Skin and Brain

Dr Gabriel Dabscheck
Paediatric Neurologist
RCH, Melbourne

OUTLINE

1. Intro
2. Brief discussion of three conditions (TSC, NF1, SWS)
3. Importance of early diagnosis in these conditions
4. Our aims and project for the next 24 months

- Images, and information, in this talk are form uptodate.com, dermnet.org.nz, Dr Susan Robertson, and Google Images.

Intro

- Paediatric neurologist at RCH
- Clinical interest in epilepsy, general neurology, Neurofibromatosis
- Research interest in Neurofibromatosis
- Board member of FOH (FOH funding this work)
- Honorary position at MCRI
- 2 of my 3 children had all their checks at MCHN in Glen Eira and Port Phillip. The other was born in the US.

The Royal Children's Hospital Melbourne

murdoch children's research institute

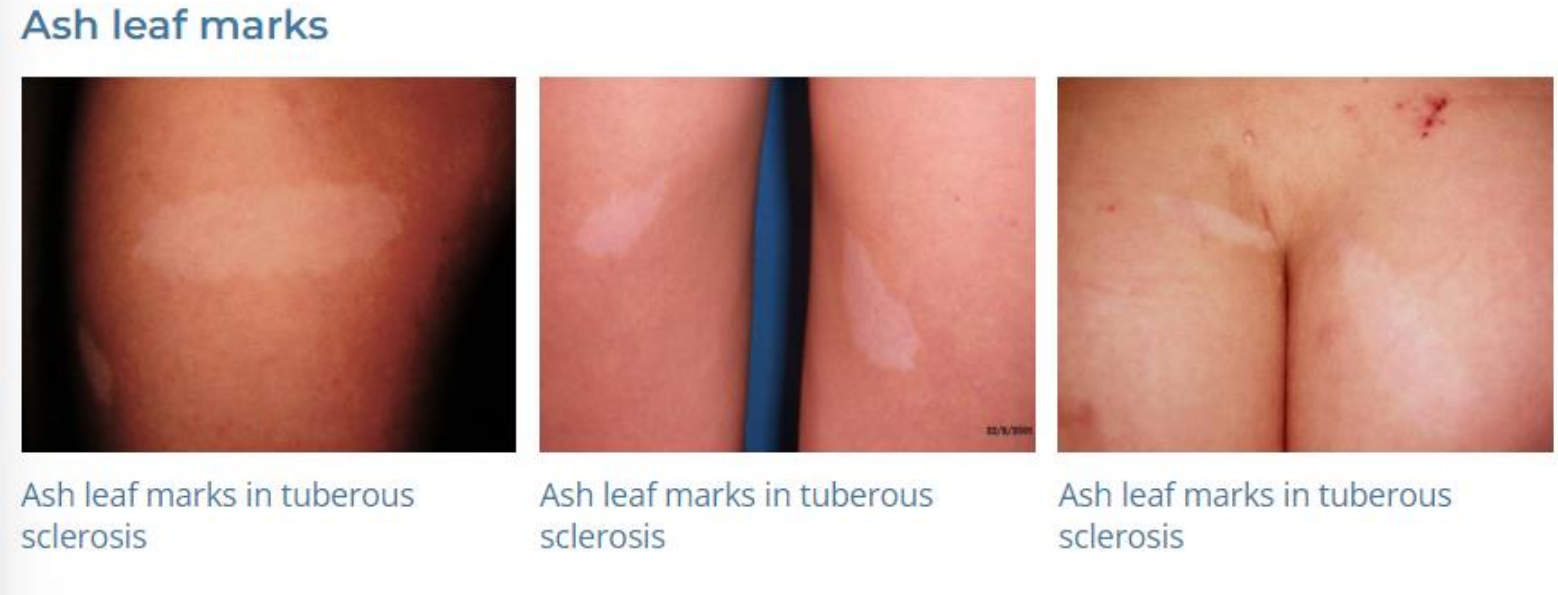
flicker of hope

1. Tuberous Sclerosis (TSC)

- TSC is a neurocutaneous disorder that involves benign hamartomas of the brain, eye, heart, lung, liver, kidney and skin.
- TSC1 and TSC2 genes.
- It is autosomal dominantly inherited. It is de novo in 80%.
- The phenotype is variable
- Clinical features:
  - Skin lesions:
  - Brain lesions - cortical tubers and subependymal noduels/ SEGA
  - EPILEPSY
  - Developmental Delay - about 1/2 have Intellectual disability
  - Other: eye lesions, pulmonary manifestations, renal lesions and cardiac lesions.

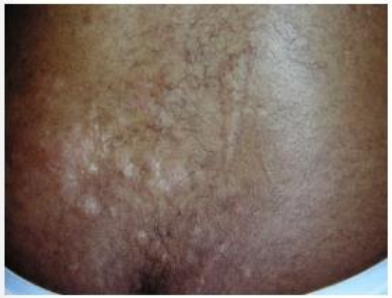
TSC Skin lesions

- More than 90% of patients with TSC have at least one skin lesion
- HYPOMELANOTIC MACULES/ASH LEAF - often present in infancy. (3 or more)

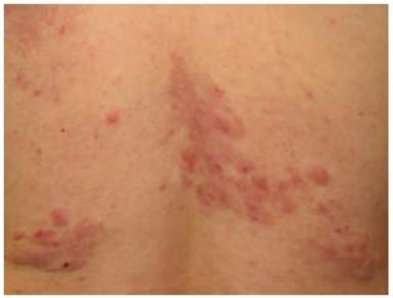


Other Skin manifestations - present later in childhood/adolescence

Shagreen patches

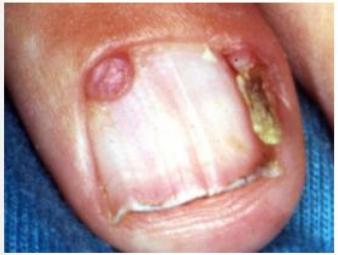


Shagreen patch in tuberous sclerosis

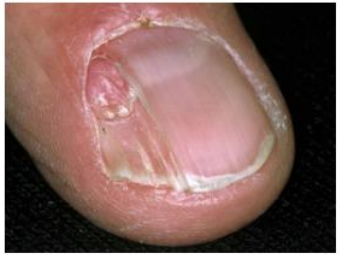


Shagreen patch in tuberous sclerosis

Periungual fibromas

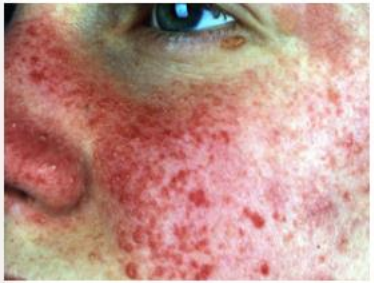


Periungual fibroma in tuberous sclerosis

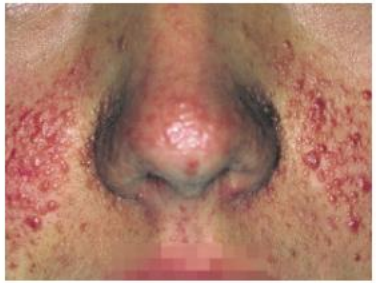


Periungual fibroma in tuberous sclerosis

Angiofibromas



Angiofibromas in tuberous sclerosis

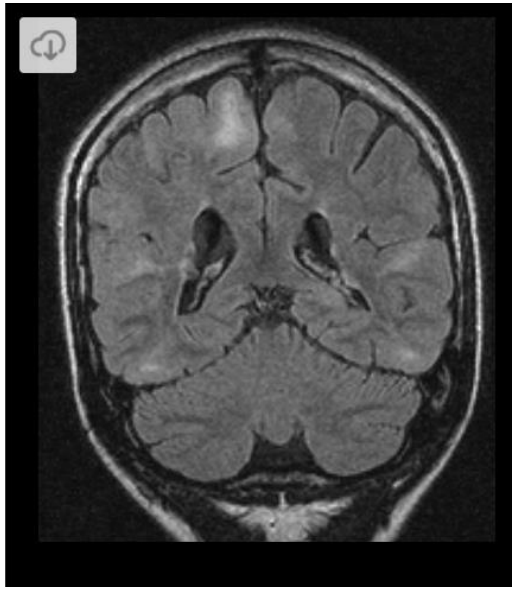


Angiofibromas in tuberous sclerosis

DermNet™ All about the skin

Epilepsy in TSC - Importance of Early Diagnosis

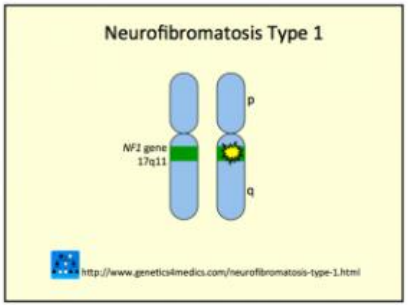
- Epilepsy is seen in >70% of patients with TSC
- About 2/3 of seizures begin in the first year of life.
- Infantile spasm are a common presentation in infants with TSC
- Infantile spasms lead to an increased risk of Intellectual Disability
- **Pre treatment/early recognition of infantile spasms can greatly reduce epilepsy risk and may improve developmental outcomes.**



Radiopaedia

2. Neurofibromatosis 1 (NF1)

- NF1 is a neurogenetic condition that commonly presents with nerves on tumours and has manifestations that can affect all organs including, commonly, cutaneous manifestations and difficulties in learning and education
- The incidence 1 in 2600 to 1:3000.
- NF1 is due to a pathogenic variant on the NF1 gene on 17q11.2. It is autosomal dominant. Half inherited.
- Clinical Features:
  - Skin lesions
  - Eye tumours
  - Soft tissue tumours
  - High rates of ASD/ADHD and low average intelligence

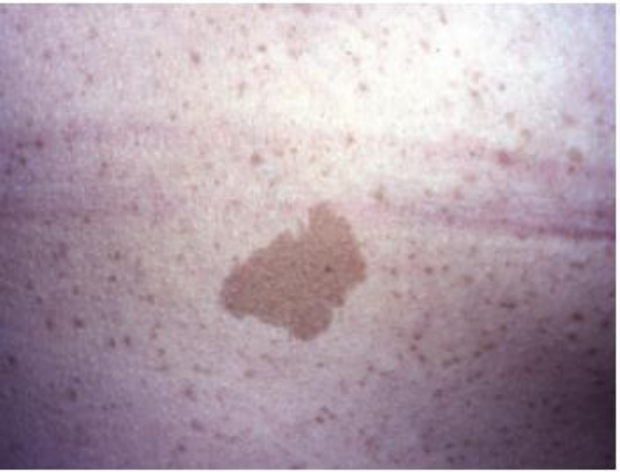


Neurofibromatosis Type 1

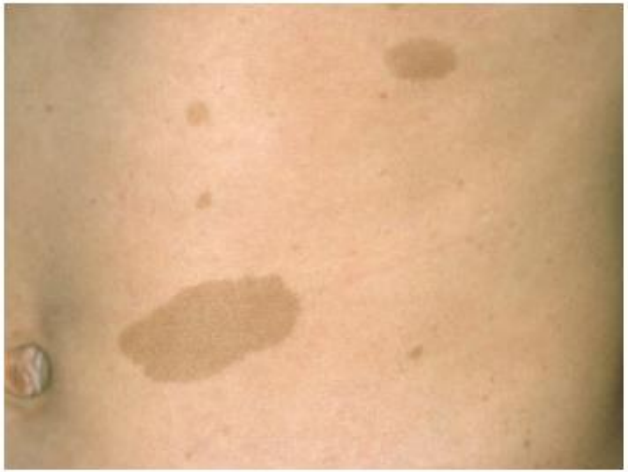
*Image courtesy Genetics 4 Medics

Neurofibromatosis - skin lesions

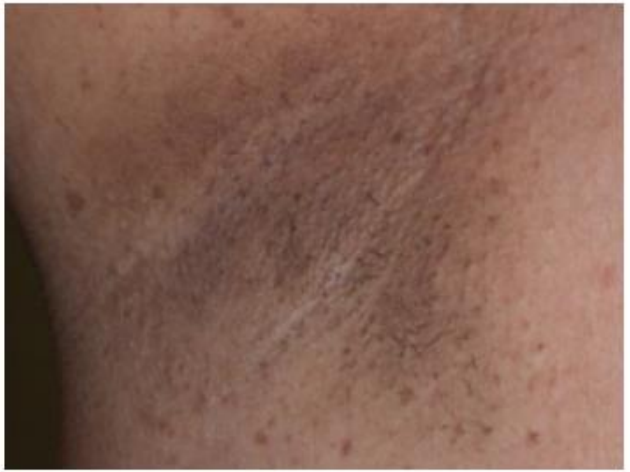
Neurofibromatosis



Café-au-lait macule



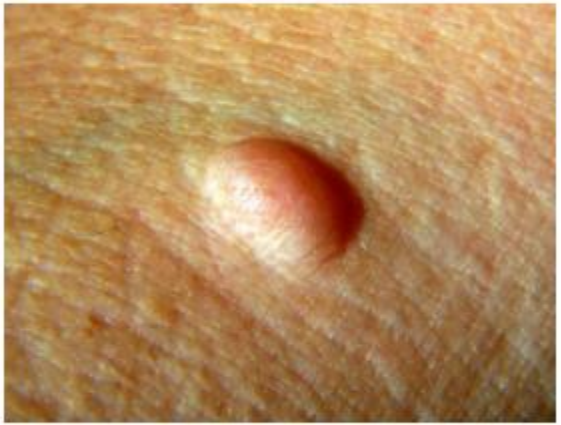
Café-au-lait macule



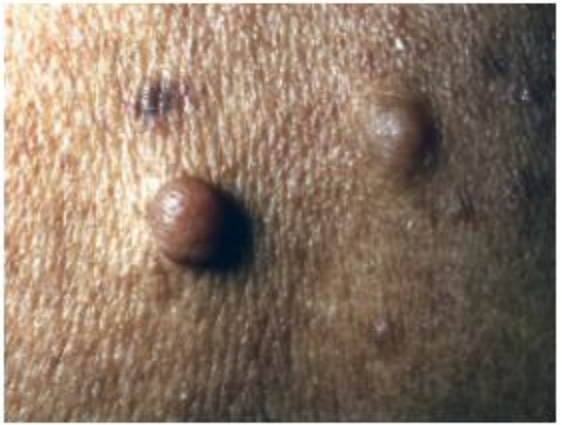
Freckling in the armpit

Other Skin manifestations - present later in childhood/adolescence

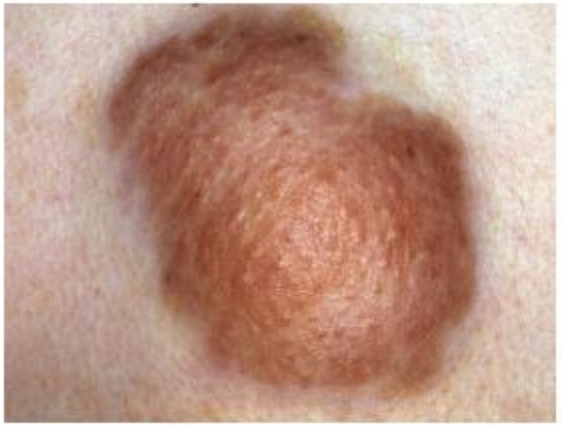
Cutaneous neurofibromas



Neurofibroma



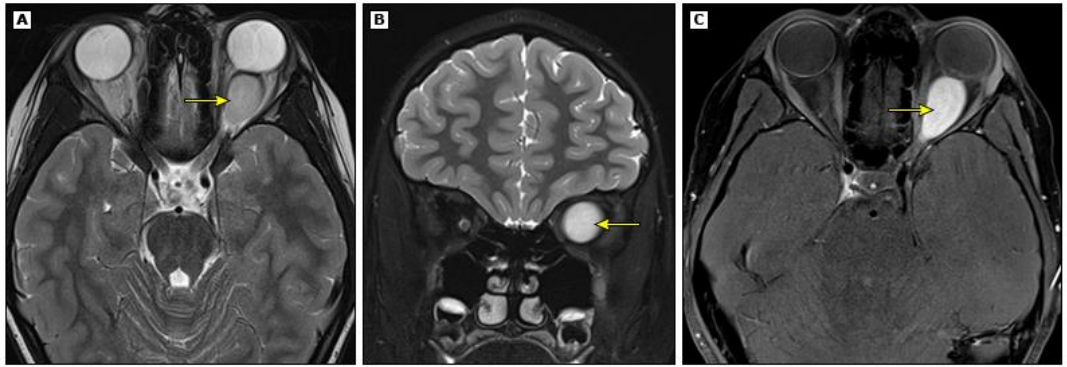
Neurofibromas



Plexiform neurofibroma

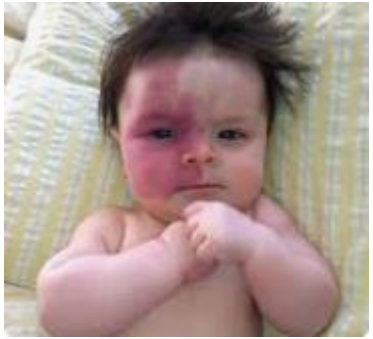
NF-1 - Importance of Early Diagnosis

- Early recognition of NF1 may reduce complication rates of Optic Pathway Gliomas.
- Optic Pathway Gliomas occur in 20% of patients with NF1
- Less than 20% of them require treatment.
- There is consensus that early diagnosis of NF1 is vital so ophthalmic evaluations are initiated.

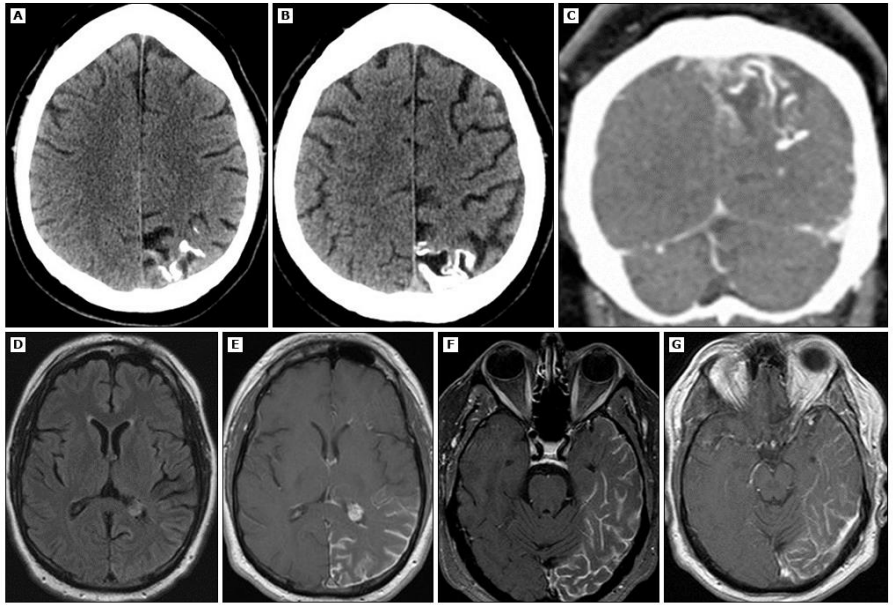


3. Sturge Weber Syndrome (SWS)

- SWS is a rare condition characterized by a facial capillary malformation (a port wine birthmark) and associated leptomeningeal capillary venous malformation, involving the brain and eye
- About 3 in 1,000 babies are born with a port wine birthmark. Only 6% of them have SWS.
- Due to a somatic mutation in GNAQ or GNA11 genes.
- Skin: Port wine stain - involvement of the forehead/upper eyelid increased the risk of brain involvement
- Brain: Risk of seizures, hemiparesis, visual field loss, and intellectual disability
- Eye: Glaucoma in 50% (and half at birth)!

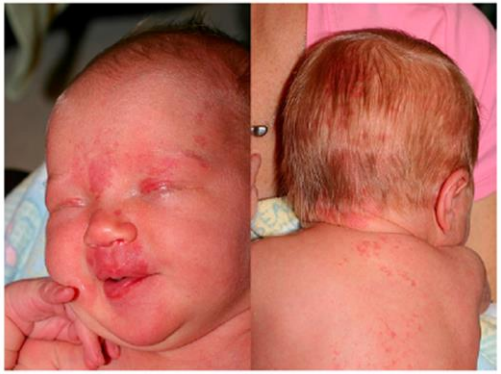


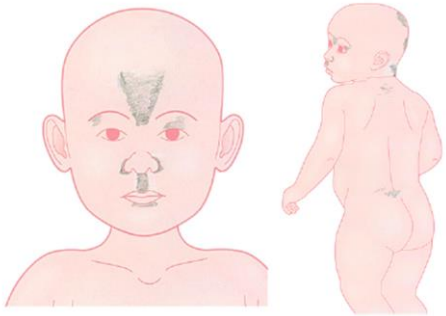
SWS



SWS is easily confused with Neavus Simplex (stork bite)

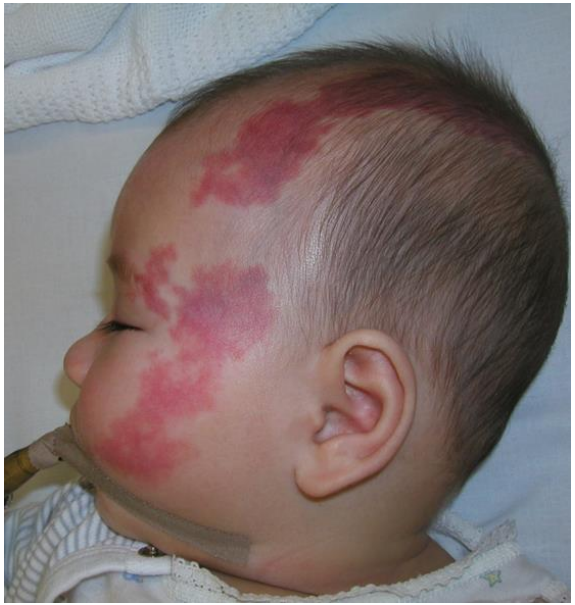
- 40% of newborns
- Typically: forehead/glabella, upper eyelids, nape of neck
- May be extensive distribution “naevus simplex complex”:
- Nose, philtrum, shoulders, upper and lower back in the midline
- No systemic associations
- Generally lightens and disappears by age 5yrs



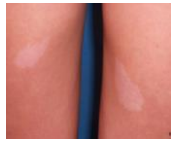
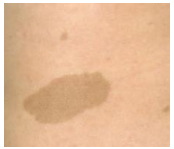
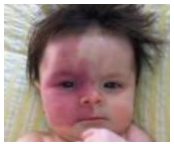


Importance of Early Diagnosis of Port Wine Stain/SWS

- About 50% of patients with SWS have glaucoma at birth
- Prompt management is ideal for optimal outcomes



Importance of early diagnosis in neurocutaneous conditions

Condition	Birthmark	Complication
Tuberous sclerosis		Epilepsy/Developmental delay
Neurofibromatosis 1		Visual loss from optic pathway glioma
Sturge Weber Syndrome		Visual loss from glaucoma

What should you do?

Please get the patient to see their GP and get a referral to **dermatology** at RCH**, with photos,** if there are:

- > 2 hypomelanotic macules
- > 5 cafe- au lait macules
- Port of wine stain involving the face

Our aims

- Educate
- Develop a skin check list for MCHN that integrates into your workflow
- Develop a referral template that is simple to use
- Early diagnosis to ensure optimal management