Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Neurological relapse of acute lymphoblastic leukemia mimicking COVID-19 associated Guillain-Barré Syndrome

To the editor:

We herein present a case of neurological relapse of acute lymphoblastic leukemia (ALL) presenting as meningo-radiculoneuropathy after contracting Corona virus disease –2019 (COVID-19).

A 12-year-old girl diagnosed case of Philadelphia chromosome positive acute lymphoblastic leukemia in complete remission, presented during maintenance phase of FRALLE 2000 protocol with acute diplopia, urinary retention and weakness of all four limbs 20 days after the diagnosis of COVID-19. Patient had been off chemotherapy for 3 weeks. On examination, the patient had flaccid quadriparesis, predominant on lower extremities, facial and abducens nerve palsy on the right side and third nerve palsy on the left. A clinical diagnosis of Post COVID-19 Gulliane Barre Syndrome (GBS) was kept.

Electroneuromyography (ENMG) revealed axonal sensorimotor polyradiculoneuropathy with a neurogenic tracing, and signs of active denervation and temporal summation, in all 4 limbs, respecting a pluriradicular distribution. However, brain and spinal magnetic resonance imaging (MRI) revealed diffuse leptomeningeal contrast enhancement of the central nervous system, including cauda equina roots. Whole body tomography was unremarkable. Cerebrospinal fluid (CSF) study revealed 3590 atypical lymphocytes per mm^3, glucose was 0.41 g/l, proteins was 0.54 g/l. Complete blood count, hemostasis and peripheral blood smear were unremarkable. Bone marrow examination revealed 15% lymphoblasts and immunophenotyping revealed B-cell ALL. Karyotype study of 27 cells using RHG technique revealed 46,XX, t(9; 22) (q34:q11) indicating a positive Philadelphia chromosome. Complete infectious workup (myocobacterium tuberculosis, Lyme disease, poliovirus etc.) was negative and COVID-19 polymerase chain reaction (PCR) was negative. Acute lymphoblastic leukemia (ALL) is the most common childhood cancer and an important cause of cancer-related deaths during the first two decades of life [1–3]. While some 5–8% of ALL cases will have neurological involvement at initial presentation, 30% of relapses entail neurological manifestations [4,6]. Neurological involvement remains a negative prognostic factor [4,5] Our patient presented the Philadelphia mutation, that is the t(9; 22), and thus was at high risk of neurological involvement. Recent advances in the fields of diagnostics and therapeutics have improved prognosis in patients [2,3,6].

Our patient presented, not only with cranial nerve involvement, but also polyradiculoneuritis. While it stands to reason that the context of neoplastic history makes the B-cell ALL a very likely culprit, it must be pointed out that in the case of our patient, other differentials are important to discuss, mainly infectious and post infectious acute polyradicluloneuropathy GBS [4], given the immunocompromised state and the current pandemic context (COVID19) [4,7,8]. Nevertheless, toxic neuropathies should also be considered. Performing lumbar puncture (LP) is an important procedure at the time of diagnosis and MRI is required if CNS involvement is suspected [8,9]. Neurological examination and appropriate diagnostic workup are required to parse out the various differentials.

This case points to the need to have a high suspicion for neurological relapse in patients of ALL presenting with GBS like symptoms post COVID19.

Consent statement

Written and verbal consent for publication was obtained from the patient and his parents.

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Declaration of competing interest

The authors have no conflict of interest to declare.

References

[1] Smith MA, Seibel NL, Altekruse SF, Ries LAG, Melbert DL, O'Leary M, et al. Outcomes for children and adolescents with cancer: challenges for the twenty-first century. J Clin Orthod 2010;28:2625–34.
[2] Tatar A-S, Nagy-Simon T, Tomuleasa C, Boca S, Astilean S. Nanomedicine approaches in acute lymphoblastic leukemia. J Contr Release 2016;238:123–38.
[3] Gafencu GA, Tomuleasa CI, Ghiaur G. PARP inhibitors in acute myeloid leukaemia therapy: how a synthetic lethality approach can be a valid therapeutic alternative. Med Hypotheses 2017;104:30–4.
[4] Maramattom BV, Zachariah AN, Meleth HA, Zachariah ZT, Mathew KM. Post covid-19 Guillain Barre Syndrome. Ann Indian Acad Neurol 2021;24(4):622–3.
[5] Johnston DL, Alonzo TA, Gerbing RB, Aplenc R, Woods WG, Meshinchi S, et al. Central nervous system disease in pediatric acute myeloid leukemia: a report from the Children's Oncology Group. Pediatr Blood Cancer 2017;64.
[6] Terwilliger T, Abdul-Hay M. Acute lymphoblastic leukemia: a comprehensive review and 2017 update. Blood Cancer J 2017;7:e577-e577.
[7] Frishman-Levy L, Izraeli S. Advances in understanding the pathogenesis of CNS acute lymphoblastic leukaemia and potential for therapy. Br J Haematol 2017;176:157–67.
[8] Alsadeq A, Schewe DM. Acute lymphoblastic leukemia of the central nervous system: on the role of PBX1. Haematologica 2017;102:611–3.

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[9] Sanchez R, Ayala R, Alonso RA, Martínez MP, Ribera J, García O, et al. Clinical characteristics of patients with central nervous system relapse in BCR-ABL1-positive acute lymphoblastic leukemia: the importance of characterizing ABL1 mutations in cerebrospinal fluid. Ann Hematol 2017;96:1069–75.

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