



Haematology practical

Practical on haemoglobinopathies
this teamwork doesn't mention everything in the lecture
but it covers everything important

Color coding

- important
- Extra info
- Notes from lecturer

دعاء قبل المذاكرة

اللهم أني أسالك فهم النبيين و حفظ المرسلين و الملائكة المقربين اللهم
أنك على كل شئنا قدير و اجعل سنتنا عامرة بذكرك و قلوبنا بخشيتك
(حسبنا الله نعم الوكيل)

normal hemoglobin (very important to memorize !!)

Haemoglobin type	% in Caucasian	% in Saudi
HbA	97.0%	95.0%
HbA2	1.5%	3.5%
HbF	0.5%	1.5%

Hb C: Is due to replacement of glutamic acid in position 6 of the beta chain by lysine ($\alpha_2\beta_2$ 6-GLU→LYS).

Hb F: is predominant Hb in newborn 95-99% .

Clinical and haematological abnormalities important notes

- If HbA2 raised more than 3.5 Beta thalassemia less 1.5 alpha thalassemia.
- the most accurate test for Hb is Hb electrophoresis.
- in electrophoresis if Hb S is present :

-more than 60% indicate homozygous sickle cell anaemia.

-less than 60% indicate sickle cell trait.

- anisocytosis: significant variation in RBCs size.
- poikilocytosis: abnormal shape RBCs.
- target cell: RBCs with a dark centre surrounded by a light band that again encircled by a darker ring.
- microcytic hypochromic: RBCs are smaller and paler than normal.
- **further investigation for the whole cases are:genetic study and family study.**

CASE 0 normal

KKUH

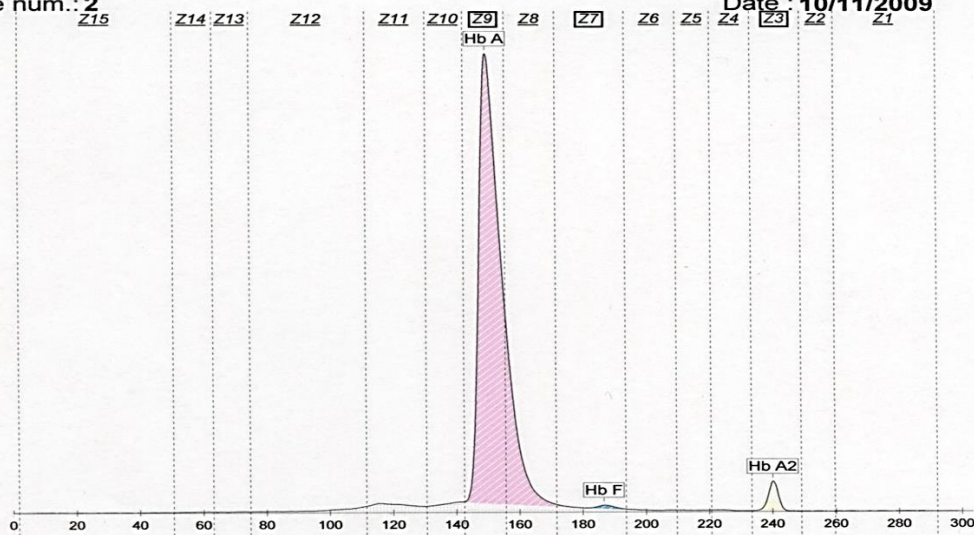
Heamatology Unit
Hb Electrophoresis

Hospital No.: 933376

ID : 061773

Sample num.: 2

Date : 10/11/2009



Hb Electrophoresis

Fractions	%	Ref. %
Hb A	96.7	96.8 - 97.8
Hb F	0.5	=< 2.0
Hb A2	2.8	1.5 - 3.5

	results:	normal	comment
Hb A	96.7%	95 -97 %	normal
Hb F	0.5 %	0.5-1.5%	normal
Hb A2	2.8%	1.5-3.5 %	normal

**the results indicate normal Hb
Hb S normally not present**

In order to get full mark on question :

- 1- write each Hb results and normal range
- 2- write the results in the following order : (Hb A than Hb F than Hb A2) Hb S if present
- 3- explain results when it need explanation
- 4- write diagnosis

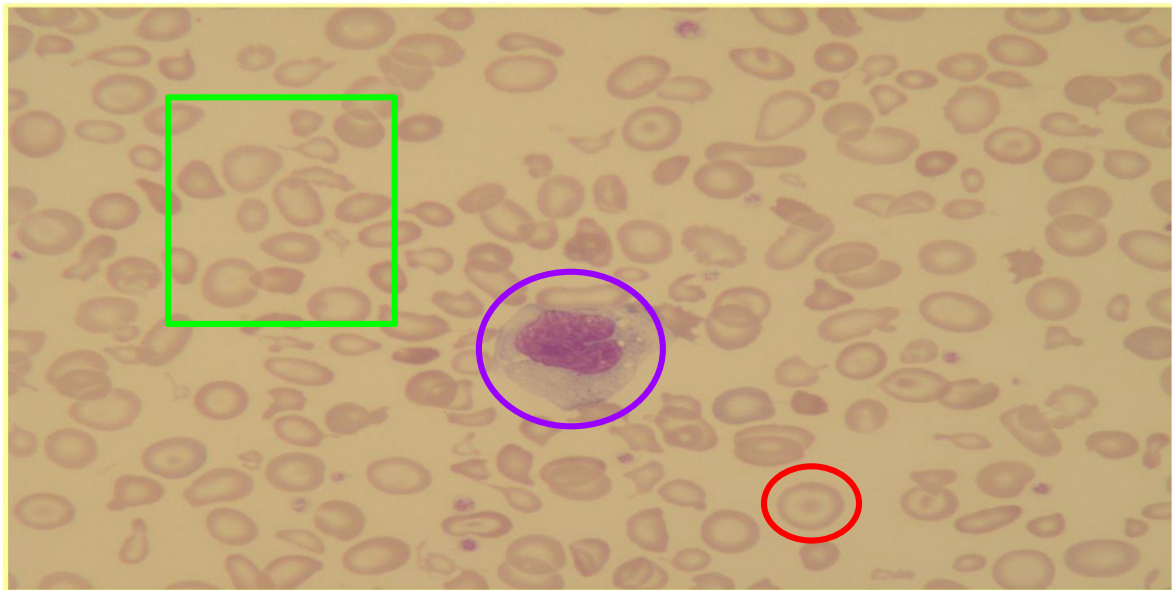
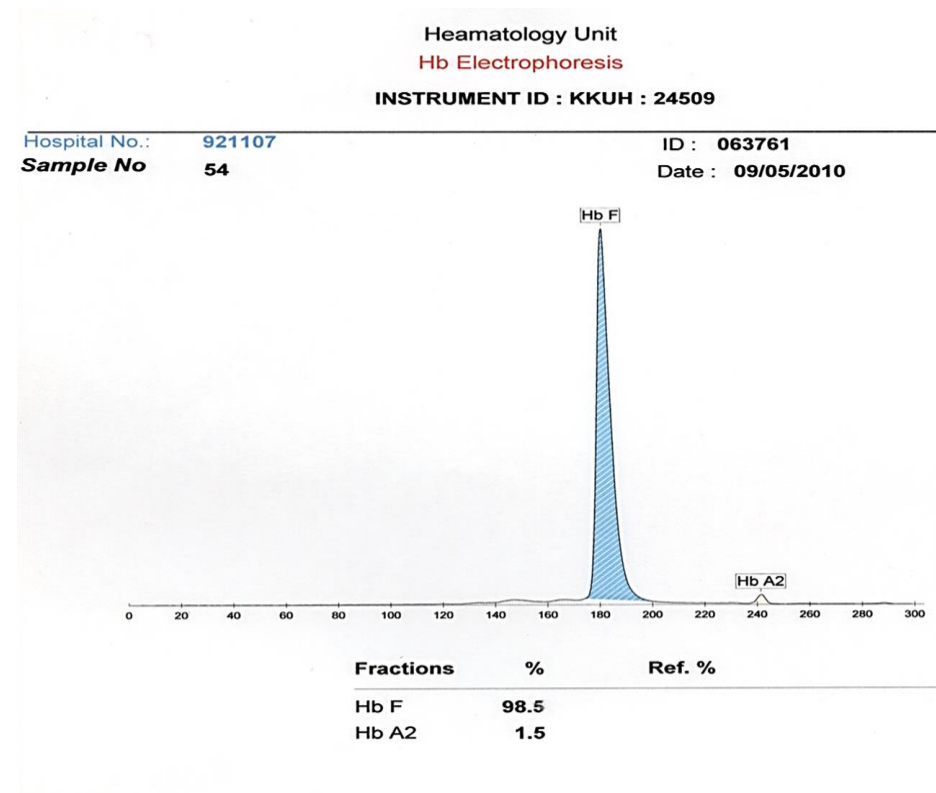
CASE 1:

Test name : hemoglobin electrophoresis

	results:	normal	comment
Hb A	0.0%	95 -97 %	absent Hb A
Hb F	98.5%	0.5-1.5%	increase in Hb F
Hb A2	1.5%	1.5-3.5 %	decrease in Hb A2

The results indicate :

hereditary fetal persistent hemoglobin



Test name : Blood film smear

- ❖ Target cells *
- ❖ Microcytic hypochromic (different in size and shape) *
- ❖ Anisocytosis
- ❖ Poikilocytosis
- ❖ Monocyte *

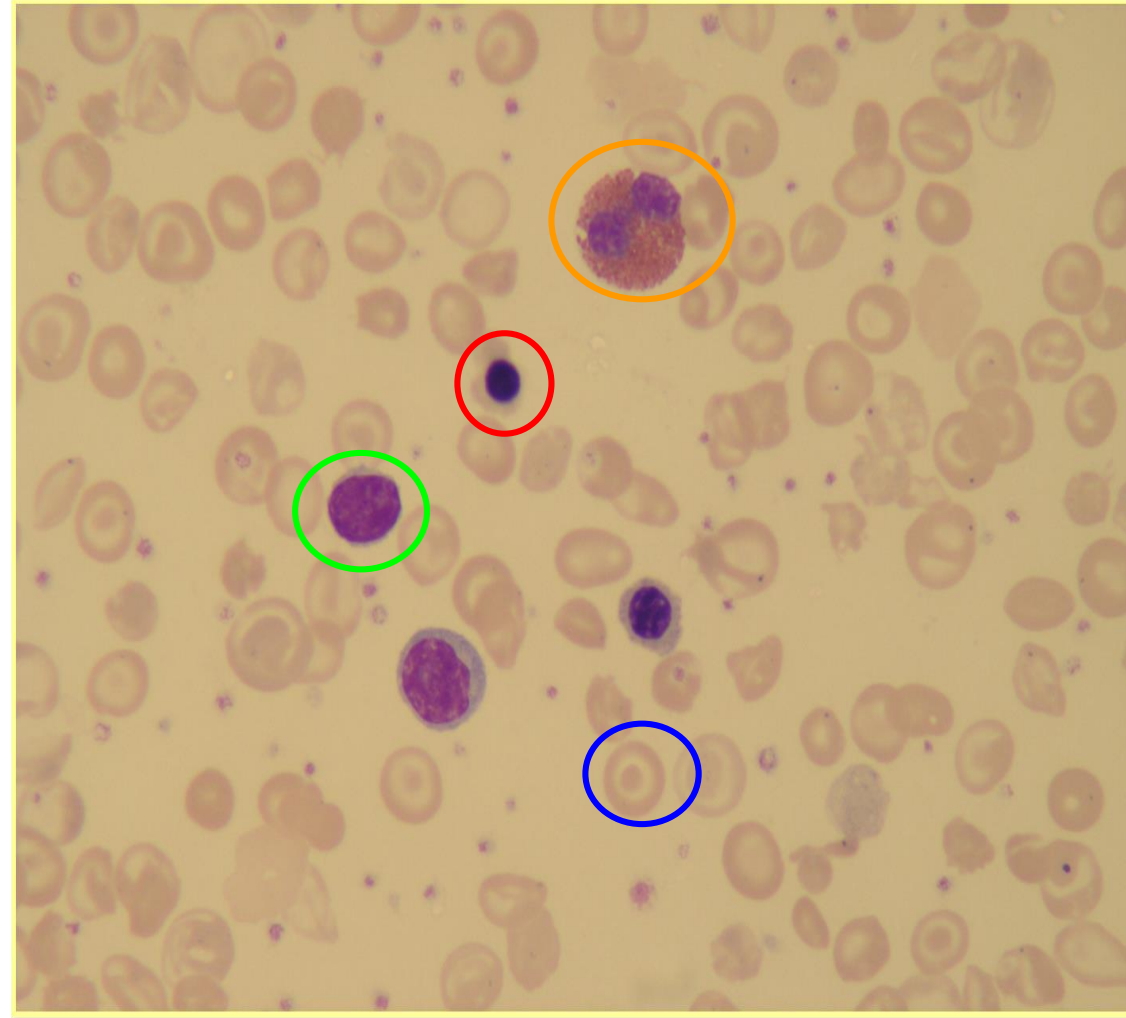
Diagnosis: alpha thalassaemia

Case 2 :

Test name : Blood Film Smear

- ❖ Microcytic hypochromic RBCs
- ❖ Target cells^{*}
- ❖ Nucleated RBC^{*}
- ❖ Anisocytosis (significant variation in RBCs size)
- ❖ Eosinophils^{*}
- ❖ Lymphocytes (with cytoplasm)^{*}
- ❖ Poikilocytosis (abnormal shape RBCs)

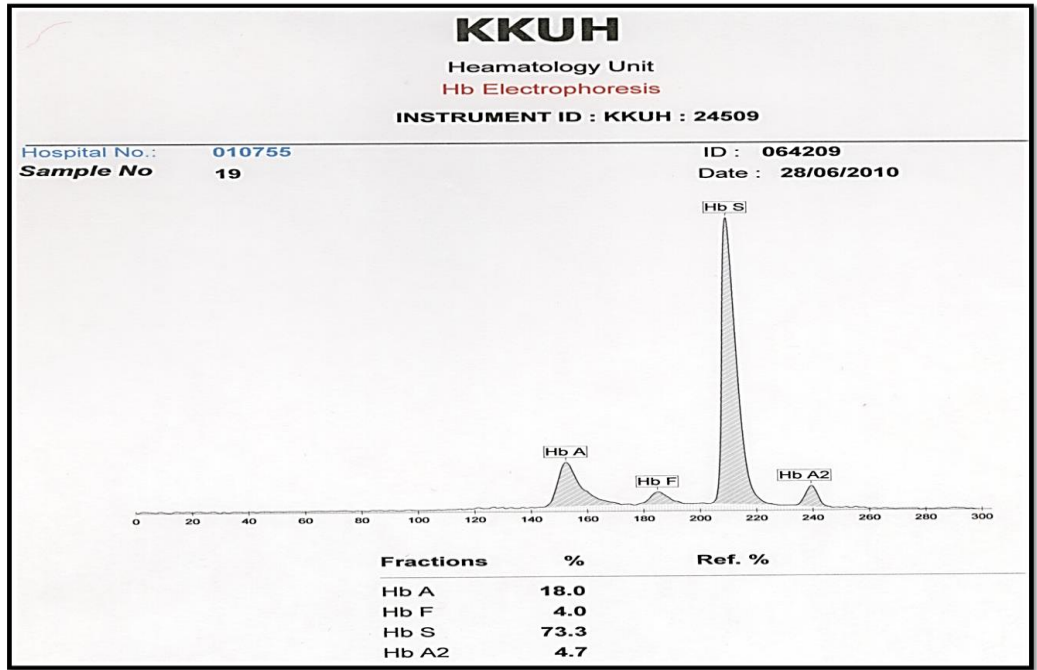
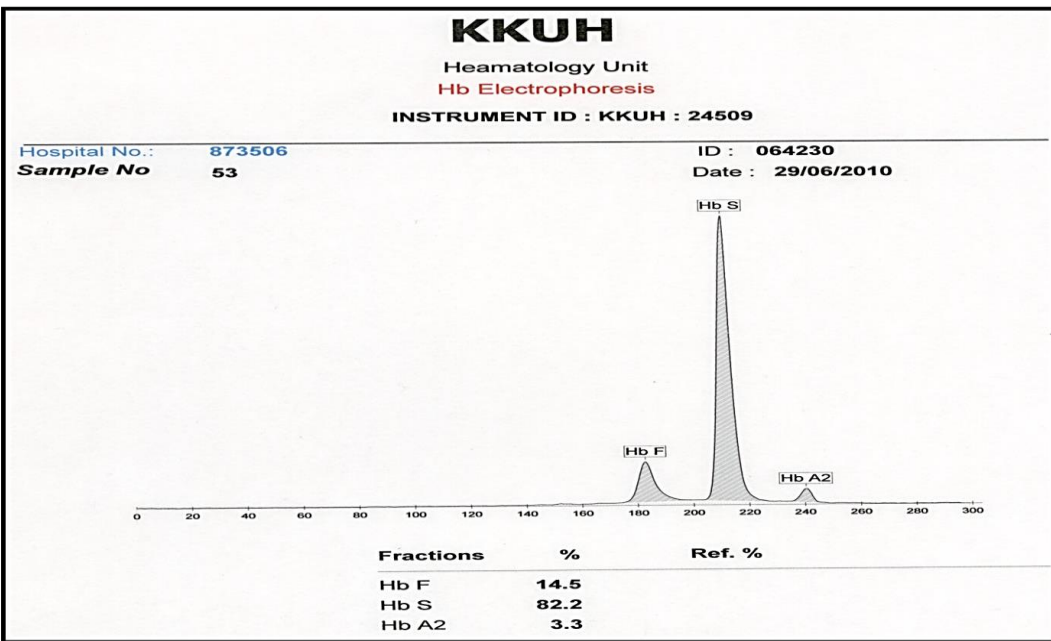
Diagnosis: beta thalassaemia



Case 3 & 4

	results:	normal	comment
Hb A		95 -97 %	not present
Hb F	14.5%	0.5-1.5%	increased
Hb A2	3.3%	1.5-3.5 %	normal

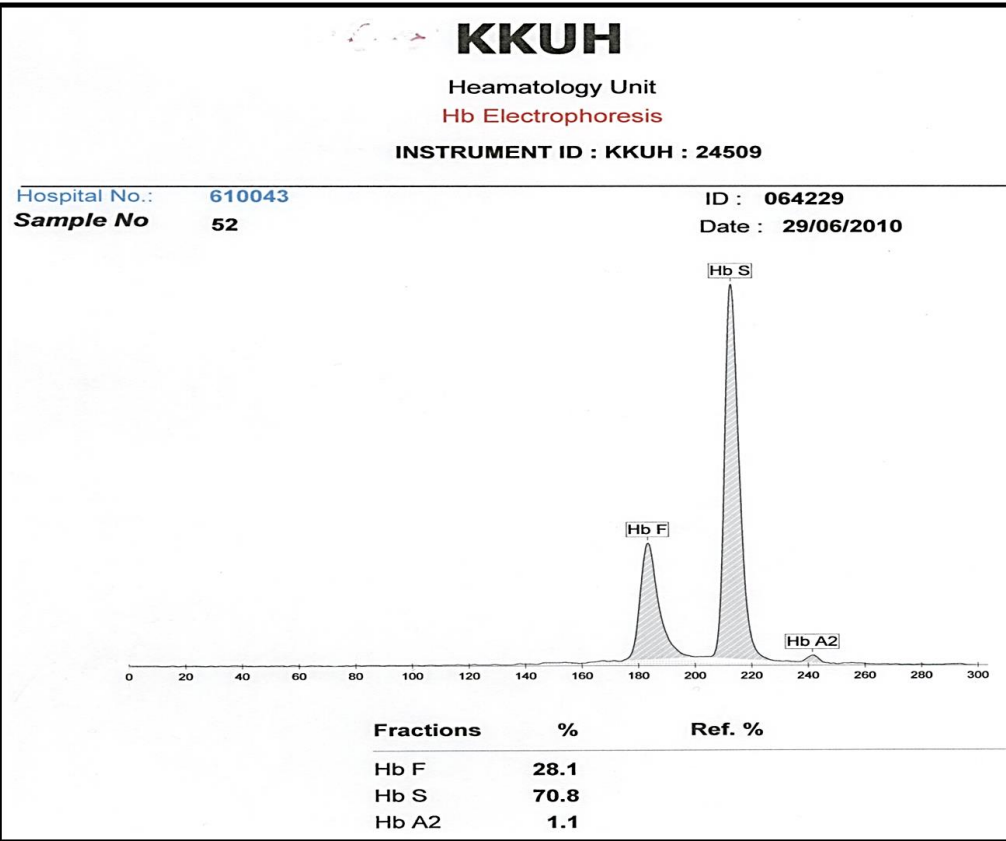
Hb S is present = 82.2% (more than 60%) indicates homozygous sickle cell anaemia.
diagnosis: sickle cell anaemia



	results:	normal	comment
Hb A	18.0%	95 -97 %	decreased present due to blood transfusion
Hb F	4.9%	0.5-1.5%	increased
Hb A2	4.7%	1.5-3.5 %	increased indicate beta thalassaemia

Hb S is present =73.3% (more than 60%) homozygous sickle cell anaemia.
diagnosis :beta thalassaemia sickle cell anemia

Case 4 :



	results:	normal	comment
Hb A	0.0%	95 -97 %	decreased also indicate blood transfusion
Hb F	28.1%	0.5-1.5%	increased
Hb A2	1.1%	1.5-3.5 %	decrease indicate alpha thalassemia

Hb S is present 70.8 % (more than 60%) indicates homozygous sickle cell anaemia

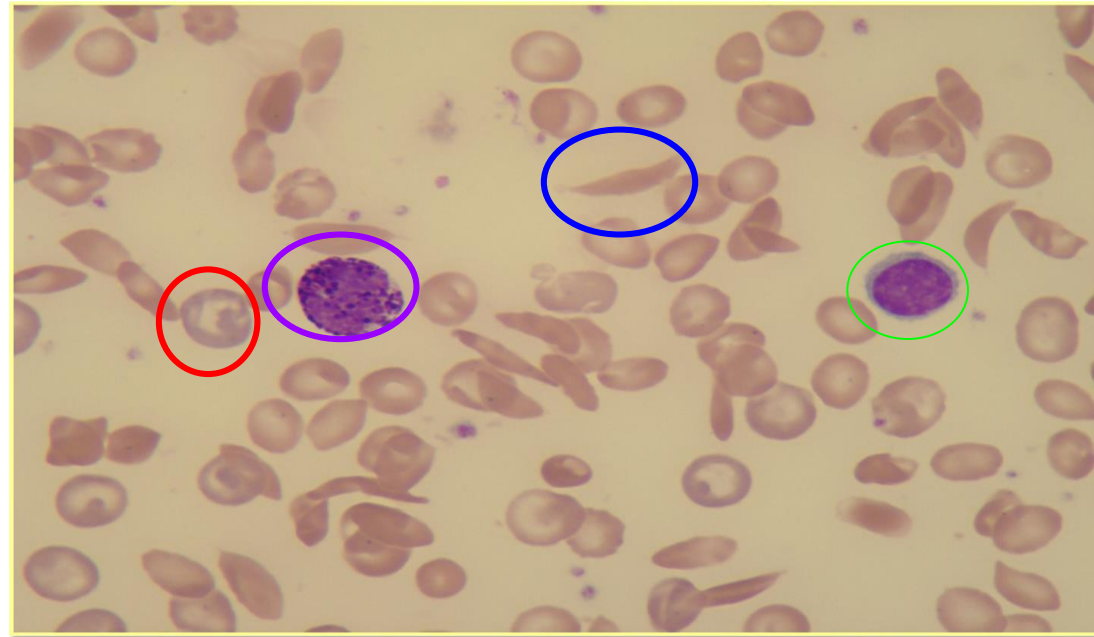
Diagnosis : Alpha thalassemia & sickle cell anemia

Case 5 : sickle cell anemia

Test : Blood Film Smear

- ❖ Basophils present*
- ❖ Reticulocytes
- ❖ Lymphocyte*
- ❖ Target cells*
- ❖ Sickling cell*

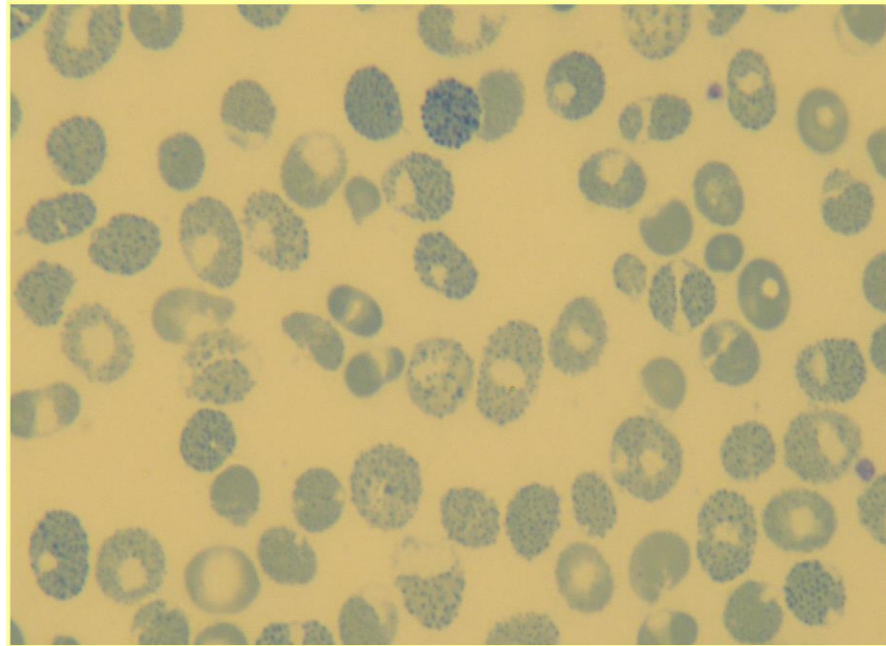
Diagnosis: sickle cell anaemia.



Case 6: Haemoglobin H Disease

Test: Blood Film Smear

- ❖ supra vital stain.
- ❖ golf ball appearance of alpha thalassemia
- ❖ Diagnosis: Hb h disease.



Thank you for checking our work

Now you can check a lecture out :D

Done by:

Hadeel B.Alsulami

Abdullah M. Albasha



دعاء بعد المذاكرة

فرده لي عند , اللهم اني أستودعتك ما قرأت وما حفظت وما تعلمت (وحسبنا الله ونعم الوكيل , حاجتي اليه أنك على كل شيء قدير