College of Pharmacy/University of Baghdad .Clinical Pharmacy Dept.
Fourth year. Pharmacy Practice Workshop. 2014-2015. Practice no. 2
Anemia and some other blood disorders (chapter 9 BNF)

1

الدكتور احمد دريد يحيى

اسم المريض: تحسين كمال: ٤٠سنة

Iron deficiency anemia

Rx

Ferrous sulfate 200mg tab.

التاريخ / /٢٠١٥

Q1-What is the **dose** of iron that should be given to **treat** the patient's iron deficiency anemia (I.D.A)? [ ]

Q2-What is the expected **therapeutic response** (i.e. the rising rate in Hb conc. in term of g/100mL)? [ ]

Q3-For **how long,** the treatment of I.D.A with oral iron should be continued? And why? [ ]

Q4-What **counseling** should be given for patient taking oral iron therapy?(supplement A) [ ]

Q5-If you have **ferrous gluconate** 300mg tablet only in your pharmacy!!!What will be the equivalent dose? [ ]

2

الدكتورة الق حسين علي

اسم المريض: رقية حسام العمر:٣٣سنة

Iron deficiency anemia

Rx

Ferrous fumarate (ferrosam®)200mg tab.

1tab t.i.d

التاريخ / /٢٠١٥

Q6-What are the **expected side effects** of oral iron therapy? [ ]

Q7-If the patient develops such side effects? What are your **recommendations to minimize** it and to increase patient's compliance?(see supplement B)

Q8-Few weeks later the same patient return to your pharmacy carrying an empty sheet of **ferrous gluconate** which had been dispensed from another pharmacy instead of ferrous fumarate. And the patient was insisting on this product because he experienced **a lower incidence of side effects**!!What is your explanation? [ ]

3

الدكتور حارث سلامة

اسم المريض: حسن هادي العمر:٢٠سنة

Rx

Ferrogard C ®tab

1tab. Daily before food

التاريخ / /٢٠١٥

Q9-knowing that ferrogard C ® **contain iron and vitamin C** (500mg). What is the therapeutic advantage of iron-vitamin C compound products??

(see BNF + supplement C) [ ]

4

الدكتور ريسان محسن بوهان

اسم المريض: حيدر زكي العمر: ٨ سنة

Rx

Ferrous sulfate (feospan ®) modified release (m/r) cap.

1cap. Daily before food

التاريخ / /٢٠١٥

Q10-What is the therapeutic advantage of **modified release (m/r) iron preparations?** [ ]

Q11-Why did modified release (m/r) iron preparations have a **lower incidence of side effects?** [ ]

Q 12-What **advisory label** should be given to the patient with feospan? And what do you recommend if the child cannot swallow it? [ ]

5

الدكتورة زهراء عباس ناصر

اسم المريض:أساور عبد الباقي العمر: ٢٩سنة

Rx

Ferrosam® tab: 1 tab. t.i.d

Folic acid 0.4 mg tab.:1 tab daily

Gastrigel® tab.: 1 tab. t.i.d

التاريخ / /٢٠١٥

Note: the Rx is for **pregnant** *woman, and the Gastrigel® is a combination of AL. and Mg* **antacid**

Q13-Why **folic acid** is prescribed routinely for **pregnant** women? And for how long? Hint: see drugs used in megaloplastic anemia----prevention of neural tube defect +supplement D [ ]

Q14-For which women a dose of **400 mcg** folic acid is indicated and for which women a dose of **5mg** is indicated during pregnancy ? [ ]

Q15-What is the **problem** in this Rx and what do you recommend to overcome it?(see appendix 1 in BNF) [ ]

6

الدكتورة رنين صبيح

اسم المريض اميمة وسيم العمر: ٢٦سنة

Lower UTI

Rx

Ciprofloxacin 500mg tab.

1 tab B.i.d

التاريخ / /٢٠١٥

Note: the patient has **G-6-PD deficiency(see G6PD deficiency)**

Q16-What happen to individuals with G-6-PD deficiency on taking fava **beans or some drugs** ? [ ]

Q17- Can she takes this drug safely? [ ]

Q18-What **are the drugs** that must be avoided in such patients? [ ]

Q19-What **alternative** drug(s) you recommend? (see table 1 in chapter 5 under lower UTI treatment) [ ]

7

الدكتورة رحيق ثامر

اسم المريض سجى فائق فاضل العمر: ٤٠سنة

Iron deficiency anemia

Rx

Iron dextran 2 ml injection (50 mg/ml)

التاريخ / /٢٠١٥

Q20-What are the **indications for parenteral iron** therapy?
[ ]

Q21-If the patient did not have any of the above indications for parenteral iron therapy, but the physician prescribed it to produce **faster response** than oral route!!! Is this true practice?? [ ]

Why (see supplement E)??

8

الدكتورة نغم طارق صالح

اسم المريض: نهى صباح محمد العمر: ٥٠سنة

الوزن: ٧٠كغم Hb=10 g/dl

Rx

Iron dextran 2 ml injection (50 mg/ ml)

التاريخ / /٢٠١٥

Q22-The patient cannot tolerate oral dosage form, therefore, parenteral iron had been prescribed. How would you **calculate a total dose of iron dextran** (no. of mls)?? (see supplement F)

Q23-Knowing that parenteral iron therapy can **stain the skin** at injection site (for up to 2 years)!!What is your **recommendation** to minimize such unwanted effect??(see supplement G)

Q24- Knowing that parenteral iron therapy can **cause fatal anaphylactic reaction** .What **precautions** should be made for patient taking parenteral iron therapy for the first time??
(see supplement H)

9

الدكتورة مصطفى صباح

اسم المريض: بلال هاشم العمر: ٤٠سنة

Rx

Iron dextran injection

One i.m injection every other day(6 ampoules)

ferrosam tab. 1tab t.i.d

التاريخ / /٢٠١٥

Q25-Can we give oral and parenteral iron therapy **at the same time? Why** (see supplement I)? What is your recommendation? [ ]

Q26-You found out that the patient is **asthmatic**!! What is your recommendation now ??
[ ]

10

الدكتور عبد اللطيف ضمد

اسم المريض: حسن صبيح : ٣ سنة

Iron deficiency anemia

Rx

ferrous gluconate (ferrosam ®) **syrup**

1tsp t.i.d

Q27-What **counseling s**hould be given to the parents about **proper administration** of iron **syrup** to the child?
(See supplement J).

11

الدكتورة مروة علاء عبد الجبار

اسم المريض: هناء مازن : ٣٠ سنة

B.wt : 60 kg

Chronic Renal failure(CRF)

Rx

epoetin alfa (Eprex®)inj.
5000 units twice weekly (Subcutaneously).

Q28-What is **epoetin**? And why it is used in **CRF** patients?

[ ]

12

الدكتور رياض محمد

اسم المريض: احمد توفيق: ٣٠ سنة

B.wt : 60 kg

leukemia

Rx

Filgrastim (30million-units) inj.
One subcutaneous inj. daily

Note: the patient had received a **cytotoxic chemotherapy** yesterday.

Q29-What is **Filgrastim**? And why it is used after cytotoxic chemotherapy?
[ ]

Supplement

<u>Definition</u> : Anemia is a reduction in the concentration of hemoglobin below normal that results in a reduction of the oxygen-carrying capacity of the blood.

Or Anemia defined (as recommended by the World Health Organization (WHO)) as hemoglobin (Hb) <13 g/dL in men or <12 g/dL in women.

• Anemias can be classified on the basis of RBC morphology, etiology, or pathophysiology
• Morphologic classifications are based on cell size. **Macrocytic** cells are larger than normal and are associated with deficiencies of vitamin B12 or folate. **Microcytic** cells are smaller than normal and re associated with iron deficiency whereas **normocytic** anemia may be associated with recent blood loss or chronic disease.

A-
1-Administration on an empty stomach (1 hour before or 2 hours after a meal) is preferred for maximal absorption. However, if patients develop intolerable GI side effects (i.e., heartburn, nausea, bloating) after taking iron on an empty stomach, they should be advised to take it with meals [(1)].

2-Iron should be dispensed in a childproof container, and the patient should be told to store it in a safe place away from children. Accidental ingestion of even small amounts (three to four tablets) of oral iron can cause serious consequences in small children. The patient should be told that oral iron therapy produces dark stool [(2)]

B-To minimize gastric intolerance, oral iron therapy can be initiated with single oral dose of iron tablet, the dose is increased by increment of one tablet per day every two to three days until the full therapeutic dose (e.g. 1 tab t.i.d) can be administered [(2)].

C- Several products contain ascorbic acid (vitamin C) which maintain the iron in ferrous state (more absorbable form), however, a dose up to 1 gm increase iron absorption by only 10%. Lower doses of vitamin C (e.g. 100 mg) don not significantly alter iron absorption [(2)].

D-Neural tube defects (NTDs) are prebirth defects that occur at a very early phase of the first trimester in pregnancy. The neural tube forms the baby's spinal cord and brain and the bone surrounding them.
Defective closure of the neural tube results in (NTDs). Depending on the point of the defect NTDs may affect the brain (anencephaly, encephalocele) or spinal cord (spina bifida).
If present, NTDs can cause miscarriages. If these babies are carried to term, they tend to have a very short life or they develop.

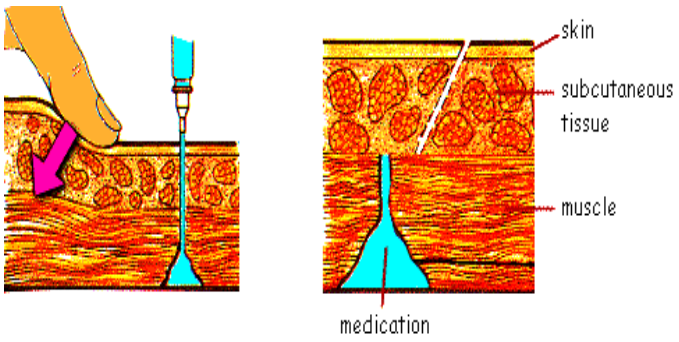
E-Because the rate of iron incorporation into Hb does not exceed that achieved by oral iron therapy, the response time is similar to that of oral iron therapy [(1)].

F-For patients with iron deficiency anemia, the replacement dose, i.e., the amount of iron dextran needed to restore hemoglobin to normal and to replete iron stores, is calculated as follows:
Adults & patients weighing >15 kg
Dose (mg) = 0.66 x (Wt in kg) x [100 - (Hgb x 100)/14.8]
where 14.8 is normal mean Hgb.

Children <15 kg: the normal mean Hb of 12 g/dL is used in place of 14.8 g/dL in the above equation

G-

Z-track technique is used to avoid staining of the skin it involve [1] :
1-pull the skin laterally before injection (A)
2-inject.
3-release the skin to avoid back leakage of iron dextran into the dermal layer (B)



(A) (B)

لان الفتحة في العضلة حيث يوجد الدواء سوف لا تكون تحت فتحة الجلد

H-

It is suggested that all patients considered for iron dextran injection receive a test dose of 25 mg iron (i.e. 0.5 ml). Patient should be observed for more than 1 hour for untoward (chest pain, hypotension …).if no reaction occurs, the remainder of the dose can be given.
If an anaphylactic – like reaction occurs, it generally responds to i.v epinephrine, diphenhydramine, and corticosteroids [3].

ملاحظة : بالنسبة لإعطاء الحديد **وريديا**...فكان التوصية بعمل جرعة اختبار الحساسية قبل كل إبرة...**ولكن في عام ٢٠١٣**
صدرت توصية في أوربا ...بمنع إجراء اختبار الحساسية بتاتا في حالة إعطاء الحديد وريديا

Previously, an initial test dose has been recommended for some IV iron products before administration of the first dose to a new patient. However, there are no clear data that an initial test dose minimises risk: conversely, it may give false reassurance because hypersensitivity reactions have been reported in patients that had a negative initial test dose. Therefore, an initial test dose on first use of an IV iron product for a patient is no longer recommended. All references to this recommendation will be removed from relevant product information

وتم وضع هذه الوصية في كتاب ال BNF

MHRA/CHM advice
Serious hypersensitivity reactions with intravenous iron (August 2013)

Serious hypersensitivity reactions, including life-threatening and fatal anaphylactic reactions, have been reported in patients receiving intravenous iron. These reactions can occur even when a previous administration has been tolerated (including a negative test dose). Test doses are no longer recommended and caution is needed with *every* dose of intravenous iron.

Intravenous iron products should only be administered when appropriately trained staff and resuscitation facilities are immediately available; patients should be closely monitored for signs of hypersensitivity during and for at least 30 minutes after every administration. In the event of a hypersensitivity reaction, treatment should be stopped immediately and appropriate management initiated.

The risk of hypersensitivity is increased in patients with known allergies, immune or inflammatory conditions, or those with a history of severe asthma, eczema, or other atopic allergy; in these patients, intravenous iron should only be used if the benefits outweigh the risks.

Intravenous iron should be avoided in the first trimester of pregnancy and used in the second or third trimesters only if the benefit outweighs the potential risks for both mother and fetus.

I-

Not only because combination is unnecessary, but it may promote adverse reactions by saturation of the plasma portion (transferrin) binding capacity----------so that the injected iron gives a higher unbound plasma iron conc. than is safe [6].

J- The liquid preparation of iron may be diluted with water or juice and taken through a straw to prevent staining of the teeth [4, 5].

References of the supplement

1- Marie A. Chisholm-Burns .Pharmacotherapy Principles & Practice. 3rd edition. 2013. by The McGraw-Hill Companies
2- Koda-Kimble and Young's. Applied Therapeutics: The clinical use of drugs, 10th ed., 2013 by Lippincott Williams & Wilkins
3-phrmacotherapy.A pathophysiological approach . 8th edition 2011.
4-Drug therapy. Decision making guide.1996.
5-Lippincott's nursing drug guide . 2003.
6-Clinical pharmacology . 8th edition by Laurence.1997.

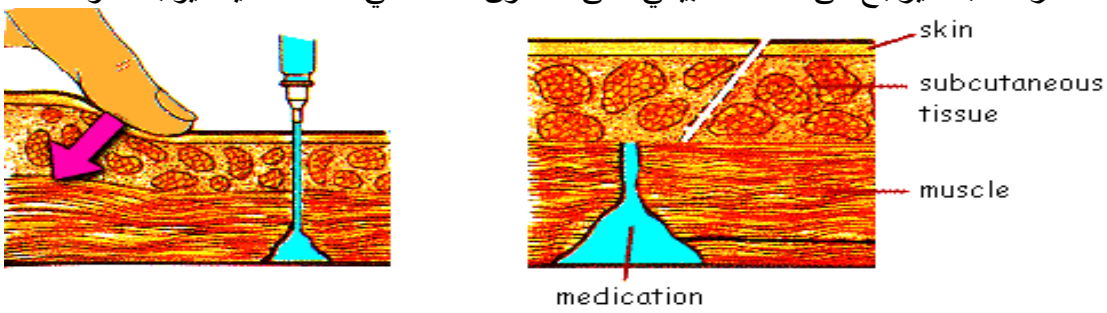
(طريقة زرق ابر الحديد)

ملاحظة: تستخدم هذه الطريقة للتقليل من اصطباغ مكان الزرق باللون الاسود:

١-اسحب الجلد جانبا قبل زرق الابرة(كما الشكل رقم ١)

٢-ازرق الابرة.

٣-اترك الجلد ليرجع الى مكانه الطبيعي حتى لا تكون الفتحة في العضلة حيث يوجد الدواء تحت فتحة الجلد



(الشكل رقم ١)