European Reference Network
for rare or low prevalence complex diseases

Network Paediatric Cancer (ERN PaedCan)

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Dilemmas in a patient with Bloom syndrome and synchronously developed medulloblastoma and Wilms tumour

Moderation: Fiona Poyer

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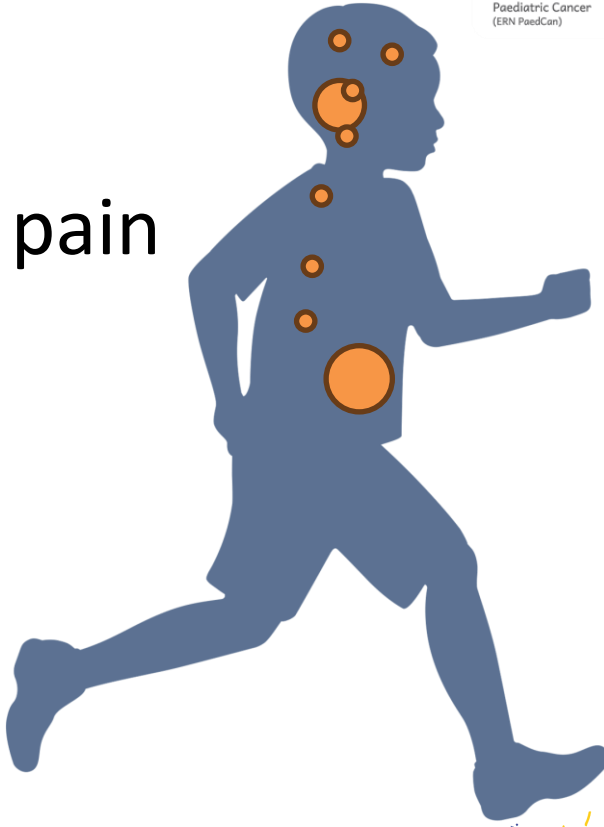
COI declaration

- Aleksa Jovanovic: nothing to declare.
- Katrin Scheinemann: nothing to declare.

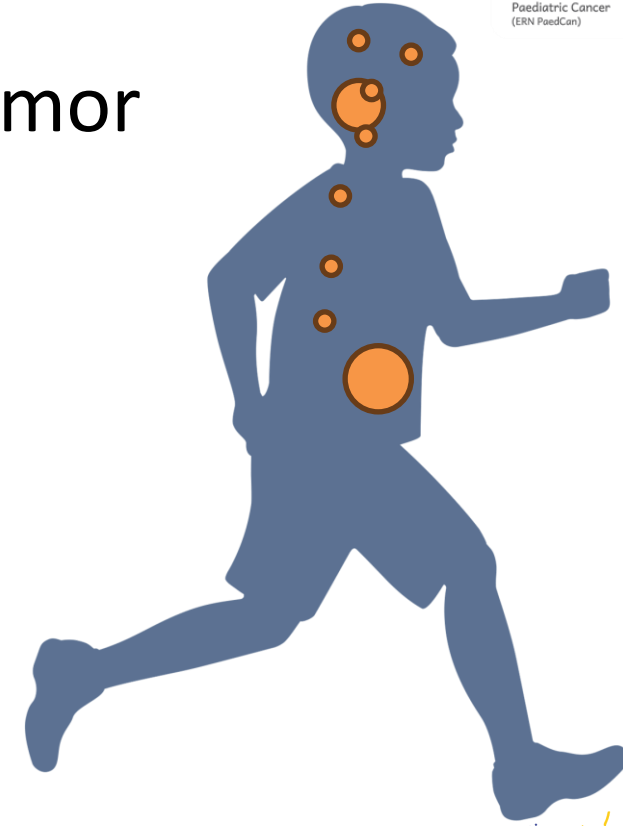
The patient

- 3-year-old boy
- Feb 2024: vomiting, abdominal pain
- US, CT scans
- Head and spine MRI
  - Leptomeningeal dissemination



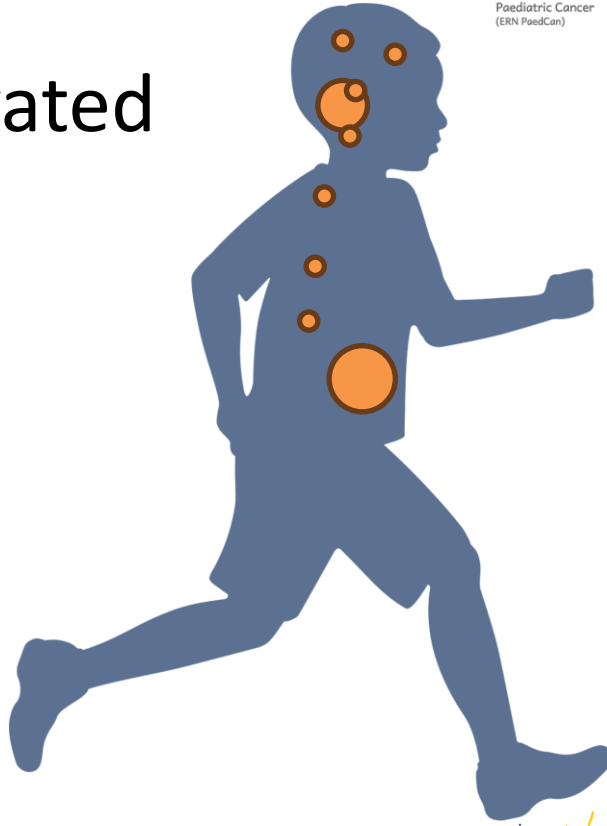
First steps

- March 2024: posterior fossa tumor resection
- April 2024: right nefrectomy



Pathology

- MBL, CNS WHO gr. 4, SHH-activated (clasic histology, large cell zones, melanine producing)
- WT, CS II, blastemal type, intermediate risk



Question 1

- Which patients have better 5-year survival?
  a) Patients with medulloblastoma
  b) Patients with Wilms tumour

Medulloblastoma
70 – 80%

Wilms tumour
80 – 90%

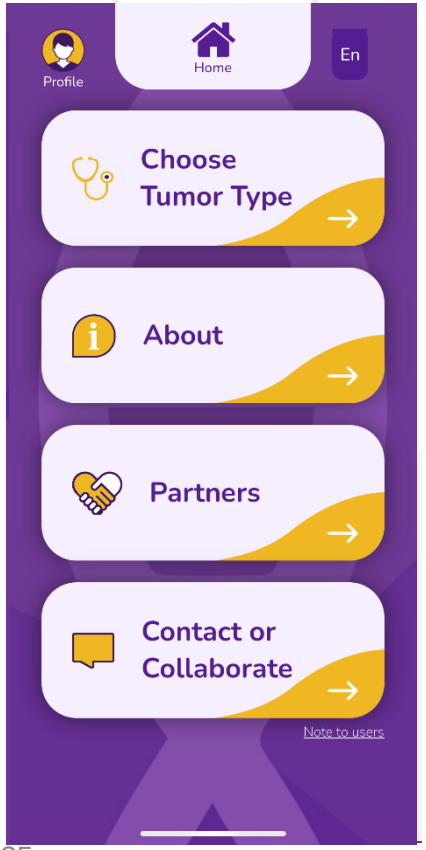
A child with **two or more** synchronously or metachronously developed tumours should always rise suspicion of having a **cancer predisposition syndrome**.

Question 2

- What are the other features that are highly suspicious of cancer predisposition syndrome?
  a) tumour type
  b) family history (cancer at young age, consanguinity)
  c) excessive treatment toxicity
  d) aberrant growth, skin changes, dysmorphic features, intellectual disability etc.
  e) all answers from a) to d)

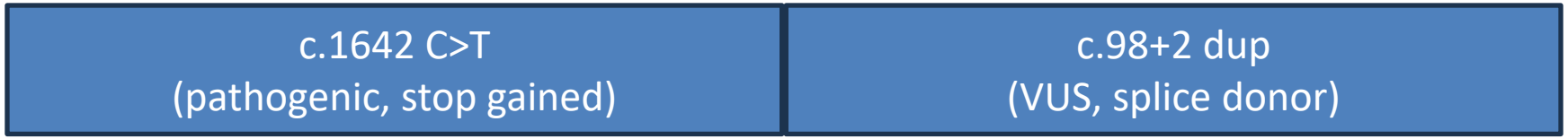
Tools for physicians

- Revised Jongmans tool (2016)
- MIPOGG mobile app (2017)
- ChiCaP (2024)
- …



Does our patient have cancer predisposition syndrome?

- Clinical exome sequencing



BLM gene

Bloom syndrome

Bloom syndrome

- Cancer predisposition syndrome
  - Multiple carcinoma types in early adulthood
  - **NHL**, AML, ALL, Wilms tumor in childhood
  - Only 3 cases of medulloblastoma in literature
- Increased toxicity of chemo- and radiotherapy
- Life expectancy around 30 years

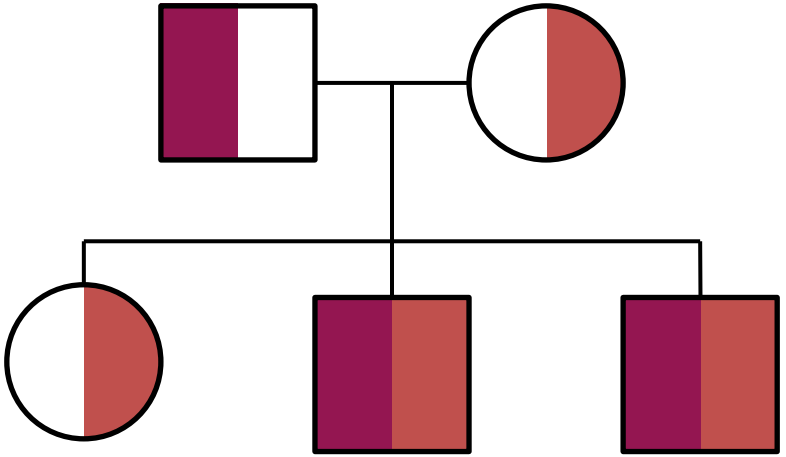
Bloom syndrome

- Dolichocephaly
- Long face, malar hipoplasia, malar rash
- High-pitched voice
- Short stature
- Immunoglobulin deficiency
- Prone to severe infections

Question 3

- What is the chance that a sibling has Bloom syndrome if both parents are carriers?
  a) 25%
  b) 50%
  c) 75%
  d) 100%

Family tree



Best approach for our patient?

- Chemotherapy for Wilms tumour?
- Intensive chemotherapy for high-risk medulloblastoma?
- Chemotherapy dose modification (Bloom syndrome)?
- Radiation therapy (Bloom syndrome)?
- Is the treatment curative?

Epilogue

- From April 2024 to August 2024: 3 SKK cycles (HIT MED) with modifications
- Disease regression after first cycle; constant progression afterwards
- October 2024: Patient died after clinical deterioration prior to planned CSI with dose reduction

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DISCUSSION

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Take home messages

- Think of **cancer predisposition syndromes** in case of 2+ tumours in a patient.
- Patients with cancer predisposition syndromes might have **increased chemo- and radiotoxicity** and require dose modification.
- To treat or not to treat?

Cancer predisposition syndromes

- 10% + of all new diagnosis in pediatric oncology
- Treatment modification (RT, alkylating agents etc.) – evidence?
- Successful treatment of primary cancer
- CPS and tumor follow up

Cancer predisposition syndromes

- Minimize risk for SMN (primary treatment, Xrays, sun exposure, evidence based screening)
- Genetic testing and family counselling
- Right «not to know»
- Psychosocial support