Neurocutaneous syndromes

- **Neurocutaneous disorders** or neuroectodermatoses.
- **Genetic diseases**
- **Involve both** the skin and nervous system.
- **Any portion** of the central and peripheral nervous system may be affected.
- **The clinical spectrum ranges** from frequent abortive forms (formes frustes) to a severe, potentially lethal condition with highly protean clinical manifestations.

Neurocutaneous syndromes

- **Neurofibromatosis.**
- **Tuberous sclerosis.**
- **Sturge–Weber syndrome.**
- **Von Hippel–Lindau disease.**
- **Ataxia telangiectasia.**
- **Other neurocutaneous syndromes.**

Neurofibromatosis

- **The neurofibromatoses (NFs) are** autosomal dominant neurocutaneous disorders.
- **NFs** can be divided into: **NF1** 'peripheral' and **NF2** 'central' types, although there is significant overlap.

1)**The most common type of neurofibromatosis is NF1** (von Recklinghausen's disease or 'peripheral' neurofibromatosis).

2)**Less commonly NF2** ('bilateral acoustic neuromas' or 'central' neurofibromatosis).

- *Segmental neurofibromatosis is characterized by localized cutaneous neurofibromas and café-au-lait spots limited to one segment of the body, but which can include underlying intrathoracic or intra-abdominal neurofibromas.*

Incidence and prevalence

- **Neurofibromatosis affects** all races and has an estimated frequency of approximately 1 in 3000 of live births and a mutation rate of 1 × 104 per gamete per generation.
- **The point prevalence of NF1** is at least 1 in 4950 (20.2/105) and NF1 accounts for 90 per cent of cases of NF.

- **The incidence and prevalence of NF2** is uncertain, but is thought to occur in approximately 1 in 40 000 live births.

Neurofibromatosis type 1 (NF1)

The characteristic features of NF1 are:

–**Café-au-lait spots,**

–**Neurofibromas ,**

–**Axillary freckling,**

–**Lisch nodules,**

–**Osseous lesions,**

–**Macrocephaly,**

–**Short stature and mental retardation,**

–**Can be associated with several different types of tumours.**

- **Café-au-lait spots tend to increase** in number and size in the first and second decades.
- **Two spots or more** occur in only 0.75 per cent of normal children under the age of 5 years, but the presence of five spots with a diameter greater than 0.5 cm is suggestive of the diagnosis of NF1.
- **Nearly all children with NF1** have developed café-au-lait spots by the age of 5 years.
- **Children of patients with NF1** should be examined annually for cutaneous signs of NF1. If by age 5 years there are no apparent signs, follow-up can be discontinued.
- **In children below 5 years of age** with equivocal signs, where confirmation is sought of whether the child is either unaffected or affected, and where there are two or more affected family members are available for study, intragenic polymorphic markers can be used to determine the risks of disease.
- **In adults, the presence of six café-au-lait spots** larger than 1.5 cm is almost always abnormal.
- **Neurofibromas are highly characteristic** lesions and usually become clinically evident at ages 10 to 15 years.
- **They always involve the skin**, ultimately developing into sessile, pedunculated lesions.
- **The nodules are found on** deep peripheral nerves or nerve roots and on the autonomic nerves that innervate the viscera and blood vessels.
- 1.**Cutaneous neurofibromas** are soft, violet-coloured lesions, varying from 0.1 cm to several centimetres in diameter.

  2.**Subcutaneous neurofibromas** commonly appear after the age of six and are present in all affected cases by age 17.

3.**Plexiform neurofibromas**

- **Neurofibromas involving the terminal distribution** of peripheral nerves form vascular plexiform neurofibromas that result in localized overgrowth of tissues or segmental hypertrophy of a limb (elephantiasis neuromatosa).
- **Spinal root or cauda equina neurofibromas** are often asymptomatic when they are small, but large tumors may compress the spinal cord, causing the appropriate clinical signs.
- **Freckling in the axilla, groin, under the breasts, and on the neck is also a helpful associated sign of NF1.**