When you hear hooves – sometimes it is a zebra.

(A really rare zebra)

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The Case

15 month old male. At presentation:

Cough – 5 month history.

Discharge from left ear – 2 separate occasions.

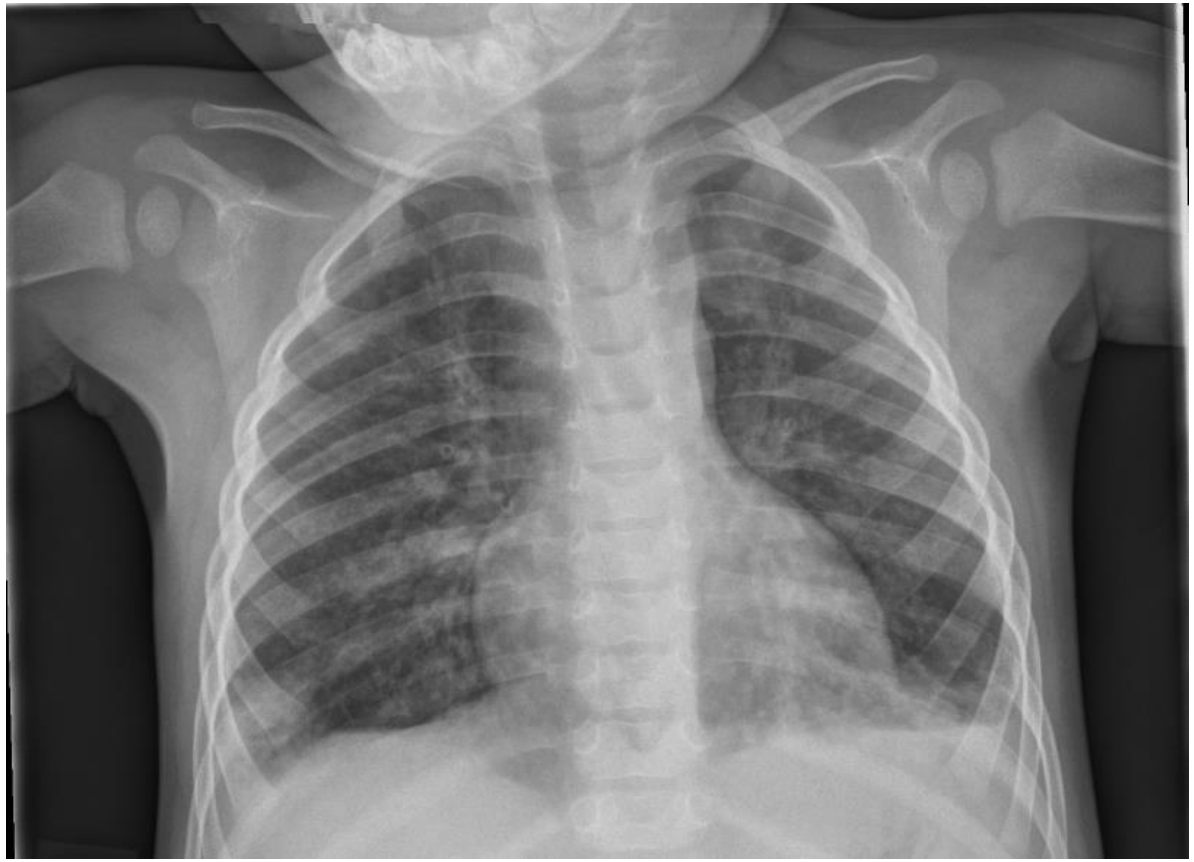
Diarrhoea – Loose stools 4-5x/day.

Past Medical History:

- **Rhinitis.**
- **Growing well.**
- **Not meeting** all development milestones.
- Up to date with immunisations.
- No known TB contacts.

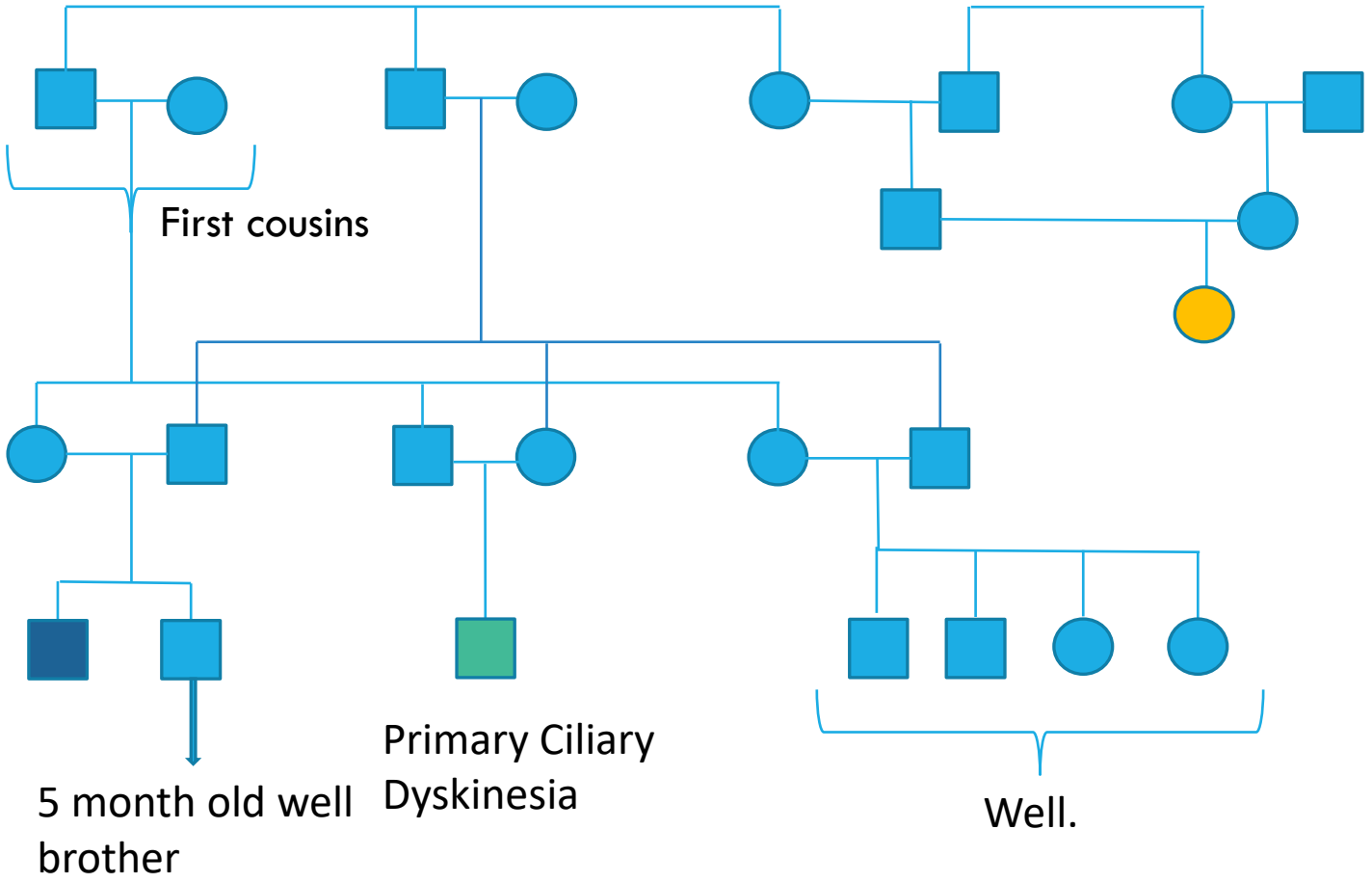
Examination

- Coarse crepitations bilaterally. No clubbing.
- Right bulging tympanic membrane.
- Otherwise *normal examination.*



Question 1:
What do you think the most likely diagnosis is at this stage?
HIV.
Primary immunodeficiency.
PCD.
Cystic Fibrosis.

Family History



Questions 2:

Bearing in mind the family history, what is the probability of this child having PCD?

25%

12.5%

6.25%

3.125%

Investigations

FBC and WCC differential, Immunoglobulins (GAM + Functional), Sweat Test, Ciliary Brushings all normal.

Microbiology at presentation:

- Viral throat swab – Adenovirus +ve on PCR.
- Right ear swab culture *H.Influenzae*.
- Sputum – Upper respiratory tract flora. Gastric washings did not grow *M.Tuberculosis.*

Total Lymphocytes	**2749**	**cells/uL**
Percent CD3 cells	38	%
Lymph CD3+ cells	1037	cells/uL
Percent CD4 cells	9	%
Lymph CD3+4+ cells	240	cells/uL
Percent CD8 cells	6	%
Lymph CD3+8+ cells	175	cells/uL

%CD3+ TCR a/b+ve	0%
TCR a/b+ CD4/8-ve	0%
%CD3+ TCR g/d +ve	22%
TCR g/d+ CD4/8-ve	15%

Question 3:

Considering the T-Cell subset analysis, what is the problem?

An absent population of TCR a/b +ve CD3+ cells.

Low population of CD4 and CD8 cells.

A population of CD3+ cells which are expressing neither CD4 or CD8.

All of the above

Diagnosis and management

TCR alpha sub-unit deficiency.

- Genetically confirmed.
- 2 other families with 2 other patients in the literature.
- Chromosomal region 14q11.2.
- Homozygous G to A substitution affecting the TCR-Alpha subunit constant gene (TRAC).

Initially managed with antimicrobial prophylaxis and fortnightly Cuvitru 2g.

- MDT approach

Currently awaiting bone marrow transplant but…:

- Lung lesion – **EBV lymphoproliferative disease**.
- High EBV load, requiring Rituximab.

Learning points

Consider primary immunodeficiency even if there seems to be another, more obvious, diagnosis.

Not to be fooled when a child is growing is well.

Family history – Important, but:

- Important not to rule out other conditions.
- Is it feasible to have found the second-cousin with the same diagnosis?
- Also difficult to establish with large, consanguineous families.

Trust the radiographer's instincts!

Question 4

Why is this disease not always severe early on when this affects the major T-Cell receptor?

I have no idea.

I have a theory but I’m not willing to discuss it.

I have a theory and want to discuss in a minute.

I don’t really care!