Summary

Chronic haemolytic anaemias are associated with characteristic abnormalities of the skeleton and visceral organs; more severe in haemoglobinopathies.

The skeletal abnormalities in haemoglobinopathies can be classified into the following categories:
- lesions due to hyperplasia of the bone marrow.
-lesions caused by recurrent marrow ischaemia and vascular occlusion by masses of sickle cells.
-lesions resulting from therapy : bone marrow iron overload, and deferoxamine induced bone dyplasia.
-several additional problems, including fracture and infection are also common.

Conventional radiography remains the initial study of choice obtained when a bone marrow process is suspected to provide an inexpensive overview of the osseous pattern and may be diagnostic when the specific features are present. But, radiography is not sensitive in early detection of avascular necrosis or osteomyelitis, and often does not provide sufficiently detailed anatomic and physiologic information.

MRI is sensitive in detecting all the above marrow abnormalities. Although not particularly useful in the inital diagnosis of haemoglobinopathies, MRI may be useful in the future to assess the severity of disease by monitoring the extent of marrow reconversion.

In patients with sickle cell anaemia, MR is a useful imaging modality to clearly identify the presence of acute or chronic bone marrow infarctions, particularly in patients with a clinical picture of crisis and suspected avascular necrosis. When avascular necrosis is present, early detection by MR in those patients with normal radiographic or scintigraphic examinetions permits aggressive treatment with core compression when appropriate.

A Clinical difficulty in patients with sickle cell anaemia is distinguishing acute infarction from osteomyelitis . MRI can define the site and extent of the lesions accurately but can not differentiate between

them. Scintigraphy and CT are found to have an important role in this issue.

Gallium scanning shows increased uptake in all patients with osteomyelitis. While bone marrow scans of osteomyelitis did not show diminished uptake at all in all patients. Technicium scanning is necessary only for interpretation of gallium scanning. However, scintigraphy is not the practical way to differentiate osteomyelitis from infarction due to its hazards and it is inconvenient.

Enhanced CT proved its efficacy in diagnosing subperiosteal abscesses which were found to be the earliest abnormality in development of osteomyelitis and can aid in percutaneous drainage.

MRI can detect complications of treatment as haemosiderosis and bone dysplasia. It is to be expected that this technique will be useful in documenting the response of the bone marrow to therapeutic manipulation of various anaemias.

Being able to detect early bone marrow infarction and the complications of therapy, makes MRI a promising possible indispensable investigation tool in the follow up of high risk patients.

As regarding the visceral changes, all systems in the body may affected by the pathology of the disease. Sickle cell anaemia is accompanied by the effects of multiorgan damage due to vascular occlusion.

MR imaging and MR angiography are accepted as the diagnostic tools in the evaulation of sickle cell patients with documented stroke, allowing selection of patients who need therapeutic intervention and long-term monitoring. Newer MR techniques, such as diffusion imaging, show promise for earlier detection of ischaemic stroke.

MRI is useful non invasive technique in the evalution of children with extramedullary haematopoiesis and symptoms of spinal cord compression.

MRI is a reliable non invasive method for diagnosing hepatic iron overload concentration that is as little as 1.5 times the normal value. This procedure may eventually prove useful in the follow-up of patients treated by multiple blood transfusion.

Other radiological and imaging techniques may be helpful in the diagnosis although most of the finding are non specific.

Echocardiography is the best method to assess the cardiovascular changes in chronic anaemias, as it is non invasive rapid and releiable method.

In pulmonary lesions, CT is the best method to detect areas of microvascular occlusion as well as the consolidated segments in cases of acute chest syndrome, and can detect signs of pulmonary interstitial disease in patients with sickle cell disease during pain free periods and it is correlated to number of prior episodes of acute chest syndrome.

CT has been the primary study used in the diagnosis of acute intracranial haemorrhage.

Transcranial Doppler US scanning has great potential as an inexpensive, easily performed screening procedure for cerebrovascular disease in patients with sickle cell disease.

Patients with chronic haemolytic anaemias show high prevalence rate of gallstones as detected by US & CT. ERCP is the best method to detect stones in common bile ducts.