Isolated Central Nervous System Relapse After 10 Years in a Case of Primary Testicular Lymphoma Detected on ^{18}F -FDG PET/CT

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A 51-year-old male patient with a past history of right-sided primary testicular non-Hodgkin lymphoma (NHL) in 2003 was referred to our department with a clinical suspicion of relapse in the brain. The patient was previously managed with bilateral orchiectomy, targeted chemoimmunotherapy with R-CHOP regimen as well as neuroprophylactic chemotherapy with intrathecal methotrexate and cytarabine in 2003. He later started developing episodes of dull headache 10 months back. The patient was referred to our department for ^{18}F -fluorodeoxyglucose (^{18}F -FDG) positron emission tomography/computed tomography (PET/CT) for restaging purpose. ^{18}F -FDG PET/CT in this patient revealed a metabolically active hyperdense mass (Fig. 1a–g, arrows), involving the corpus callosum as well as the adjacent brain parenchyma on either side associated with peri-lesional oedema, giving an appearance identical to that of a butterfly glioblastoma [1]. There was no evidence of any other focus suggestive of metastasis within the neural axis including the meninges. Also, the rest of the scan was otherwise normal, with no evidence of disease relapse elsewhere. The patient underwent magnetic resonance imaging (MRI) of brain for further characterisation of the brain lesion, which revealed a hypointense, enhancing mass involving the splenium and body of the corpus callosum on either side of the midline with involvement of adjacent brain parenchyma and associated with mild-to-moderate vasogenic oedema suggestive of secondary central nervous system (CNS) lymphoma. Based on the antecedent history of testicular lymphoma and a serum lactate dehydrogenase (LDH) of 394 U/l (125–243 U/l) in this patient, a diagnosis of CNS

relapse of the testicular lymphoma was made. As the tissue diagnosis procedure of the brain lesion to assess the clonal variance could not be performed, a distant possibility of a second primary lymphoma affecting the CNS cannot be ruled out in this patient. Subsequently, the patient has been instituted on chemotherapy and the treatment will be subsequently tailored as per the response of the patient to the therapy, which shall be evaluated through periodic PET/CT scans.

Primary testicular NHL is an uncommon type of extra-nodal presentation, accounting for 1 % of all NHL and 1–9 % of testicular neoplasm [2]. Primary testicular lymphoma demonstrates a continuous pattern of relapse and propensity for extra-nodal sites such as the CNS [3]. The major pattern of presentation is of leptomeningeal involvement, while only approximately one-third of the affected patients present with parenchymal disease [4]. Also, at the time of diagnosis of their CNS manifestation, progressive systemic lymphoma would be noted in up to 50 % of the patients [4]. In addition, the median time duration of appearance of CNS secondaries in a case of NHL usually ranges from 5 to 12 months after the primary diagnosis of NHL [4]. In a survey by the international extra-nodal lymphoma study group, the estimated 5- and 10-year risk of CNS relapse were found to be 19 % (95 % CI, 14–25 %) and 34 % (95 % CI, 25–46 %), respectively [5]. Usually whole-brain radiotherapy is given as treatment; however, in the elderly this treatment has substantial potential neurotoxicity. The particularly protracted latent period of 10 years involved in the detection of CNS involvement in this case; absence of evidence of disease relapse elsewhere; as well as the unusual pattern of presentation around the region of the corpus callosum on PET/CT images mimicking the neuroimaging appearances of glioblastoma [6] and, less commonly, in primary CNS lymphoma [7], are a few interesting diagnostic features in this patient which deserve attention. Although relapse of testicular lymphoma was documented with ^{18}F -FDG PET/CT [8], CNS relapse has not been documented on

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Fig. 1 ^{18}F -FDG PET/CT (a maximum intensity projection PET; b–d transaxial PET, CT and PET/CT; e–g coronal PET, CT and PET/CT) images revealing ^{18}F -FDG-avid hyperdense mass (arrows), involving the

corpus callosum as well as the adjacent brain parenchyma on either side associated with peri-lesional oedema

^{18}F -FDG PET/CT. All these collective diagnostic singularities also carry important implications in terms of further clinical management of this patient and similar cases in the future.

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Conflict of Interest Sellam Karunanithi, Ganesh Kumar, Varun Singh Dhull, Shambo Guha Roy and Rakesh Kumar declare that they have no conflict of interest.

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