$

5- عملية ضرب الوسطين في الطرفين والحصول على المطلوب

The answer is 100 mg

Pharmaceutical Calculations

Systems of weight and Measures

Metric System:

Units of weight is: gram (g)

Units of volume is: liter (l)

Units of length is: Meter (m)

Each of them takes unit number one (1)

Kilo (k) is number = 1000

Example kilogram (kg) = 1000 gram

Kilometer (km) = 1000 meter

Kilolitre (kl) = 1000 liter

hecto (h)	is number = 100
deka (dK)	is number = 10
litre , gram , meter	is number = 1
deci (d)	is number = 1/10
centi (c)	is number = 1/100
milli(m)	is number = 1/1000
micro (mc)	is number = 1/1000,000

Kilo= 10 hecto = 100 deka = 1000 …. =10000 deci = 100000 centi = 1000000 milli = 1000 000 000 micro

Conversion:

Exact equivalents are used for the conversion of specific quantities in the pharmaceutical formulas and prescription compounding

Unit Mass

1 gram (g) = 15.432 grain

1 kilogram (kg) = 2.240 pound

1 grain (gr) = 0.065 mg

Unit Volume

1 liter (1) = 35.2 fluid ounces= 0.22 gallon

1 fluid ounce = 30 ml

Unit Length

1 meter (m) = 39.37inches

1 inch = 2.54 cm

House hold measurement

1 tea spoonful (tsp.) = 5ml

1 table spoonful (tbsp.) = 15ml

1 milliliter (ml) = 16 drops (dps or gtts)

Calculation of doses:

Total amount of doses = size of dose + number of doses.

Example # 1:

How many drops would be prescribed in each dose of liquid medicine in 15ml contained 60 doses?

1 ml = 16 drops

15ml =?? Drops → 480 dps or gtts

Size of dose = 240dps /60 doses = 4 dps or gtts

Example # 2:

How many doses are found in 10g, if the dose is 200mg?

Number of doses = 10g/ 0.2g= 50 doses

Example # 3:

How many milliliters of liquid medicines would provide a patient with 2 table spoonful twice a day for 8 days?

Total amount = 2 ×15ml ×2 × 8= 480ml

Temperature conversion

To convert temperature from Fahrenheit scale (F) to Celsius (centigrade) (C) we use the formula 5F = 9C + 160 Where

Scale	Fahrenheit	Celsius
Boiling point	212	100
Freezing point	32	0

Example Convert temperature 30 C to F the answer (86 f)

5F = 9C + 160

5F= 9×30 + 160

5F= 270 + 160

5F= 430

F = 430÷ 5 = 86

Convert temperature 150 F to C the answer (65.5 c)

5F = 9C + 160

5×150 = 9C + 160

750 = 9C + 160

750 – 160 = 9C

590 = 9C

C = 590 ÷ 9 = 65.5

Drug name

There are three names of drug

1- Chemical name : exact description of chemical structure
2- Generic name : shorten Chemical name
3- Trade name : brand name or proprietary name

Abbreviation Meaning

am	morning	pm	after noon
aq	water	evening	evening
ad	right ear	prn	when needed
as	left ear	pulv	a powder
au	each ear	qs	quantity
bid	twice a day	Qd	every day
Cap.	capsule	Qh	every hour
gtt	drop	Qid	four times day
h	hour	soln	solution
hs	at bed time	stat	immediately
inj	injection	supp	suppository
nebul	a spray	syp	syrup
non rep	do not repeat	tab	tablet
noct at	at night	tid	three times a
no	number	tbsp	table spoonful
ou	each eye	tsp	tea spoonful
od	right eye	IM	intramuscular
os	left eye	IV	Intravenous
po	By mouth	QOD	Every other
pc	after eating	Sos	If necessary

I	1	Viii	8
Ii	2	Ix	9
Iii	3	X	10
Iv	4	L	50
V	5	C	100
Vi	6	D	500
Vii	7	M	1000

Preparation and administration of medicine

Solid preparation

1- Powder drug in powder form
2- Capsule drug in gelatin container
3- Tablet compressed solid mass

Semi Solid preparation

1- Suppository drug molded into shape for insertion in a body opening
2- Ointments & creams drug suspended in some base for external use

Liquid preparation

1- Fluid extract alcoholic solution of drug
2- Spirit alcoholic solution of volatile substance
3- Elixir solution containing alcohol , sugar , flavoring substance
4- Tincture alcoholic solution of ostrichion substance

All alcoholic preparation is

a) Potent
b) take in small dose
c) never to be injected
d) never to applied to open lesion

5- Emulsion mixture of two liquid usually oil & water
6- Suspension liquid preparation containing un dissolved material
7- Lotion liquid preparation containing un dissolved material for external Use only.
8- Syrup highly concentrated sugar solution
9- Liniment solution of drug in oily or alcoholic or soapy base intended For external use only.

Route of administration

1- Oral : swallowed by mouth to give systemic effect

2- Sublingual : resemble oral but tablet dissolved under the tongue (not swallowed)

3- Buccal :resemble oral but tablet dissolved in the pouch of the cheek (Not swallowed)

4- Rectal : local or systemic effect which suitable for pediatric , vomiting And unconsciousness

5- Vaginal / urethral : local effect

6- Inhalation : through respiration then go to systemic circulation

7- Topical : applied to surface of the skin

8- Parenteral :

A. Intra venous (IV) : Injection directly into veins (most rapid) for **aqueous** only

B. Intra thecal : Injection directly into spine

C. Intra muscular (IM) : Injection deeply into muscle tissue (aqueous or oily)

D. Intra dermal(ID) : the top few layer of the skin

E. Sub cutaneous(SC) :into the fatty layer e.g. insulin

F. Intra-arterial (IA) : used in chemotherapy & diagnostic procedures

9- Transdermal : nitroglycerin patch- nicotine patch

لمزيد من التوضيح يرجى مشاهدة الفيديو رقم 1

لمزيد من التوضيح يرجى مراجعة الاسئلة التالية :

نموذج 1 : 33-34-37-38-39-41-42-44-96

نموذج 2 :35-36-42-43-44-47-48-49-50-51-66-98-99-100

نموذج 3 : 3-5-8-9-10-12-46-51-52-53-54-55-57-58-59-60-100

نموذج 4 : 71-72-73-74-75-76-77-78-79-80-81-82

نموذج 6 : 59 -60 -61-66-67-68-69-70-71-72

نموذج 7 : 51 -85

نموذج 8 : 55 -56 -57 -58 -60 -73 -89 -93 -97 -98

نموذج 9 :35- 38- 42- 47- 57- 58- 62- 63- 65- 66- 67- 71- 76- 91- 101

نموذج 10 : 34- 50- 51 -56-58-61-63-66

نموذج 11: 7-9- 34-36-37

N.S (nervous system)

Nervous system is divided into

1- Central 2- peripheral nervous system

Peripheral nervous system is divided into

1- Afferent 2- efferent nervous system

Efferent nervous system is divided into

1- autonomic nervous system

2- somatic nervous system

C.N.S (central nervous system)

General anesthesia

Agent used for induce loss of consciousness, analgesia, relaxation

Classification	Inhalation anesthesia	Intravenous anesthesia
Route	Mix with oxygen	Directly with blood
Control	Well control	Difficult to control
Uses	Long term operation maintenance	Short term
Examples	Nitrous oxide Ether halothane	Thiopental Ketamine

Local anesthesia

Agent used for induce loss of sensation without affecting, consciousness

Example: cocaine, benzocaine (topical {surface} application)

Procaine, bupivacaine , mepivacaine (local injection)

Lidocaine (both topical, local injection)

Antiepileptic drug

Epilepsy is violent involuntary contraction of voluntary muscle which is characterized by

1-Chronic 2- recurrent 3- typical 4- usually episodes of unconsciousness or amnesia

Drugs

1. Phenytoin
2. Ethoxsumide (only for petit mal epilepsy)
3. Carbamazepine
4. Vaproic acid
5. New : lamotrigine

Antipsychotic drug

Psychosis is disorder of mood, thought and behavior

It is characterized by delusion, hallucination and thought disorder

Aim of therapy: to block centeral dopamine receptor

Typical Antipsychotic drug

1. Chloropromazine
2. Haloperidol

Side effect: parkinsonian like syndrome (extra pyramidal side effect)

Atypical Antipsychotic drug

1. Clozapine
2. Olanzapine
3. Risperidone

Side effect: **fewer** parkinsonian like syndrome (extra pyramidal side effect)

Drug for Parkinsonism disease

Parkinsonism is movement disorder characterized by muscle rigidity and postural instability

Aim of therapy: is to increase central dopamine

Anti parkinsonian drug:

1. L- dopa (levodopa)
2. Selegline
3. Bromocriptine
4. Amantidine

Side effect: excess dose may lead to psychosis

Narcotic analgesic

*Morphine and related opoid has the following effect

1. Strong analgesic
2. Cough suppressant (central antitussive)
3. Anti diarrheal

Side effect

1. Addiction
2. Respiratory depression
3. Constipation

*Codeine is Morphine derivative which is **only** *central antitussive*

Loperamide and diphenoxylate are Morphine derivative which used **only** to control diarrhea

*Meperidine

*Methadone

*Fentanyl

*Propoxyphene

*Tramadol

Antagonists

*Naloxone

*Naltrexone

Migraine

severe headache in which patient complain from only one side of head

Patient suffer first from stage of aura (vasoconstriction) then stage headache (vasodilatation)

Drugs for acute attack (for vasodilatation)

1. Ergotamine
2. Sumatriptan
3. Analgesics

Drugs for prophylaxis (for vasoconstriction)

1. Beta blocker
2. Calcium channel blocker
3. Serotonin receptor blocker

Antidepressants

Disorder of mood is characterized by decreased self esteem and increased sadness

drugs

1. Monoamine oxidase inhibitor (MAO inh) :e.g. phenelzine
2. Tricyclic antidepressant (TCA) :e.g. amitryptillin , imipramine
3. Selective serotonin reuptake inhibitor (SSRI) : e.g. fluoxetine, sertraline, Citalopram

Sedative & hypnotics

It's called also * anxiolytics

* Minor tranqulizers

* All sedative become hypnotics at large dose

1- Benzodiazepines: GABA agonist: * ultra short acting (4 hours) قصيره المدى
midazolam,triazolam

*intermediate –acting (5-20 hours) متوسطة
lorazepam, oxazepam

*long –acting (60 hours) طويلة المدى
Diazepam, clonazepam

- Benzodiazepines antagonist : flumanezil

2-Barbiturates : * ultra short acting (15-30 min)
Thiopental

*short –acting (2-4 hours)
Pentobarbital, secobarbital

*intermediate –acting (4-6 hours)
amobarbital

*long-acting (6-8 hours)
phenobarbital

3- Zolpidem

4- Zaleplon

5- Buspirone

Antimania

It's called (bipolar disorder)

1- lithium

2- olanzapine

3- risperidone

Drugs of abuse

هناك بعض الأدوية التى تستخدم من دون غرض علاجى

غالبا ما تؤدى الى ادمانها ومنها :

1- alcohol

2- amphetamines

3- barbiturates

4- benzodiazepines

5- Cocaine

6- Methaqualone

7- Opium alkaloids

Autonomic nervous system

Is a part of peripheral nervous system associated with the *involuntary* action?

Is divided into 1- **sympathetic** (adrenergic**)** nervous system (S.)

2- **Parasympathetic** (cholinergic) nervous system (P.S.)

يتحكم الجهاز العصبي اللاإرادي في كل الوظائف اللاإرادية ومجازا هي كل الأعضاء الداخلية

- **parasympathetic** nervous system (P.S.)

يزيد من كل وظائف الجسم ما عدا القلب والأوعية الدموية

والمقصود بكلمة زيادة هي contraction للـــ muscle وتعني secretion لو كانت Gland و.....

Example (P.S.)

Action on respiratory muscle is contraction that leads to asthma

Action on Intestinal muscle is contraction that leads to digestion

Action on Uterine muscle is contraction that leads to excretion of urine

Action on salivary gland is contraction that leads secretion of saliva and so on…..

N.B excess contraction of intestinal muscle will cause spasm in abdomen and so on…..

*Action on **heart** is relaxation that leads to slow action of heart*

*Action on **blood vessel** is relaxation that leads to dilates blood vessel.*

Drugs

Parasympathomimetic (Parasympathetic agonist) cholinomimetic

1- direct acting (acetylcholine , carbacol , bethanecol , Pilocarpine)

2- Indirect acting (physostigmine , neostigmine organophosphorus compound)

Parasympatholytic (Parasympathetic antagonist)

1- Atropine, hysocine and atropine substitute (e.g. homatropine…)

- **sympathetic** nervous system (S.)

يقلل من كل وظائف الجسم ما عدا القلب والأوعية الدموية

والمقصود بكلمة تقليل هي relaxation للـــ muscle وتعني decrease secretion لو كانت Gland و.....

Example (S.)

Action on respiratory muscle is relaxation that leads to dilatation of lung

Action on Intestinal muscle is relaxation that stops digestion

Action on Uterine muscle is relaxation that leads to inhibit excretion of urine

Action on salivary gland is decrease secretion that decrease secretion of saliva and so on ……..

*Action on **heart** is* contraction *that lead to strengthens action of heart*

*Action on **blood vessel** is* contraction *that lead to increase blood pressure.*

	Site	**Receptor**	**Action**
sympathetic	**Heart**	**Beta 1 (β1)**	contraction
	Blood vessel	**Alpha 1 (α1)**	contraction
	Lung	**Beta 2 (β2)**	relaxation

Any drug act on sympathetic system

either enhance or inhibit action of sympathetic nervous system

Drug agonist mean that. it will stimulate function of the receptor

Drug antagonist (blocker) mean that. it will block the action of the receptor

	Site	**Receptor**	**Drug agonist**	**Drug antagonist**
sympathetic	**Heart**	**Beta 1 (β1)**	contraction	relaxation
	Blood vessel	**Alpha 1 (α1)**	contraction	relaxation
	Lung	**Beta 2 (β2)**	relaxation	contraction

Example

Drug name	Description	Receptor	Site of action	Action	Effects
Salbutamol (ventolin®)	(β2) agonist	(β2)	Lung	Agonist	Dilate lung for asthmatic patient
Atenolol (tenormin®)	(β1) blocker	(β1)	Heart	Blocker	*slow action of heart*
Dobutamine	(β1) agonist	(β1)	Heart	agonist	*strengthens action of heart*
Prazocin	(α1) blocker	(α1)	Blood vessel	blocker	Dilate Blood vessel
Isoprenaline	Non selective β stimulant	β1	Heart	Agonist	*strengthens action of heart*
		β2	Lung	Agonist	Dilate lung for asthmatic patient
Propranolol (inderal®)	Non selective β blocker	β1	Heart	blocker	*slow action of heart*
		β2	Lung	blocker	Asthma
Epinephrine (adrenaline)	Mixed agonist	(α1)	Blood vessel	Agonist	Contract Blood vessel (HTN)
		β1	Heart	Agonist	*strengthens action of heart*
		β2	Lung	Agonist	Dilate lung for asthmatic patient

Dou you know why propranolol can be used for hypertensive patient but cause asthma while atenolol will not cause asthma?

Dou you know why propranolol is contraindicated with asthmatic patient?

Drug affecting Muscular system

Skeletal muscle relaxant

Neuromuscular blocking agents

E.g. curare and succinylcholine

Centrally acting skeletal muscle relaxant

E.g. diazepam, chlorozoxazone (parafon®) , orphenadrine , cyclobenzaprine

لمزيد من التوضيح يرجى مشاهدة الفيديو رقم 2

لمزيد من التوضيح يرجى مراجعة الاسئلة التالية:

نموذج 1: 6- 13-45

نموذج 2 : 18-85

نموذج 3 : 36- 39- 43-47-61-67-69-70-71-72-98-99

نموذج 4 : أسئلة من 1:36 ثم 38 – 84-85-86-87

نموذج 6 : 62-65-73-74

نموذج 7 :15- 19- 23- 25- -27- 66- 72- 73- 74- 75- 80

نموذج 8 : 62- 63- 74- 76- 90- 91- 92

نموذج 9 : 8- 18- 24- 27- 28- 30- 33- 43- 53- 56- 80- 94

نموذج 10 : 6-12-17-22- 29- 44- 59- 60- 68- 89- 90

نموذج 11 : 3- 4- 23- 25

Drug affecting respiratory system

Bronchial asthma

Definition: functional airway obstruction due to hyperactivity of airway muscle to Variety of muscle

Drugs:

1- **bronchodilator** :

*beta agonists

a) none selective β agonist (β1 , β2) as : adrenaline , isoprenaline , ephedrine
b) short acting selective β2 agonist: as Salbutamol , terbutaline, albuterol, pirbuterol
c) long acting selective β2 agonist: as salmeterol , formoterol

*xanthenes

a) natural : theophylline , theopromine , caffeine
b) synthetic : aminophylline

This agent block adenosine receptor (adenosine cause bronchoconstriction)

*cholinergic antagonists

e.g. ipratropium , tiotropium

2- anti inflammatory :

1- corticosteroid : e.g. beclomethasone , prednisone , hydrocortisone

Inhibit Ag-Ab reaction, inhibit release of inflammatory mediator

2- mast cell stabilizers : e.g. sodium cromoglycate , ketotifen ,nedocromil
3- antileukotriene : e.g. montelukast , zafirlukast

Cough:

None productive cough	productive cough
Dry , useless	Useful cough
Not associated by sputum	Associated by sputum
Treated by antitussive	Treated by expectorants and mucolytic

1- **antitussive:** substance reduce frequency and/or intensity of coughing

A- Central antitussive

E.g. Codeine (addictive) , dextromethorphan (none addictive)

B- Peripheral antitussive

E.g. Liquorices lozenges, stem of inhalation of menthol

2- **Expectorants**: substance encourages coughing

E.g. Guaifenesin (cause sedation) , guiacol , creosote , potassium iodide

3- **Mucolytic**: substances liquefy bronchial secretion (reduce viscosity)

E.g. Bromhexine , ambroxol , acetyl cystine, carbocisteine

Antihistaminic

H1 blockers:

- first generation antihistaminic : produce sedation تسبب النعاس

  *chlorpheniramine

  *cyclizine

  *diphenydramine (used in motion sickness)

  * dimenhydrinate (used in motion sickness)

  * hydroxyzine

  * meclizine (used in pregnancy)

  * promethazine

- second generation antihistaminic : non sedating –long acting

  تستخدم كل 12 او 24 ساعة(طويلة المفعول) – لا تسبب النعاس

  *cetirizine

  * desloratadine

  * loratadine

لمزيد من التوضيح يرجى مشاهدة الفيديو رقم 3-4

لمزيد من التوضيح يرجى مراجعة الاسئلة التالية :

نموذج 1: 28-53

نموذج 2: 8-21-22-52-53

نموذج 3: 65 -66-83-94

نموذج 6: 64

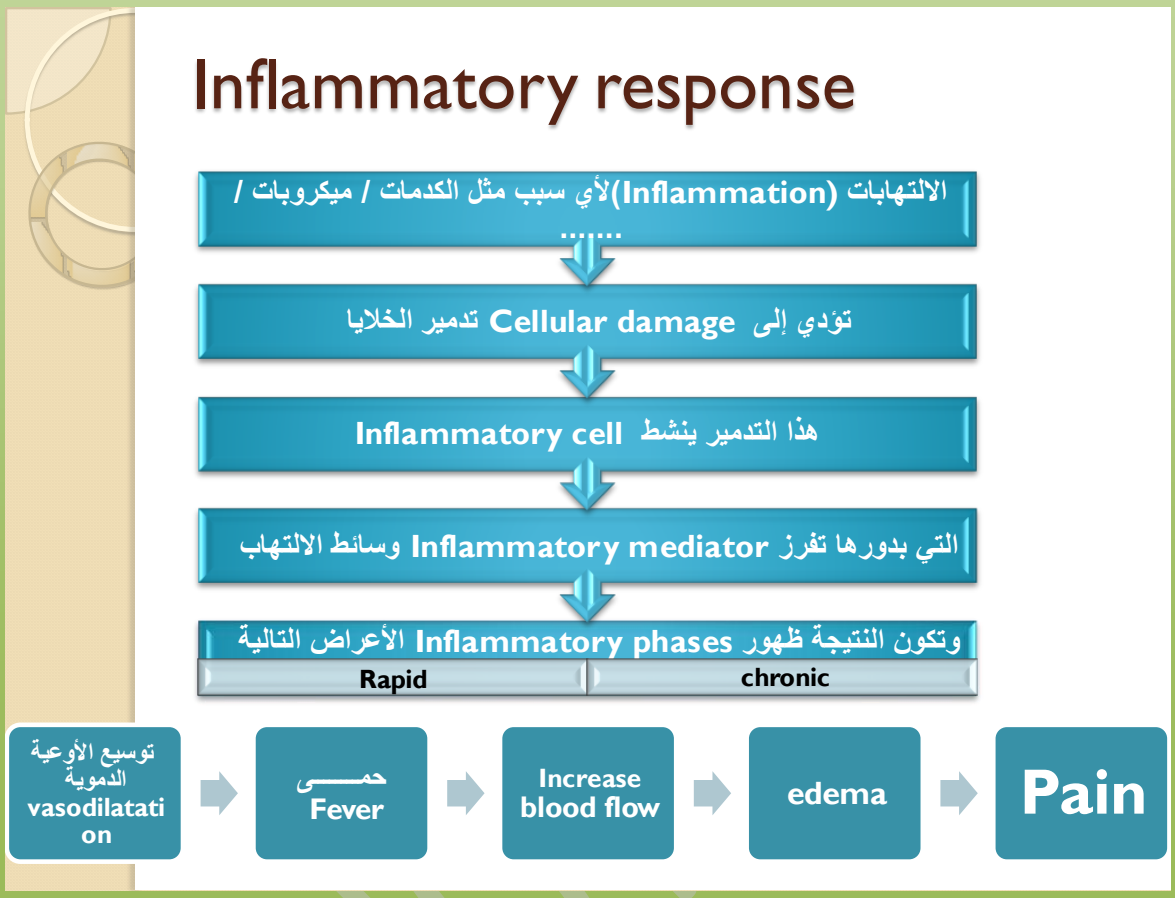
نموذج 7 : 21-22- 93

نموذج 8 : 29-35 -41- 78- 95-96

نموذج 9: 21-22-26- 37 -73

نموذج 10 : 55-85

نموذج 11 : 30- 38



الخلاصة أن أي التهاب (مثلا بسبب بكتيريا أو كدمة أو ميكروب.....) ممكن يؤدي إلى ألم فحمى ...احمرار .....
ولذلك أي مضاد للالتهاب هو في نفس الوقت مسكن للألم وخافض للحرارة

هناك 4 معلومات ضرورية مهم جدا معرفتها عن NSAIDs

1- Pharmacological effect (therapeutics uses) التأثير الدوائي

1. Analgesics, مسكن للألم
2. antipyretic, خافض للحرارة
3. anti-inflammatory مضاد للالتهابات
4. anti platelet مانع لتجمع الصفائح الدموية

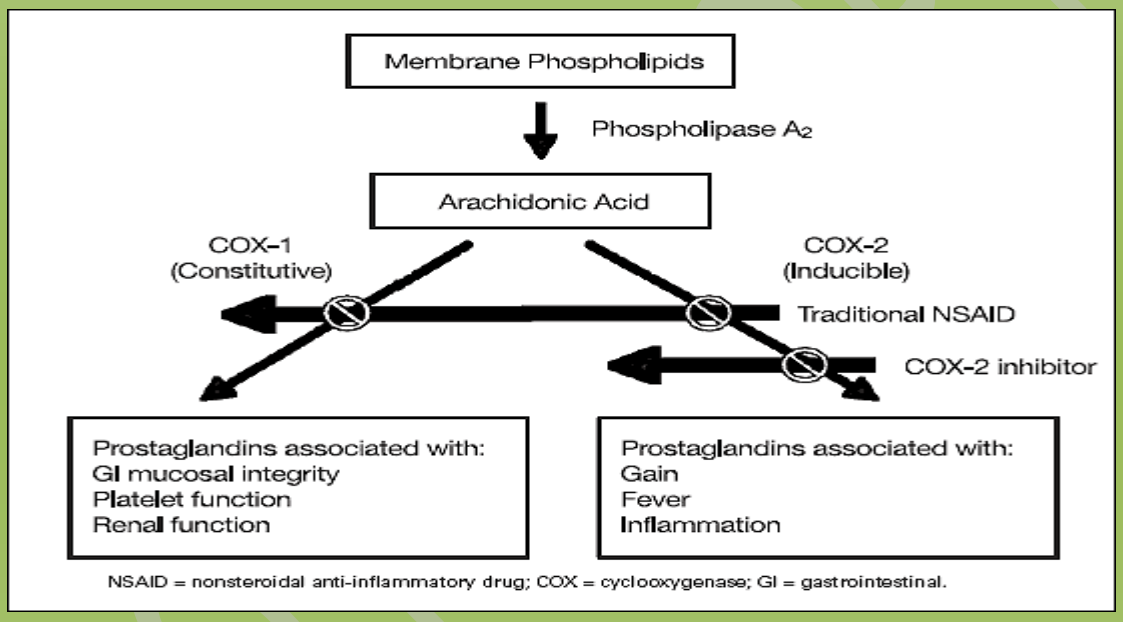
بمعنى أن أي NSAIDs يمكن أن يكون مسكن وخافض للحرارة ومضاد للالتهابات ومانع لتجمع الصفائح الدموية في نفس الوقت ولكن تختلف قوه الدواء في هذه الأربعة بحيث ممكن يكون مسكن قوي جدا ولكنة مضاد للالتهاب ضعيف و.....

2- **Mechanism of action** **آلية العمل**

inhibit cyclo-oxygenase (co-x) enzyme

inhibit both co-x 1 (constitutive form present in normal tissue)

and co-x 2 (inducible form present only at site of inflammation)



- **سبب الآلام التي يشعر بها المريض هو وصول وسائط الالتهاب إلي مكان الإصابة عن طريق COX 1 & COX 2**
- **جميع NSAIDs تعمل على منع هذا (cyclo oxygenase)**
- Cox 1هو طريق دائم ومن خلاله تمر وسائط الالتهاب مما تسبب inflammatory response المذكور سابقا
- Cox 2هو طريق مؤقت يحدث فقط أثناء الالتهاب
- هناك علاقة عكسية بين Cox 1 (وليس Cox 2) مع المعدة بحيث أن جميع مسكنات الألم التي تعمل علىCox 1 تزيد من إفراز حمض المعدة HCL وممكن تؤدي إلى قرحة
- ممكن تمثيل هذا مثل إشارة المرور وطريق الخدمات بحيث أن الطريقان المتقابلان هما stomach & cox 1 والخدمات هو Cox 2 الذي ليس له علاقة بالإشارة

انظر الفيديو رقم 5 & 6 & 7 & 8 & 9 لفهم آلية عمل NSAIDs

3- Adverse effects e.g. aspirin

1. gastrointestinal irritation as ulcer قرحة
2. Hypersensitivity
3. Bleeding
4. Renal impairment
5. Hepatotoxic
6. Reyes syndrome
7. Prolonged labor
8. Salicylism

4- A- Non selective co-x inhibitors

Generic name	Trade name
❖ Indomethacin	Indocid
❖ Diclofenac	Voltaren, rheumafen
❖ Ibuprofen	**Brufen maximum dose 3.2 gm / day ?**
❖ Mefenamic acid	Ponstan
❖ Meloxicam	Mobic
❖ Piroxicam	Feldin
❖ Loronoxicam	Xefo
❖ Paracetamol	Panadol
❖ Acetyl salicylic acid	Aspirin maximum dose 4 gm / day

4- B- Selective cox-2 inhibitors

1. Celecoxib (Celebrex®) (less anti platelet, less irritation)
2. Rofecoxib

Paracetamol هام جدا جدا

It is only	analgesic, antipyretic
The only NSAIDs	***for pregnant***
The only NSAIDs	***for asthmatic patient***
Adverse effects	Hepatotoxic and nephrotoxic
Children dose	10 – 15 mg /kg/6 hour
Maximum adult dose	4 gram per day
Management overdose	N-acetyl cysteine

تأخذ جميع المسكنات بعد الأكل أو بكميات مياه كبيرة

selective cox-2 inhibitor ممنوع تماما استخدامهم مع قرحة المعدة ما عدا

Gout (النقرص) داء الملوك

Definition

Inflammatory arthritis due to deposition of uric acid crystal in the joint

ترسيب بلورات حمض اليوريك في المفاصل مما يسبب بالأم النقرص

Treatment strategy during acute attack العلاج

Reduce inflammatory

- Colichicine (may prevent precipitation of uric acid in joint)
- NSAIDs as indomethacine,
- Intra-articular steroid

treatment strategy In between attack (chronic) الوقاية

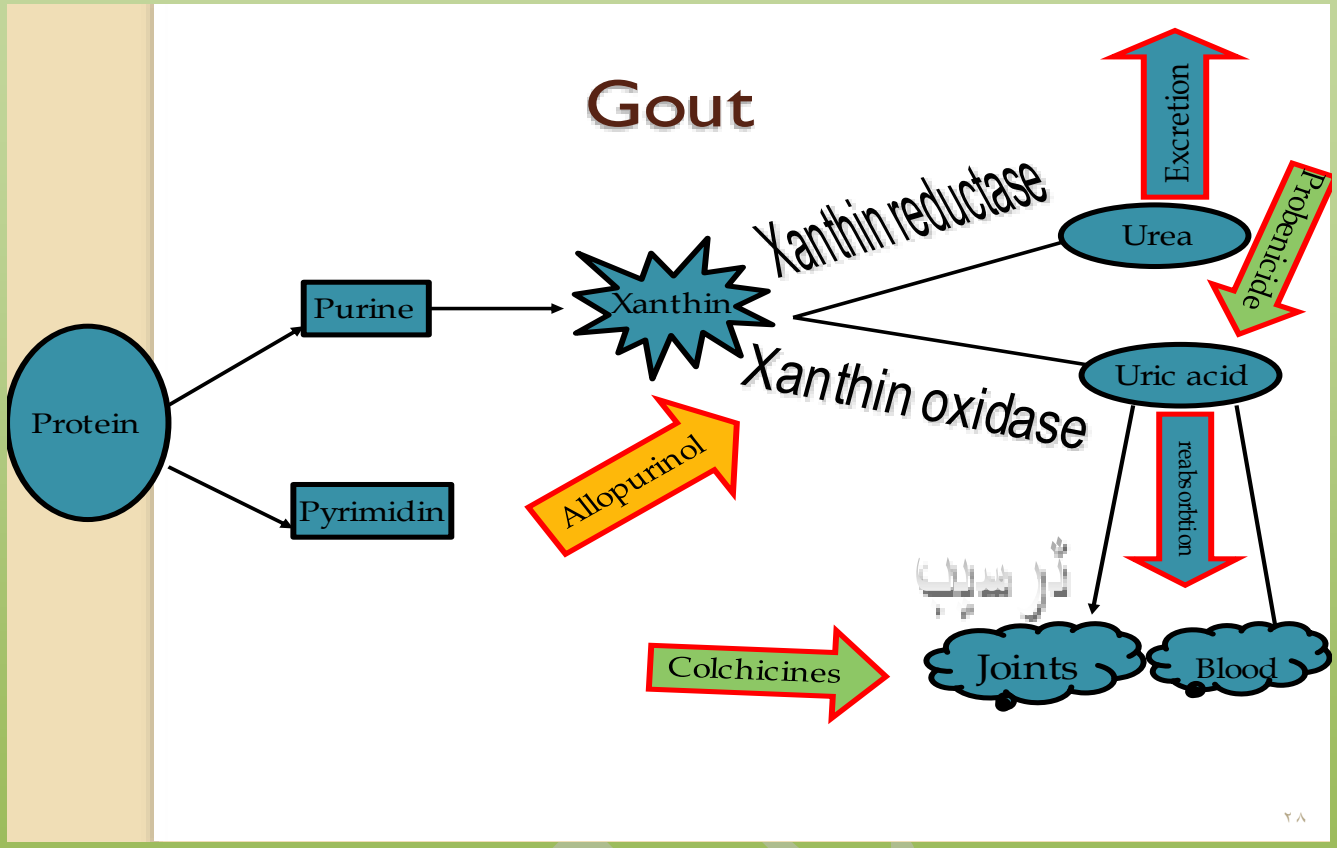
1. allopurinol

   Decrease uric acid synthesis (xanthine oxidase inh.)

2. Probencid

   Increase uric acid excretion (prevent uric acid reabsorption)

N.B. probencid action is antagonized by salicylate



لمزيد من التوضيح يرجى مراجعه video رقم 5-6-7-8-9

مطلوب حل أسئلة المذكرة

نموذج 1 الأسئلة 4 – 5 – 18 – 23 – 28 – 53 – 61 – 65 – 68 – 100

نموذج 2 الأسئلة 1 – 12 – 13 – 45 – 54 – 59 – 62 – 77 – 83

نموذج 3 الأسئلة 15 – 17 – 21 – 34 – 40 – 81 – 82 – 83 – 96

نموذج 6 الأسئلة 1-2-3-4-5-6-10- 33-34-40-49-50-53-57

نموذج 7 الاسئلة : 81- 100

نموذج 8 الاسئلة : 38- 40- 53

نموذج 9 الاسئلة : 7- 15- 29- 39- 50- 60- 99

نموذج 10 الاسئلة : 11- 20- 36- 37

نموذج 11 الاسئلة : 5- 26- 27

Cardiovascular system

High Blood Pressure

Also called: HBP, HTN, Hypertension

Blood pressure is the force of your blood pushing against the walls of your arteries. Each time your heart beats, it pumps out blood into the arteries. Your blood pressure is highest when your heart beats, pumping the blood. This is called systolic pressure. When your heart is at rest, between beats, your blood pressure falls. This is the diastolic pressure.

Your blood pressure reading uses these two numbers, the systolic and diastolic pressures. Usually they are written one above or before the other. A reading of

- 120/80 or lower is normal blood pressure
- 140/90 or higher is high blood pressure
- 120 and 139 for the top number, or between 80 and 89 for the bottom number is prehypertension

- ضغط الدم المرتفع هو حركة سريعة من الدم فيضغط على جدران الأوعية الدموية
- سبب هذه الحركة السريعة هو إما ضيق في الأوعية الدموية أو ضخ الم من القلب أسرع من الطبيعي
- لعلاج ضغط الدم نعمل على 4 أماكن (الكلى, الدم, القلب, المخ)
- يأخذ القلب أوامره من المخ ويوزع الدم بالأوعية لتمر على الجسم كله ثم تذهب للترشيح بالكلى ثم تعود مرة أخرى للقلب
- يفضل الأطباء العمل على الكلى لأنها أقل أعراض جانبية و أقل خطورة من العمل على الأماكن الأخرى

Antihypertensive agent

1. Diuretics
2. Drug affecting the rennin angiotensin system
3. Direct acting vasodilator
4. Centrally acting antihypertensive drugs
5. Adrenergic neuron blocking agent
6. Alpha adrenoreceptor blocking drugs
7. Beta adrenoreceptor blocking drugs
8. Calcium channel blocker

1-**Diuretics**

Classification	Example الدواء	Mechanism	Uses	Adverse effect
Carbonic anhdrase inhibitor	Acetazolamide Dorzolamide	Carbonic anhdrase inhibitor	Glaucoma	hypokalemia
Osmotic diuretic	Mannitol i.v	Osmosis	1-Glaucoma 2-Decrease intra cranial pressure	Edema dehydration
Loop Diuretics	Ethacrynic Acid (Edecrin ®) Furosemide (Lasix®) bumetanide (bumex®)	Inhibit Na & Cl reabsorption	Edematous state (CHF, pulmonary edema,……)	Hyponatermia hypokalemia hypocalcemia ototoxic
Thiazides diuretic	Chlorothiazide (Diuril®) Hydrochlorothiazide (Hydro®) indepamide (natrilix®)	Inhibit Na & Cl reabsorption	Edematous state (CHF, pulmonary edema …)	Hyponatermia hypokalemia hypercalcemia No ototoxic
Potassium Sparing diuretic	Spironolactone (Aldactone®) Triamterene (Dyrenium®) amilorid (midamor®)	1-Aldosterone antagonist 2-non aldosterone antagonist	Potassium depletion CHF hypertension	hyperkalemia, gynecomastia, anti androgenic

ملاحظات هامة جدا :-

1- المجموعة الأولى : Carbonic anhdrase inhibitor تشمل الدواء acetazolamide اسمه التجاري (diamox) ولا يعالج الضغط الشامل ولكن يعالج glaucoma (intra ocular pressure)(I.O.P)(المياه الزرقاء (زيادة ضغط الدم بالعين)

2- المجموعة الثانية : osmotic diuretic تشمل الدواء mannitol أيضا لا يعالج الضغط الشامل glaucoma (intra ocular pressure)(I.O.P) ولكن يعالج المياه الزرقاء (زيادة ضغط الدم بالعين) + يعالج (I.C.P)(intra cranial pressure) (زيادة ضغط الدم بالجمجمة)

ولا يؤخذ إلا عن طريق الوريد IV

3- يستخدم أيضا لعلاج الجلوكوما كلا من (pilocarpine & timolol) drops

4- هناك أيضا اليوريا urea من مدرات البول وتستخدم لعلاج I.C.P فقط

	Diuretic	IOP	ICP
Acetazolamide	Yes	Yes	NO
Mannitol i.v	Yes	Yes	Yes
Urea	Yes	No	Yes

5- المجموعة الثالثة : Loop Diuretics اشهر أدويتها Furosemide اسمه التجاري (lasix) يعالج الضغط المرتفع ولكن يسبب

أ- سمية بالأذن ototoxicity

ب- نقص لكل أنواع المعادن ..... hypo

Hypo natremia , hypo kalemia , hypo calcemia

لاحظ ان Na صوديوم و البوتاسيوم K والكالسيوم Ca

6- المجموعة الرابعة : thiazide Diuretics اشهر أدويتها indepamide اسمه التجاري (natrilix) يعالج الضغط المرتفع والفرق عن المجموعه السابقة

أ- لا يسبب سمية بالأذن no ototoxicity

ب- نقص لكل أنواع المعادن ..... hypo ماعدا الكالسيوم فانه يزيد تركيزه ..... hyper

Hypo natremia , hypo kalemia , hyper calcemia

7- أخطر عرض جانبي هو نقص البوتاسيوم hypo kalemia للقاعدة

لا يوجد انبساط للقلب إلا في وجود البوتاسيوم ولا يوجد انقباض للقلب إلا في وجود الكالسيوم

8- **تم** اختراع مدرات للبول جديدة تحافظ على نسبة البوتاسيوم بالدم وهي

المجموعة الخامسة : Potassium Sparing Diuretics أشهر أدويتها Spironolactone

اسمه التجاري (Aldactone) يعالج الضغط المرتفع ولكن يسبب

- زيادة البوتاسيوم hyper kalemia
- Anti androgenicمضاد للخصوبة

9- مهم جدا معرفة أدوية diuretic بالكامل بأسمائها التجارية من الجدول السابق

2- Drug affecting angiotensin system

drug	Mechanism	indication	Side effects
captopril	ACEInh	HTN, angina , arrhythmia	**Cough** Hypotension Proteinuria Fetal renal damage (C.I.in pregnancy) **hyperkalemia**
lisinopril	ACEInh	HTN, angina , arrhythmia	
enalapril	ACEInh	HTN, angina , arrhythmia	
losartan	(AT-1) blocker	HTN, angina , arrhythmia	As ACEInh without cough

Angiotensin converting enzyme inhibitor (ACEInh)

Angiotensin receptor (AT-1) blocker

- الكلى حساسة جدا لكمية المياه الموجودة بالجسم فمثلا عندما يكون الانسان صائم يقل اخراج البول والعكس صحيح
- تفرز الكلى مادة rennin التي بدورها تقوم بتنشيط Angiotensin I الذي يتحول بدوره الى Angiotensin II
- يعتبر Ag II أقوى مسبب لانقباض الاوعية الدموية بالجسم مما يسبب ارتفاع مفرط بضغط الدم
- لتقليل تكوين Ag II نمنع تحويل Ag I الى Ag II بواسطة ACE inhibitor
- أي دواء ينتهي ب pril..... ينتمي لل ACE inhibitor
- أشهر أدوية ACE inh هو Captopril اسمة التجاري (Capoten)

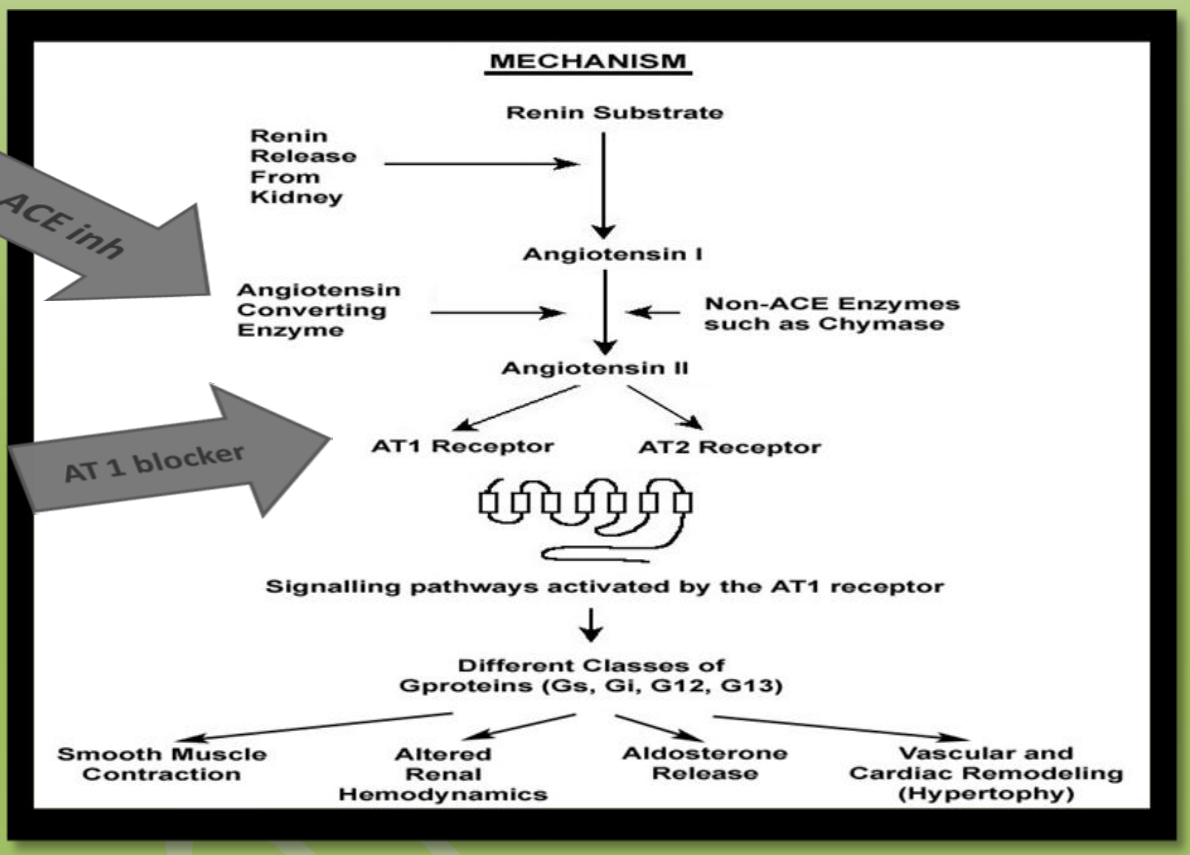
- الجرعه اليومية القصوى

Capoten maximum daily dose 150 mg / day either 3 tablet (50 mg) or 6 tab. (25 mg)

- الأعراض الجانبية تشمل

Hyper kalemia & dry persistent cough

- هناك طريقة أخرى عن طريق منع وصول Ag II الى مستقبلاته (AT-1 blocker) مثل دواء **losartan**



3- direct acting vasodilator

drug	mechanism	indication	Side effects
Hydralazine	arteriolar dilatation	Moderate HTN	tachycardia
Minoxidel	arteriolar dilatation	Moderate HTN	tachycardia
Diazoxide	arteriolar dilatation	HTN emergency	tachycardia
Nitroprusside	Veno-arteriolar dilatation	HTN emergency	tachycardia

أحيانا يكون هناك حالات طوارئ من ارتفاع مفرط من ضغط الدم وفي هذه الحالة نلجأ هذه المجموعة وأشهرهم

nitroprusside &Hydralazine

4- Centrally acting

drug	mechanism	indication	Side effects
Methyl dopa	**α2 agonist**	Moderate HTN	Sedation, dizziness
Clonidine	**α2 agonist**	Moderate HTN	Sedation, rebound hypertension

Methyl dopa **(aldomet®)** ***D.O.C*** drug of choice in ***pregnancy,***

الدواء الوحيد المسموح للحوامل

5- Adrenergic neuron blocker

drug	mechanism	indication	Side effects
reserpine	Inhibit NE release	HTN	Sedation, depression
guanithidine	Inhibit NE release	HTN	Orthostatic hypotension

6- Alpha adrenoreceptor blocking drugs

drug	mechanism	indication	Side effects
prazocin	Alpha (α1) blocker	HTN	Orthostatic hypotension
terazocin	Alpha (α1) blocker	HTN	Orthostatic hypotension
doxazocin	Alpha (α1) blocker	HTN	Orthostatic hypotension

Alpha (α1) blocker .....azoocin **أي دواء ينتهي بمقطع**

Alpha (α1) blocker used also in benign prostate hyperplasia (BPH)

7- Beta (β) blocker

drug	mechanism	indication	Side effects
propranolol	Non selective β blocker	HTN, angina , arrhythmia	**Asthma**, CHF, bradycardia
pindalol	Non selective β blocker	HTN, angina , arrhythmia	**Asthma**, CHF, Bradycardia
atenolol	beta (β 1) blocker	HTN, angina , arrhythmia	CHF, bradycardia
esmolol	beta (β 1) blocker	HTN, angina , arrhythmia	CHF, bradycardia

Used I.V for hypertensive emergencies

Note propranolol is contraindicated with asthmatic patient

أي دواء ينتهي ب olol…… يكون B- blocker

أي دواء ينتهي ب olol…… ويبدأ بأحد حروف N , P , T يكون non selective B blocker

Example timolol , propranolol , pindalol , nadalol

أي دواء من non selective B blocker يعالج الضغط ولكن يسبب أزمة صدرية

Treat hypertension but cause asthma

أي دواء ينتهي ب olol…… ولا يبدأ بأحد حروف N , P , T يكون selective B1 blocker

Example atenolol , acebutalol , esmolol

أي دواء من selective B blocker يعالج الضغط لا يسبب أزمة صدرية

Treat hypertension without causing asthma

ملحوظة : labetalol & carvidalol are α and β1 blocker

8- Calcium channel blocker

Calcium channel blocker (CCBs) Block calcium block contractility of heart and induce vasodilatation of blood vessel

Drug	mechanism	Indication	Side effects
Verapamil	(CCBs)	HTN, angina , arrhythmia	Constipation , nausea, **heart block**
diltiazem	(CCBs)	HTN, angina , arrhythmia	Constipation , nausea, **heart block**
Amlodipine	(CCBs)	HTN, angina , arrhythmia	Constipation , nausea,
nifedipine	(CCBs)	HTN, angina , arrhythmia	Constipation , nausea, **flushing, tachycardia**

- Verapamil , diltiazem block Ca on heart خاص بقنوات الكالسيوم في القلب

- Amlodipine , nifedipine block Ca on Blood vessel خاص بقنوات الكالسيوم في الأوعية الدموية

Trade name of nifidepine is (adalat®)

Congestive heart failure (C.H.F)

Definition

Condition in which cardiac output is less than body need

فشل القلب في القيام بوظيفته نتيجة احتقان (امتلاء)

Treatment

الإستراتيجية العلاجية أولا زيادة نشاط القلب (تقوية عضلة القلب وزيادة الانقباض)

I- Positive inotropic effects (increase contraction of cardiac muscle by)

1-Cardiac glycoside

Digoxine	Digitoxine
1. Less oral absorption	1. High Oral absorption
2. Shorter duration	2. Longer duration
3. **Renal** elimination	3. **Hepatic** elimination
4. Oral , i.v administration	4. Oral administration

2-B1 agonist (dobutamine)

إذا لم نتمكن من الإستراتيجية الأولى نلجأ إلى تقليل التحميل (load) على القلب

II- Vasodilators (see hypertension)

III- Diuretics (see hypertension)

Arrhythmia

Definition

Abnormal heart beat due to disorder of impulse formation, conduction or combination

عدم انتظام ضربات القلب

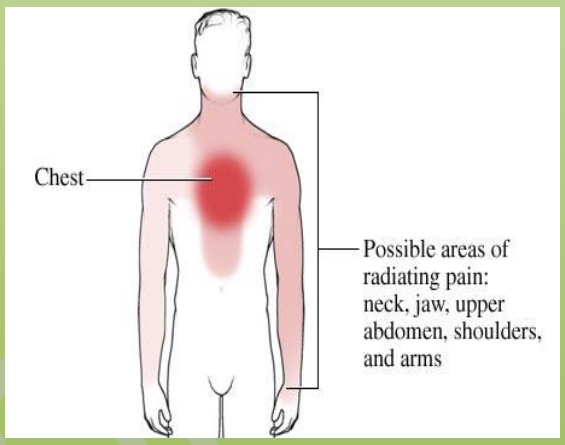
Classification	mechanism	drug	Action Potential
Class I A	Na+ channel blocker	Quinidine, procainamide, disopyramide	Increase
Class I B	Na+ channel blocker	Lidocaine i.v phenytoin	Decrease
Class I C	Na+ channel blocker	Flecainide ecanide	No effect
Class II	B blocker	Propranolol atenolol	Decrease
Class III	K + channel blocker	Amiodarone bretylium	Increase
Class IV	Ca+ channel blocker	Verapamil deltiazem	
Un classified		Adenosine digoxin atropine adrenalie	

Angina

Definition

Acute chest pain (squeezing) occur when coronary blood flow is inadequate

To supply the oxygen required by the heart



Treatment During acute attack

1- short acting nitrate

Nitroglycerin sublingual , or i.v. Infusion

isosorbid dinitrate sublingual

Treatment In between attack

1- Long acting nitrate

Isosorbid mono or dinitrate oral

2- Beta blocker

3- Calcium channel blocker

4-Anti platelet

Hyperlipidemia

Coronary heart disease is one of the major causes of the death

The incidence of CHF is correlated with elevated levels of LDL, cholesterol triglyceride with low level of HDL.

Other risk factors include 1- cigarette smoking 2- hypertension 3- obesity 4- diabetes.

Target of anti hyperlipidemic agent is LDL (border line of LDL is 130 – 160 mg/dl)

Patient with serum level 160mg/dl with one or more risk factor should start drug therapy

Patient with serum level 130mg/dl with two or more risk factor should start drug therapy

Definition

Condition of high level of cholesterol, triglyceride, and/or lipoprotein in blood

Anti hyperlipidemic agent aim of therapy:

- ⊡ It is decrease LDL (bad cholesterol)
  - *low density lipoprotein*
- ⊡ It is increase HDL (good cholesterol)
  - *high density lipoprotein*
- ⊡ Decrease triglyceride

Class	LDL	HDL	Triglyceride	Drug	S.E
Resins	↓↓	No effect	Slight ↑	Cholestyramine	Gastrointestinal irritation
HMG CoA reductase inhibitor	↓↓↓	↑	↓	**Simvastatin** **Atorvastatin** **Pravastatin**	
Nicotinic acid derivative	↓↓	↑↑	↓		
Fibrates	↓	↑	↓↓↓	**Gemifibrozil**	

لاحظ انتهاء جميع أدوية HMG بمقطع Statin……

لمزيد من التوضيح يرجى مراجعه video رقم 10-11-12-13-14-15-16

مطلوب حل أسئلة المذكرة

نموذج 1 الأسئلة 1- 8 -17 – 21 – 30 – 31 –32-51- 54 – 55 –74– 76 – 77 – 80 – 81 – 82 – 83 – 88

91 - 90 –

نموذج 2 الأسئلة 3 – 4 – 31 – 40 – 41 – 64 – 67 – 68 –69-74 -75 – 86 – 92

نموذج 3 الأسئلة 2-18 – 33 – 38 – 48 – 49 – 50 – 68 – 73 – 74 –75-76 -80-81

نموذج 7 الاسئلة : 3- 5- 6- 8 -14 -41 -43 -44 -45 -46 -47 -50 -55 61

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نموذج 10 الاسئلة : 7- 8- 14- 26- 35- 38- 39- 40- 42- 47- 53- 69- 74- 78- 83- 94

نموذج 11 الاسئلة : 6

Drug acting on the blood and blood forming

Anemia

iron deficiency anemia

- Iron is required for haemoglobin production
- Iron deficiency lead to hypochromic microcytic anaemia
- Main dietary source is meat & liver
- A etiology

Decrease intake (e.g. starvation) سوء تغذية

Decrease absorption سوء هضم

E.g. Gastrectomy, excess tannic acid {tea}

Increase requirement (e.g. Pregnancy & lactation) زيادة الطلب

Increase loss (e.g. bleeding) زيادة الفقد

❖ **Iron therapy**

- Oral iron

Ferrous form not ferric??????

Blackening of teeth and stool

Abdominal discomfort

Duration of therapy (3 – 6) month.

- Patenteral

Iron dextran and iron sorbitol

P

ain brownish discoloration at site of injection

- Antidote

desferoxamine

2- megaloblastic anemia

- Vitamin B12 ,folic acid is essential for DNA synthesis
- deficiency of both lead to megaloblastic anemia
- Deficiency of Vitamin B12 alone due to lack of gastric intrinsic factor lead to type of megaloblastic anemia called pernicious anemia
- pernicious anemia cause neurological damage if not treated
- Main dietary source of Vitamin B12 is animal product
- Main dietary source of folic acid is vegetables
- A etiology

Decrease intake (e.g. starvation)	سوء تغذية
Decrease absorption (e.g. Gastrectomy)	سوء هضم
Increase requirement (e.g. Pregnancy & lactation)	زيادة الطلب
Decrease utilization	قلة الاستخدام

(E.g. Lack of transcoplamine (vit B 12) , Use of drugs as methotrexate , trimethoprime)

Therapy

- Vitamin B12 (Parenteral)

  cyanocoblamine , hydroxycoblamine
- folic acid

  Folic acid (oral) folinic acid (Parenteral)
- V.I.P

Treat pernicious anemia with folic acid alone improve symptoms however neurological damage will occur

I-anti coagulant drug

الأدوية المضادة لتجلط الدم

إن تخثر الدم أو تجلط الدم من الأمراض التي يجب الحذر منها تماما في علاجها

لو حدث عند المريض جلطة ولم يتم السيطرة عليها يحدث انسداد لمجرى الدم مما يؤدي إلى خطورة على الحياة

لو أخذ المريض جرعة زائدة من العلاج قد يؤدي إلى نزيف داخلي

- Drugs which inhibit development, enlargement of clot
- أدوية تمنع نمو الجلطة (زيادة الحجم والعدد)
- Do not lyses clot
- لا تذيب الجلطة
- Types
    1. Parenteral anti coagulant عن طريق الحقن
    2. Oral anti coagulant عن طريق الفم

هذا الجدول هام جدا

Drug	Heparin (enoxparin deltparin)	warfarin
Route	I.V and S.C	Tablet
Action	Blood Rapid Acute	Liver slow chronic
Site	vivo and vitro	vivo only
Antidote	Protamine sulfat	I.V vitamin K + fresh frozen plasma
Pregnancy	Used	Not used

يعتبر الوارفارين من أخطر الأدوية التي يتعامل معه الإنسان ولايجوز مطلقا خروج هذا الدواءOTC

II-Fibrinolytic drugs

- ---Lytic mean lyses (dissolve) الأدوية التي تذيب الجلطة
- Drugs which dissolve thrombus by formation of Fibrinolytic plasmin from plasminogen
- Type
    1. non selective Fibrinolytic
    2. selective Fibrinolytic

	non selective Fibrinolytic	selective Fibrinolytic
Site	Act on both bound , free plasminogen	Act on bound plasminogen only
Members	urokinase streptokinase	alteplase reteplase tenecteplase
antidote of bleeding	aminocaproic acid tranxamic acid	aminocaproic acid tranxamic acid

III- antiplatelet

- Drugs which inhibit platelet aggregation, so inhibit clot formation
- Used as prophylaxis against thrombus
- Members
    1. aspirin
    2. Ticlopidine ,
    3. clopidogrel
    4. Abciximab
    5. Dipyridamole

لمزيد من التوضيح يرجى مشاهدة الفيديو رقم 17-18

مطلوب حل أسئلة المذكرة

نموذج 1 الأسئلة 18 –47-48- 71

نموذج 2 الأسئلة 38 – 71

نموذج 3 الأسئلة 77 - 78 – 79

نموذج 4 الأسئلة 37 – 49 –51-52-53-54- 55 – 56 – 57 -58-90

نموذج 7 الاسئلة 7- 35- 38- 39- 40- 79- 94- 99- 101

نموذج 8 الاسئلة 3

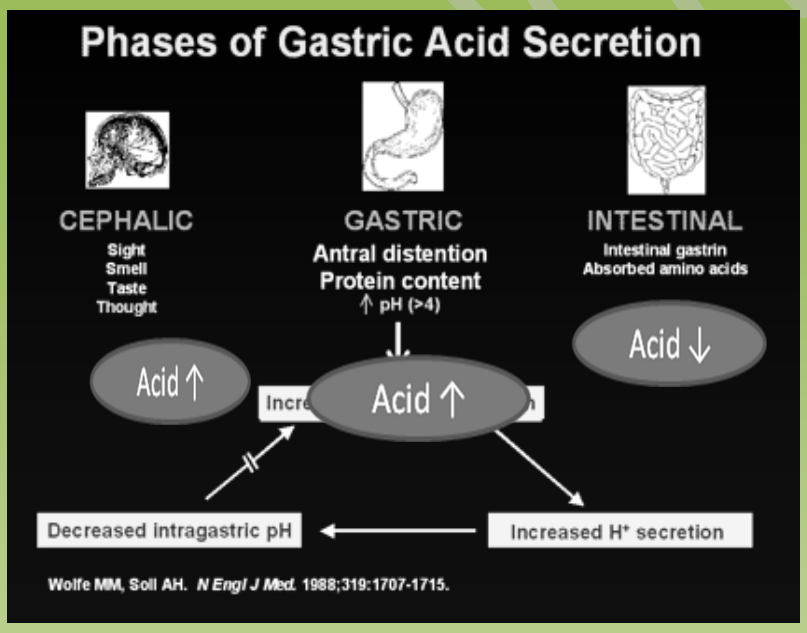
نموذج 9 الاسئلة 4- 10- 82- 95- 96- 98

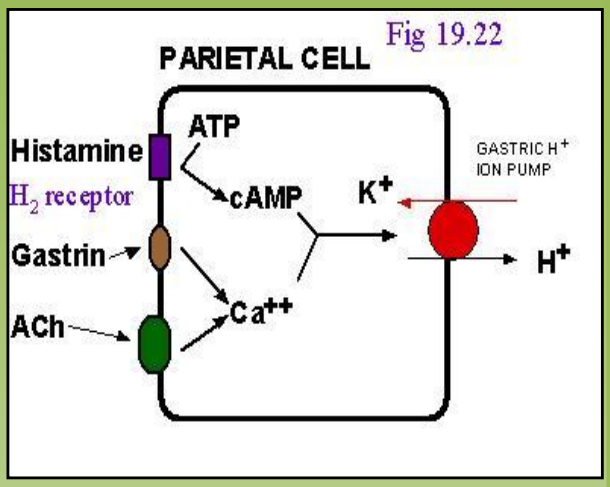
نموذج 10الاسئلة 3- 4- 9- 10- 33- 71

نموذج 11 الاسئلة 2- 8- 47- 50

لمزيد من التوضيح يرجى مراجعة video , PowerPoint , photo

Drugs used in treatment of gastric ulcer





1. **H2- receptor antagonist**
   - e.g. cimitidine, ranitidine, nizatidine, famotidine
   - Action H2- receptor antagonist

❖ Adverse effects

A. Cimitidine

antiandrogenic effect

Decrease activity of hepatic enzyme (enzyme inhibitor)

B. ranitidine, nizatidine, famotidine

More effective

No antiandrogenic effect

No interfere with activity of hepatic enzyme

2. Proton pump(H/K ATPase) inhibitor

❖ E.g. omeprazole, lansoprazole, pantoprazole, rabeprazole

❖ action Proton pump(H/K ATPase) inhibitor

Totally block parietal cell (more effective than H2 antagonist)

❖ Adverse effects

G.I.T disturbance

Decrease absorption of vitamin B12, mineral

Enteric infection due to decrease acidity

– Omeprazole decrease activity of hepatic enzyme

3. Antacids

- action neutralize gastric acidity

Type	Absorbable	Non Absorbable
Example	NaHCO3	1. Ca salt 2. AL salt 3. Mg salt
Side effect	alkalosis	Ca salt **cause** Constipation AL salt **cause** Constipation Mg salt **cause** Diarrhea **All can cause hypokalemia**

4. **Drugs that protect mucosa**

- ❑ Sucralfate (aluminum sucrose sulfate)
  1. Action creating a protective layer against acid
  2. S.E. Constipation
- ❑ prostaglandin analogue (misoprostol) (cytotec®)
  1. Action gastric mucous barrier
  2. S.E. diarrhea

***Contraindicated in pregnancy (cause abortion)**

Drugs to eradicate *helicobacter pylori* bacteria

microorganism that can cause chronic gastritis and peptic ulcer disease

- New triple therapy
  - Proton pump inhibitor (B.I.D for 14 days) then Continue for 4-6 week
  - Clarithromycin (500 mg) (B.I.D for 14 days)
  - Amoxicillin (1g) (B.I.D for 14 days)
  - If patient sensitive to amoxicillin replaced by Metronidazole (500 mg) B.I.D

Vomiting

- **Emetics**
  1. Agent induce reflex vomiting
  2. Emesis Used if recently ingested toxic substance, drug over dose
  3. Contraindication with C.N.S depression, caustic substance, unconsciousness
  4. E.g. Ipecac directly acting on CTZ
     Indirectly acting gastric mucosa
     cardiotoxic if reach systemic circulation
     E.g. apomorphine directly acting on CTZ
     Respiratory depression which is treated
     By **naloxone**

- **Anti emetic drug**

1. H1 antagonist

E.g. diphenhydramine , dimenhydrinate , meclizine

Uses motion sickness and vertigo

Adverse effect atropine like effect

2. anticholinergic

E.g. Hyoscine

Action block M receptors

Uses motion sickness and vertigo

Adverse effect atropine like effect

3. Serotonin (5HT3) antagonist

E.g. ondasetron , granisetron , dolasetron

Action block 5HT3 receptors

Uses chemically induced vomiting

Adverse effect atropine like effect

4. Dopamine (D2)antagonist

E.g. metoclopramide , domperidone

Action block D2, 5HT3 receptors

Uses chemically induced vomiting

Vomiting of pregnancy

Adverse effect hyperprolactinemia

5. Vitamin B6

Action regulate of GABA/glutamate balance

Uses (D.O.C) vomiting of pregnancy

Adverse effect dry mouth, sedation

Purgative

Drug that used to evacuate bowel if its mild purgative called (laxative)

If its severe purgative called (cathartics)

- 1- Bulk forming purgative

  E.g. bran, psyllium, methyl cellulose

- 2- osmotic purgative

  E.g. lactulose, MgSo4, Na/K tartarate

- 3- Stimulant purgative

  E.g. castor oil, biscacodyl, aloe, senna

- 4- Lubricant purgative

  E.g. mineral oil (liquid paraffin)

Anti diarrheal drug

- Drug used to control diarrhea
- Should not be used in
  1. Bloody diarrhea
  2. High fever
  3. Systemic toxicity

❑ Opioid agonists :

Natural : morphine

Synthetic: loperamide , diphenoxylate

C.N.S side effects

❑ Adsorbents

Kaolin, pectin

Safe

- ❑ Colloidal bismuth salt
- ❑ Bile salt binding resin

  cholestyramine or colestipol
- ❑ Astringents : Tannic acid
- ❑ Antibacterial : cotrimoxazole

  When the bacterial is the cause of diarrhea
- ❑ Oral rehydration solution

  Oral administration of **glucose containing salt**

Antispasmodics

- Drug used for the relief of the painful biliary, ureteral or colonic spasm
  1. Anti cholinergic as atropine , hyoscine
  2. Smooth muscle relaxants as papaverine , mebeverine

Drug affecting biliary system

1. Antispasmodics seen before
2. Drug dissolve gallstone
   i. bile acid as chenodeoxycholic acid (CDCA),
   ii. ursodeoxycholic acid (UDCA)
3. Cholinokinetics (cholagogues)

   Stimulate gall bladder empty

   Used for diagnostic purposes

   As egg yolk, MgSO4, cholecystokinin

لمزيد من التوضيح يرجى مشاهدة الفيديو رقم 19-20- 21

لمزيد من التوضيح يرجى حل اسئلة المذكرة :

نموذج 1 الأسئلة: 12-14

نموذج 2 الأسئلة: 14-15-20-23-55-56-57-58-61

نموذج 3 الأسئلة: 45-95-97

نموذج 4 الأسئلة : من 38 الى 45 ثم 47-48- 50ثم من 59 الى 70

نموذج 5 الأسئلة : من 18 الى 34

نموذج 7 الاسئلة : 78- 83- 97

نموذج 8 الاسئلة : 11- 15- 17- 28- 33- 42- 54- 79

نموذج 9 الاسئلة : 17- 74- 86

نموذج 10 الاسئلة : 19- 46- 75- 79- 88

نموذج 11 الاسئلة : 1- 21- 29

Hormone and antagonists

- **Thyroid hormones**
  - T3 (tri iodo thyronine)

    Responsible for Optimal growth
  - T4 (tetra iodo thyronine) (thyroxin)

    Responsible for Optimal growth
  - Calcitonin

    Responsible for Regulation calcium metabolism
- **Agents used in hypothyroidism (myxedema)**
  1. Levothyroxine (T4)
  2. Liothyronine (T3)
  3. Liotrix (4:1) mixture of T4:T3
- **Agents Used in treatment of hyperthyroidism**
  1. Carbimazole propylthiouracil methimazole
  2. Potassium percholate thiocyanate
  3. Potassium iodid lugols iodine(I2,KI)
  4. Radioactive iodine

Adrenocorticosteroids

- They steroid hormone secreted by adrenal cortex
- Naturally occuring
  - ❖ Glucocorticoids : e.g. cortisone , cortisol (hydrocortisone)

    Its function as anti inflammatory
  - ❖ Mineralocorticoid : e.g. aldosterone desoxycorticosterone(DOCA)

    Its function as salt retaining
- Synthetic

  betamethasone, dexamethasone

  Derivative from Glucocorticoids with no mineralocorticoid activity

  fludrocortisone , desoxycorticodterone(DOCA)

  Derivative from mineralocorticoid
- Adrenal cortex also secrete sex hormones in small amount as androgen, progesterone
- **Clinical uses of steroids**
  - ❖ Replacement therapy

    In Addison's disease (primary adrenal insufficiency)
  - ❖ Supplementary therapy

    Anti inflammatory, anti shock, anti stress
  - ❖ Suppression therapy

    Suppress rejection in tissue transplantation

- **<u>Adverse effect of glucocorticoids</u>**
  1. Sodium , water retention
  2. Hypertension
  3. Cataract
  4. Glaucoma
  5. Cushing syndrome (moon face , buffalo hump …)

6. Hyperglycemia
7. Peptic ulcer
8. Osteoporosis

Cushing syndrome is excess secretion of glucocorticoids

Gonadal hormones

Estrogen

Natural

- **Estra**diol **estr**one **estr**iol لاحظ بداية الدواء الطبيعي

Synthetic

- Ethinyl **estr**adiol m**estr**anol diethylstilb**estr**ol

Function

- Endometrial proliferation
- Genitalia development development of breast , fat deposition

Clinical use

- Female hypogonadism , hormonal replacement in menopause, contraception, uterine bleeding , prostate carcinoma

Adverse effect

- Risk of thrombosis , increase risk of endometrial & breast carcinoma

Antagonist

- Clomiphene (fertility drug)

  Used in induction of ovulation

  Side effect is multiple births

- Selective estrogen receptor modulator (SERM)

  E.g. tamoxifen , raloxifene

  These compounds have selective tissue estrogenic activity

- Selective estrogen receptor modulator (SERM)

Drug	bone	breast	endometrial	Uses	Adverse effect
estrogen	agonist	agonist	agonist		**Risk of thrombosis**
tamoxifen	agonist	**antagonist**	Partial agonist	**Breast cancer**	**Risk of thrombosis**
Raloxifene	agonist	**antagonist**		**osteoporosis**	**Risk of thrombosis**

Progestin

Natural

- Pro**gest**erone

Synthetic

- MedroxyPro**gest**erone nor**gest**rel

Function

- Maintain of pregnancy stimulate endometrial glandular secretion

Clinical use

- **Contraception , hormone replacement therapy**

Adverse effect

- Decrease HDL increase LDL

Antagonist

- Mifepristone

Used for termination of early pregnancy (abortification)

Adverse effect abdominal pain, uterine bleeding

الاستروجين مسئول عن تهيئة المكان المناسب لاستقبال الجنين بينما البروجستين مسئول عن تهيئة الظروف المناسبة لنموه

Hormonal contraception

- **Oral**
  1. Combination method (estrogen + progestin)
     - taken 21 day then 7 day free period
  2. Minipill progestin only
     - daily without interruption
  3. Post coital (emergency)
     - estrogen alone in high dose within 72 hr of intercourse followed after 12 hr by second dose
     - Mifepristone + misoprostol taken once
- **Parenteral** (depot contraception)

  MedroxyProgesterone I.M every 3 mounth
- **Implanted**

  norgestrel S.C implantation (last for 5 year)

Drugs used in diabetes mellitus (DM)

- **Primary DM** (type 1 , 2 , and MODY type)
- **Secondary DM** (secondary to other cause as chronic pancreatitis)
- **Gestational DM** (pregnancy diabetes)
- **Impaired glucose tolerance** (glucose between normal and diabetic)

Primary DM	Type 1	Type 2	MODY Type
Cause	insulin deficiency نقص الأنسولين	Insulin resistance مقاومة المستقبلات للأنسولين	Intermediate between1&2
Patient age	Young صغار السن	Older كبارالسن	Young
Patient description	Non obese نحيف	Obese سمين	Obese
Treatment	Insulin injection حقن الأنسولين	Oral Antidiabetic ± insulin	Oral Antidiabetic

1-insulin has no oral absorption so Route of administration of insulin

- Usually Subcutaneous (S.C)
- Less often intramuscular injection (I.M)
- Emergency intravenous injection (I.V)

Origin of insulin

- Animal insulin beef AND pork (I.M , S.C) يسمى الأنسولين المعكر وهذا الذي يؤخذ
- Human insulin (humulin) (clear , colorless , watery) ويتميز بأنه

Adverse effects of insulin

- Hypoglycemia , hypoglycemic coma (main side effect) نقص السكر وهو الأخطر
- Weight gain
- Insulin resistance
- Allergic reaction

2-Sulphonyl urea

- Mechanism: insulin secretagogue (stimulate endogenous secretion) تعمل على زيادة الإفراز

  Insulin sensitizer (increase sensitivity of insulin receptor)

  تعمل على زيادة حساسية المستقبلات

- Classification

  1- First generation

  - Tolbutamide tolzalamide acetohexamide chloropropamide(long act)

  2- Second generation

  - Glipizide Gliclazide Glimepride Glyburide

3-Biguanides

- Drug Metformin
- Mechanism Unknown but suggestion
  - Stimulate glycolysis
  - Reduce gluconeogenesis
  - slow glucose absorption

- adverse effect lactic acidosis ,GIT disturbance

لا يعطى الأنسولين عن طريق الفم ولكن S.C وهذا هو الطريق الأشهر

و I.M بعد S.C

و I.V في حالات الطوارئ

الأنسولين الوحيد الذي يعطى I.V هو الأنسولين البشري ويتم تصنيعه

by recombinant RNA technology in E.coli

Human insulin = humulin = regular type

يحفظ الأنسولين في الثلاجة في الرف السفلي في درجة حرارة من 2 – 8 درجة مئوية

Insulin is preserved in lower shelf of refrigerator in 2-8°C

Mixtard insulin had duration of action 12 – 24 hour so can be taken once daily

Drug generic name	Trade name
Glibenclamide	Doanil
Gliclazide	Diamicron
Glimepride	Minidiab
Metformin	Glucophage

مطلوب حل أسئلة المذكرة

نموذج 1 الأسئلة 26-49 – 50 – 52-62

نموذج 2 الأسئلة 6 – 7 –25-26-27-28- 29 – 30 – 60 – 78 – 84 – 90 – 95 – 97

نموذج 3 الأسئلة 4 – 28 – 29 – 30 – 42 – 62 – 63 – 64

نموذج 7 الاسئلة 9- 12- 26- 36

نموذج 8 الاسئلة 14- 44- 51- 77- 81- 82- 83- 84- 85

نموذج 9 الاسئلة 11- 13- 14- 31- 52- 75- 87

نموذج 10 الاسئلة 15- 27- 30 -32- 43- 67- 82

نموذج 11 الاسئلة 16- 46

Introduction to Parasitology

- Medical parasitology traditionally has included the study of three major groups of animals: parasitic protozoa, parasitic helminthes (worms), and those arthropods that directly cause disease or act as vectors of various pathogens
- A parasite is a pathogen that simultaneously injures and derives sustenance from its host
- The unicellular parasites is (protozoa)

  multicellular parasites are (helminthes, arthropods)
- During their life, parasitic organisms typically go through several developmental stages that involve changes not only in structure but also in biochemical and antigenic composition

Protozoa

- **Malaria** **(D.O.C) is chloroquine**
  - ❖ There are more than 100 species of malaria (*plasmodium*). Only 4 capable of infecting human.
  - ❖ Disease is transmitted to human by bits of infected female anopheles mosquito
  - ❖ Parasites multiplicate in liver then migrate to blood.
  - ❖ Patient suffers from recurrent severe fever every 3 or 4 days.
  - ❖ Drugs used (chloroquine , quinine , primaquine , mefloquine , fansidar)
- **Amoeba** **(D.O.C)is metronidazole**
  - ❖ Protozoan *Entamoeba histolytica*
  - ❖ Parasites lives in tissue (lung , liver intestinal wall) or intestinal lumen
  - ❖ Patients have acute or chronic diarrhea, which may progress to dysentery.

- **Trichomonas** **(D.O.C) is metronidazole**
  - ✓ sexually transmitted diseases
  - ✓ Symptomatic infection is common in women, rare in men
  - ✓ characterized by vaginitis, a vaginal discharge, and dysuria
  - ✓ Relapses occur if the infected partner not treated simultaneously

- **Giardia** **(D.O.C) is metronidazole**
  - ❖ Traveler's diarrhea
  - ❖ *Giardia* infection may be asymptomatic or it may cause disease

    6Ranging from a self-limiting diarrhea to a severe chronic syndrome

- **Trypanosome** **(D.O.C) is nifurtimox for American Trypanosomiasis**
  - American Trypanosomiasis (Chagas Disease)
  - *Trypanosoma cruzi*
  - Early symptoms include fever, local or general edema, lymphadenopathy, tachycardia,
  - heart enlargement, and myocarditis
  - Heart alterations appear as late sequelae

Suramin , pentamidine ,eflornithine, Melarsoprol for African type

  - African Trypanosomiasis (Sleeping Sickness)
  - *Trypanosoma brucei* sub spp *rhodesiense* and *gambiense*
  - Early symptoms are an inoculation chancre, fever, headache and lymphadenopathy
  - meningoencephalitis, become somnolent, and die unless treated

Anti helmintics drugs

- Helminthes are transmitted to humans in many different ways (accidental ingestion of infective eggs, larvae, penetrate the skin)
- In several cases, infection requires an intermediate host vector
- intermediate vector transmits infective stages when it bites or eaten by the host
- The levels of infection in humans therefore depend on standards of hygiene

Type of helminthes:-

- **Nematodes** are cylindrical; hence the common name **roundworm**.
- Adult **cestoda** are flattened; hence the common name **tapeworms**.
- **Flukes** are also named (**Trematodes**)

Drug of choice for intestinal nematode mebendazole

1- ascaris 2- ancylstoma 3- trichuris 4- entrobius 5- strongloides

Drug of choice for tissue nematode is thiabendazole except *filaria*

1- filaria worms 2- drancunculus* (medina worm) *3- larva migrains

cutaneous larva migrains

Visceral larva migrains

only and Drug of choice for filarial is *Diethyl carbamazine*

Drug of choice for Flukes (Trematodes) is praziquantel except *Fasciola*

Blood flukes infection (schistosomiasis)

(schistosomiasis)*a- Schistosoma hemotobium*

b- Schistosoma mansoni

c- Schistosoma jabonicum

Intestinal fluke infection

a- Hyterophyes

Liver flukes infection

a- Fasciola hepatica

Drug of choice for *Fasciola* is bithionol then dehydroemetin

N.B

All Anthilmentics **mechanism is paralysis for helminthes**

All Anthilmentics **side effects is mild G.I.T side effect**

يرجى مراجعة الاسئلة الاتية

نموذج 1 الأسئلة : 64-7- 95

نموذج 2 الأسئلة : 89

نموذج 7 الاسئلة : 2- 10- 31

نموذج 8 الاسئلة : 22

نموذج 9 الاسئلة : 2

نموذج 10 الاسئلة : 31- 72

Chemotherapy of microbial disease

Selection of antimicrobial agent

- **Antimicrobial spectrum**
- **Host factor**
    1. Hypersensitivity
    2. Concomitant disease status
    3. Impaired elimination or detoxification of the drug (renal & hepatic function)
    4. Age
    5. Pregnancy
- **Pharmacological factor**
    1. pharmacokinetic
    2. Available dosage form
    3. Toxicity
    4. Drug drug interaction
- **Others**

    Cost of therapy

Spectrum of antibiotic:

Generally G+ve bacteria & G –ve bacteria

- G+ve bacteria are mainl superficial infection foe skin, eye, tonsil, ear…
- G –ve bacteria are deep infection that cause mainly
    1- Meningitis
    2- RTI (respiratory tract infection)
    3- Typhoid
    4- UTI (urinary tract infection)
    5- Prostatitis
    6- Gonorrhea
    7- Osteomylitis

أهم ما هو مطلوب معرفته من المضادات الحيوية هو

Group مجموعه المضاد الحيوي نفسه

Key word الكلمة التي من خلالها تعرف إلى أي مجموعه ينتمي هذا المضاد الحيوي

Mechanism آلية العمل

Pregnancy استخدامه مع الحوامل

Adverse effect الأعراض الجانبية

Sulfonamide

Drug	Bacterial action	Chemistry	Mechanism	Classification	Spectrum	Uses	Adverse effects	pregnancy
Sulfonamide	bacteriostatic	Analogue of PABA (Para amino bezoic acid) Key word Sulfa……..	Inhibit folic acid Synthesis	1-oral absorbed sulfadoxine, sulfadiazine 2- oral poor absorbed sulfathalidine 3- topical Silver sulfadiazine	G+ve G-ve Chlamydia toxoplasma p.falciparum	1 meningitis 2- dysentery 3 Chlamydia infection	Crystal urea hemolytic anemia nephrotoxic kernicterus	Not used

N.B. sulfacetamid used as eye drop for eye infection

Sulfathiazole for wounds in absence of pus

Sulfamfenide for wounds and burn in presence of pus

Sulfonamide combination :

- Co trimoxasole (sulfamethoxazole + trimethoprime)

It is bactericidal that use for treat G-ve infection

-Silver sulfadiazine is applied locally to prevent infection of wounds and burn.

Quinolones

Drug	Bacterial action	Chemistry	Mechanism	Classification	Spectrum	Uses	Adverse effects	pregnancy
Quinolones	Bactericidal	Analogue of nalidixic acid Key word ……..oxacin	Inhibit DNA synthesis	1st generation 2nd generation 3rd generation 4th generation	1st narrow G-ve 2nd G+ve & G-ve 3rd as 2nd + pseudomonas 4th as 3rd + anaerobic	1- meningitis 2- typhoid 3-osteomyelities 4- UTI 5- RTI 6- Prostatitis	Tendonitis Cartilage damage Headache Dizziness	Not used

1st generation is nalidixic acid (oxacin) لا ينتهي ب

2nd generation pipemidic acid

3rd generation ciprofloxacin , norfloxacin , …….

4th generation trovafloxacin

Both 3rd and 4th generation used for treat G-ve infection

Penicillins

Drug	Bacterial action	Chemistry	Mechanism	Classification	Spectrum	Uses	Adverse effects	pregnancy
Penicillin	Bactericidal	6- amino penicillanic acid Key word ……cillin	Inhibit cell wall synthesis	1- benzyl Pen 2-broad spectrum Pen 3-anti pseudomonal 4-amidino pen 5-antistaph Pen	G+ve G-ve spirochetes actinomyces	1-meningitis 2- syphilis 3- Gonorrhea 4- typhoid 5- anthrax 6- diphtheria	hypersensitivity	used

1- Benzyl penicillin injection as **(penicillin G)** فقط عن طريق الحقن

Benzyl penicillin oral as **(penicillin V)** فقط عن طريق الفم

2- **broad spectrum penicillin** as (Ampicillin , amoxicillin)

(talampicillin, pivampicillin) is pro drug

Both 1 and 2 mainly used for G+ve bacteria

N.B. *staphylococcus aureus* destroy penicillin by producing β- lactamase enzyme

V.I.P use combination of clavulanic acid or sulbactam with Ampicillin or amoxicillin as

β- lactamase inhibitor

ولذلك يعتبر Augementin® (amoxicillin + clavulanic acid) أقوى من amoxicillin بفرده

3- anti pseudomonal penicillin

E.g. (carbinicillin, ticaricillin , azlocillin , piperacillin)

4- **Amidinopenicillin** : meciliinam

Both 3 and 4 mainly used for G-ve bacteria infection

All of the above are suspected to β- lactamase enzyme

5- **Antistaph penicillin** (staph.) مجموعه من البنسلين مقاومة لإنزيم التكسير التي تقوم بتصنيعه بكتيريا

β- lactamase (penicillinase) resistant penicillin

E.g. methicillin , cloxacillin , flucloxacillin, naficillin

Cephalosporin

Drug	Bacterial action	Chemistry	Mechanism	Classification	Spectrum	Uses	Adverse effects	pregnancy
cephalosporin	Bactericidal	7- amino cephaosporinic acid Key word Cepha……. Cefa……..	Inhibit cell wall synthesis	1st generation 2nd generation 3rd generation 4th generation	1st G+ve 2nd G+ve & G-ve 3rd as 2nd + pseudomonas 4th as 3rd + anaerobic	Meningitis RTI Typhoid UTI Prostatitis Gonorrhea	Nephrotoxic	used

1st generation e.g. cephadroxil,
Cephradin,
cephalexin (Duricef®)

أي Cepha بال Ph وليس F من الجيل الأول

2nd generation e.g. cefaclor (zinnat ®)
cefuroxime , (ceclor ®)
cefoxitin

3rd generation e.g. cefotaxime , cefoperazone , cefotriaxone , ……

4th generation e.g. cefepime

هو الدواء الوحيد الذي ينتمي للجيل الرابع

Aminoglycoside

Drug	Bacterial action	Chemistry	Mechanism	Classification	Spectrum	Uses	Adverse effects	pregnancy
aminoglycoside	Bactericidal	Derived of soil actinomycetes Key word …….mycin	Inhibit protein synthesis through 30s ribosome	1streptomycin 2- neomycin 3- gentamycin 4- kanamycin 5- amikacin	Mainly G-ve Narrow spectrum G+ve	1- TB 2- gut sterile 3- hepatic coma 4- peritonitis	Nephrotoxic ototoxic	Not used

Tetracycline

Drug	Bacterial action	Chemistry	Mechanism	Classification	Spectrum	Uses	Adverse effects	pregnancy
tetracycline	bacteriostatic	Derived of soil streptomyces Key word ……cyclin	Inhibit protein synthesis through 30s ribosome	1-tetracycline 2- doxycycline 3- demeclocycline 4- minocycline	G+ve G-ve Chlamydia rikettesia	1-cholera 2- syphilis 3- Gonorrhea 4- acne 5- dysentery	Nephrotoxic hepatotoxic yellow discoloration of teeth	Not used

من أخطر المجموعات في الأعراض الجانبية لذلك هو يعتبر last choice

لا يؤخذ مع الحليب أو المعادن milk of mineral لأنه يؤدي إلى insoluble in absorbable complex

الحل لهذه المشكلة هو الفصل بينهم لمدة ساعتين على الأقل

Macrolides

Drug	Bacterial action	Chemistry	Mechanism	Classification	Spectrum	Uses	Adverse effects	pregnancy
macrolides	bacteriostatic (in low conc.) Bactericidal (in high conc.)	Large lactone ring Key word thromycin	Inhibit protein synthesis through 50s ribosome	erythromycin azithromycin clarithromycin	Mainly G+ve Chlamydia mycoplasma	syphilis Gonorrhea diphtheria toxoplasma	GIT upset cholestatic hepatitis	used

Clarithromycin trade name (Klacid®)

azithromycin trade name (zithromax®)

Chloramphinicol

Drug	Bacterial action	Chemistry	Mechanism	Classification	Spectrum	Uses	Adverse effects	pregnancy
Chloramphinicol	bacteriostatic	Key word ……phinicol	Inhibit protein synthesis through 50s ribosome	Chloramphinicol Thiamephinicol	Broad spectrum against G+ve , G-ve	Life threatening infection if no alternative exist	Anemia gray baby syndrome	Not used

Chloramphinicol is the lastest one which is bacteriostatic mainly used for typhoid infection Its side effect because bone marrow depression not used in pregnancy or children because of gray baby syndrome.

OTHERS: CLINDAMYCIN, VANCOMYCIN , LINEZOLID ,……..

- تعتبر Aminoglycoside , tetracycline , sulfonamide من nephrotoxic الأدوية السامة للكلى
- يصلح للحمل penicillin , cephalosporin , macrolides
- يمنع تصنيع البروتين aminoglycoside , macrolides , tetracycline , chloramphenicol
- تنتهي aminoglycoside ب mycin بينما تنتهي macolides ب thromycin

Antituberculosis Drugs for (M.TB) (*mycobacterium tuberculosis*)

1st line treatment

- Rifampicin
- Iso- niazide (INH) it's side effect is peripheral neuropathy
- Pyrazinamide
- Ethambutol HCL

2nd line treatment

- Cycloserine
- Para amino salicylic acid (PAS).

Regimen of therapy

1- Initial intensive course (2-4 month) at least 3 drug. if resistant add the fourth drug

2- Continuation phase (4-12 month) 2 drug. if resistant add the third drug.

3- 2nd line drug used only if resistance or severe side effect of 1st line drugs.

مدة العلاج لا تقل عن 6 – 9 شهر من مجموعه 3 : 4 أدوية

Antileprotic drugs for (*mycobacterium lepra*)

1- Dapson

2- Clofazimine

3- Rifampicin

Duration of treatment from 2 – 4 years of combination

Rifampicin is used in treatment of lipra while INH not used — INH لا يستخدم فى الجزام

Rifampicin turns urine color into red — يحول لون البول إلى اللون الأحمر

لمزيد من التوضيح يرجى مشاهدة الفيديو رقم 22
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نموذج 2 الأسئلة 9 – 10 – 11 – 17 – 19 – 24 – 32 – 33 – 34 – 37 – 46 - 63 – 65 – 72 -80-81-82 – 87 – 88 – 96
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نموذج 10 الاسئلة 2- 28- 80 -95
نموذج 11 الاسئلة 14- 42

Antifungal Drugs

Drug	Trade name
*Amphtericin B	Fungi zone
* Nystatin	Mycostatin
* Fluconazole	Diflucan
* Itraconazole	Sporanox
* Ketoconazole	Nizoral
* Miconazole	Daktarin
* Grisofulvin	Grizovin
* Terbinafin	Lamisil
* Clotrimazole	Canesten

For vaginal thrush we use Nystatin , Ketoconazole , Miconazole , Clotrimazole

For mouth thrush we use Nystatin , Miconazole , Clotrimazole

For skin scalp we use Nystatin , , Clotrimazole , Ketoconazole , Grisofulvin , Terbinafin

Antiviral Drugs

Drug	Trade name
* Acyclovir	Zovirax
* Zidovudine	Retrovir
* Lamivudine	Zeffix
* Zalcitabine	Hivld

Human Immunodeficiency Virus (HIV) cause AIDS which is treated by Zidovudine

(Herpes simplex virus) is treated by acyclovir, gancyclovir

Cancer chemotherapy

Aim of therapy: destroy DNA of cancer cell

1- **Alkylating agent**

Introducing alkyl group into nucleophilic sites whitin the cells, forming covalent bonds, the macromlucular sites of alkylation damage DNA, RNA and various enzyme.

E.g. Cyclophosphamide, chlorambucil, melphalan , busulan

2- **Antimetabolite**

Drugs that structurally related to naturally occurring compounds thus incorporated into DNA or RNA thus interfere with cell growth and proliferation.

e.g. Methotrexate , mercaptopurine (6-MP) , flurouracil (5-FU) , cytarabine

3- **Antibiotics**

E.g. Doxorubicin, bleomycin , dactinomycin

4- Plant derivative

E.g. Vicristine , vinblastin , etoposide

Immunostimulant

Also called biological response modifier or Immunomodulating agent

Used For immunodeficiency diseases as autoimmune disorder, cancer disease, some viral And fungal infections.

1. Bacillus Calmette – Guerin (BCG)

   Stimulate T-cell and natural killer cell.

   Successful in treatment of bladder cancer.

2. Levamisole

   It is anti helminthes drug that efficiency used in treating chronic infection

   Used in combination of fluorouracil in the treatment of colorectal cancer.

3. Interleukin-2 (IL-2)

   Promote proliferation, differentiation, recruitment of T-B lymphocytes, natural killer Cells and thymocytes.

4. Interferones (alpha , beta , gamma)

   INF-α used clinically in treatment of chronic hepatitis B and C, leukemia, melanoma.

   INF-β used clinically in treatment of multiple sclerosis.

   INF- δ used clinically in treatment of chronic granulomatous disease.

يرجى مراجعة الاسئلة التالية
نموذج 1 الاسئلة 7- 16- 22- 24- 35- 60- 66- 89- 93
نموذج 2 الاسئلة 70- 76- 91
نموذج 3 الاسئلة 90- 91- 92
نموذج 4 الاسئلة 88- 89
نموذج 7 الاسئلة 24- 52- 53- 54- 56- 68- 70- 71- 87- 95- 103
نموذج 8 الاسئلة 16- 23- 31- 36- 69- 70- 75
نموذج 9 الاسئلة 12- 16- 70
نموذج 10 الاسئلة 5- 24- 25- 77- 93

Vitamins

Introduction;

Essential in small amounts for regulation of normal metabolism, growth, function of body

Not all vitamins are synthesized in body there for external source is a must

Deficiency disease occurs due to insufficient ingestion, irregular absorption or impaired use

Vitamin toxicity due to excessive quantity is mainly observed with fat soluble vitamin and water

Water soluble is less toxic (not stored in the body)

Fat soluble vitamin

Vitamin	Scientific Name	Solubility	Source	Function	Deficiency	Toxicity
Vitamin **A**	Retinol	In fat	Animal	Vision	Night blind	hepatosplenomegaly
Vitamin **D**	Calciferol	In fat	Animal	Calcium absorption	Rickets osteomalacia	Hypercalcemia
Vitamin **E**	Tocopherol	In fat	Animal	Anti oxidant	Anemia	Muscle weaknes
Vitamin **K**	menadione	In fat	Plant	Blood clot	haemorrhage	

Water soluble vitamin

Vitamin	Scientific Name	Solubility	Source	Function	Deficiency	Toxicity
Vitamin **C**	Ascorbic acid	In water	Plant	Anti oxidant	Scurvy	No med. important
Vitamin **B1**	Thiamine	In water	Plant	carbohdrate metabolism	Beriberi	No med. important
Vitamin **B2**	Riboflavin	In water	Plant	Oxidation reduction	A riboflavinosis	No med. important
Vitamin **B3**	Niacin	In water	Plant	Oxidation reduction	Pellagra	No med. important
Vitamin **B6**	Pyridoxine	In water	Plant	Amino acid transformation	Neurological symptoms	No med. important
Vitamin **B12**	Cyanocobolamine	In water	Animal	erythropoiesis	Pernicious anemia	No med. important
Folic acid	Folic acid	In water	Plant	erythropoiesis	Megaloplastic anemia	No med. important

- 3 معلومات رئيسية مهمة

رمز الفيتامين (A or B or …) وذوبانه (solubility) واسمه العلمي (generic name)

- يستخدم فيتامين B12 في علاج الانيميا الخبيثة pernicious anemia
- Vit B 12 + folic acid في علاج megaloplastic anemia
- الجرعه الموصى بها لعلاج نقص Vit A هي 50 000 – 200 000 IU أو ?Mcg …….

مطلوب حل أسئلة المذكرة

نموذج 1 الأسئلة 9 – 15 – 71 – 84 – 85 – 86 – 94 – 98 – 99

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نموذج 7 الاسئلة 29- 30- 42- 63- 102

نموذج 8 الاسئلة 5- 6- 7- 8- 24

نموذج 9 الاسئلة 103

Skin and scalp preparation

- Locally acting drugs for external use only
- Avoid getting the prepared solution in contact with eyes

1- Emollient

There are oily substances which soften and protect skin

E.g. vegetable oil (olive, cotton seed …) fat and waxes

2- Astringents

They are agents that dry mucous secretion, shrink skin, whitening and reduce inflammation of mucous membrane

E.g. calamine lotion and phenolated , methanolated calamine lotion

3- Counter irritant

They are irritating agent applied to intact skin to block deep pain of muscle or viscera

E.g. oil of winter green (methyl salicylate), camphor oil, chloroform liniments

4- Keratolytic and keratoplastic

They are agent used for induce sloughing of cornified epithelium

Keratolytic agent used for removes warts and corns

Keratoplastic agent used for treatment of acne, eczema, psoriasis and seborrheic dermatitis

E.g. salicylic acid, sulfur and tretenoin (retin A)

5- Antiseborrheic

Agents used for management of dandruff and seborrheics

E.g. chloroxine, selenium sulfide

6- Sun screens

Topical agent are used to reduced amount of ultraviolet radiation (UVA, UVB)

- Physical sunscreen : obaque ingredient (unacceptable by patient) reflect and scatter

(UVA, UVB)

E.g. talc, magnesium oxide, zinc oxide, and kaolin

- Chemical sunscreen :

E.g. p- amino benzoic acid, cinnamates and salicylates

7- Miscellaneous agent

Hydroquinone: cause reversible depigmentation of the skin

Minoxidil : FDA approved for stimulating hair growth , treat of androgenic alopecia

Drugs used in treatment of psoriasis:

Psoriasis is chronic scaling skin eruption characterized by keartinocyte hyper proliferation

1- Acitretin

Given orally

Adverse effects : hair loss , liver function abnormality and teratogenic

N.B. Acitretin should not be used by women who are pregnant or may become pregnant

While undergo treatment for at least 3 year after discontinuation of Acitretin

Patient must not donate blood during treatment and for 3 year after discontinuation of Acitretin

2- Tazarotene

Given topically

Adverse effects : burning sensation , peeling and erythema

its absorbed percutaneously (if applied to more than 20% of body surface area it will be teratogenic

N.B. women of childbearing must be advised of the risk prior initiating therapy

3- **Calcipotriene** (synthetic vit D3)

Effective in plaque type

4- Psoralens and UVA (PUVA)

Approved photochemotherpay

Psoralens is given orally or locally then (after 1 – 2 hour) UVA exposure

5- Coal tar ointment :

Combined with daily exposure to UVB irradiation

6- Others :

Steroids, Methotrexate, and cyclosporine

يرجى مراجعة الاسئلة التالية

نموذج 1 الاسئلة : 3

نموذج 7 الاسئلة : 28

نموذج 8 الاسئلة : 9- 37- 67

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