Teenager with a history of acute myeloid leukaemia with an isolated brain lesion

Donna Johnston,¹ Joerg Krueger,² Lesleigh Abbott¹

¹Division of Hematology/Oncology, Children's Hospital of Eastern Ontario, Ottawa, Ontario, Canada

²Division of Hematology/Oncology, Hospital for Sick Children, Toronto, Ontario, Canada

Correspondence to
Dr Donna Johnston;
djohnston@cheo.on.ca

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DESCRIPTION

A 12-year-old girl was diagnosed with acute myeloid leukaemia (AML) with cytogenetics showing inv(14)(q11.2q32). Cerebrospinal fluid (CSF) was negative for leukaemia. She was treated based on Children's Oncology Group protocol AAML1031 with an Medical Research Council (MRC)-based backbone of therapy. Following one chemotherapy cycle, remission was obtained and minimal residual disease (MRD) testing was negative. She completed five cycles of chemotherapy and her CSF was negative throughout therapy. She underwent imaging of her head as part of the workup for prolonged febrile neutropenia and this was normal. She was well for 7 months (13 months from original diagnosis) when she developed new onset ataxia and headaches. She underwent MRI (figures 1–3), which demonstrated a posterior fossa mass involving the vermis and causing secondary tonsillar herniation. The lesion enhanced with contrast and had surrounding oedema. The differential at this time was felt to be relapse of her AML, development of a new brain tumour or less likely an infection.

As relapse of AML was the most likely diagnosis, a bone marrow was done which was normal. MRD testing was negative and lumbar puncture was not able to be safely done because of cerebellar tonsillar descent. Because the diagnosis of relapse could not be confirmed, she underwent resection of the mass, which showed a granulocytic sarcoma with the same flow cytometry and cytogenetic abnormality as her original AML. This is similar to reports in the literature of a cerebellar myeloid sarcoma relapse of AML in a paediatric patient.¹ Her neurological symptoms resolved post surgery. Repeat marrow 10

Figure 2 Coronal image.

days after the first marrow, and lumbar puncture, showed negative CSF but the marrow was positive for disease by MRD testing. She was treated with radiation therapy (1800 cGy in 10 fractions to the whole brain with a 540 cGy boost to the tumour bed), and chemotherapy with fludarabine, cytarabine and granulocyte colony-stimulating factor followed by an unrelated donor stem cell transplant conditioned with fludarabine, busulfan and thiopeta. She remains in remission, 10 months since her relapse.

Figure 1 Sagittal MRI image showing lesion in cerebellum with surrounding oedema.

Figure 3 Axial image.

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Learning points

- ▶ There should be a very low threshold to perform central nervous system imaging for worrisome or new neurological symptoms in patients with a history of acute leukaemia.
- ▶ An isolated cerebellar lesion is an unusual presentation of acute myeloid leukaemia relapse, thus confirmation of the diagnosis with tissue is necessary before initiating therapy.

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