Neurolymphomatosi: Treatment Response and Progression Monitored by $^{18}$F-FDG PET/CT

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Abstract

Neurolymphomatosis (NL) is the term for infiltration of the peripheral nervous system by neurotropic neoplastic cells in the setting of a known or unknown haematological malignancy. Optimal treatment management of this rare clinical entity remains ill defined. We report the case of a 65-year-old woman with plexiform NL of the right sciatic nerve. Initial complete response to systemic chemotherapy, and later, relapse and progression, were accurately assessed by sequential 18-FDG-PET/CT studies, performed after a few cycles of the initial chemotherapy, and following completion of both initial treatment and salvage therapy.

Keywords: Neurolymphomatosis; PET/CT; Response assessment

Introduction

A plexiform Neurolymphomatosis (NL) of the right sciatic nerve was diagnosed in a 65-year-old woman with progressive sensori-motor impairment of the right lower leg, diagnostic work-up including MRI, 18-FDG-PET/CT and open biopsy of a FDG-avid inguinal adenopathy. MRI results have been previously reported elsewhere [1]. Baseline 18-FDG-PET/CT showed intense heterogenous tracer uptake along the right sciatic nerve, as well as in numerous nodal and extra nodal sites (Figure 1A and C). Histological analysis revealed an aggressive B-cell non-Hodgkin lymphoma, unclassifiable, intermediate between diffuse large B-cell lymphoma and Burkitt's lymphoma. Immuno-histochemical analysis showed that tumor cells were positive for CD20, CD79a, BCL2, BCL6, and negative for CD10, CD5, CD23, D1 cyclin, TDT, CD34. No translocation of cMYC gene was detected on fluorescent in situ hybridization analysis. The patient was treated by eight cycles of R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone). Interim 18-FDG-PET/CT, performed after three R-CHOP cycles, detected no residual FDG-avid tumour (Figure 1D), contrasting with only partial neurological and MRI improvement. One month after the last chemotherapy cycle, the patient complained of reduced strength in the left hand and painless numbness from the fourth and fifth fingers to the ulnar styloid process, suggesting tumoral relapse in the right sciatic nerve and in a multitude of nodal and extra nodal sites (Figures 2A and B). Zoography of the left upper limb revealed a diffuse ulnar nerve thickening, consistent with NL. 18-FDG-PET/CT showed discontinuous hyper metabolic uptake in the left ulnar nerve as well as tumoral relapse in the right sciatic nerve and in a multitude of nodal and extra nodal sites (Figures 2A and B). Zoographically-guided biopsy of a hyper metabolic lesion in the right mammary gland confirmed unclassifiable aggressive B-cell non-Hodgkin lymphoma. Laboratory tests showed mild red cell count decrease (3.4 $10^{11}$/mm$^3$) and increased serum LDH (277 U/l, N: 135-250). Cerebrospinal fluid examination revealed high protein content (105 mg/dl, N: 15-45), low glucose level (28mg/dl, N: 40-80) and a mild pleiocytosis (24 mm$^3$, N: 0-10) that consisted mostly of lymphoma cells. Three cycles of R-DHAOx (rituximab, dexamethasone, high-dose cytarabine, oxaliplatin) and intrathecal injections of cytarabine, every 3 weeks, were administered. Unfortunately, response to salvage chemotherapy, as assessed by 18-FDG-PET/CT at the end of therapy, was only partial (SUV reduction ranging from 40% to 50%, depending on the involved site) and the patient was placed under supportive care. She died 15 months after her initial diagnosis of NL. NL is the term for infiltration of the peripheral nervous system by neurotropic neoplastic cells in the setting of a known or unknown haematological malignancy [2].
facilitated by the use of contemporary imaging techniques, such as MRI and 18-FDG-PET/CT [1-13]. To date, optimal therapeutic management of NL remains however ill defined [2-4] and the median survival (2 to 21 months from diagnosis as a function of the underlying haematological malignancy) [2,4] is still far shorter than in lymphomas without NL [14,15]. The majority of patients with NL now undergoes systemic chemotherapy alone or combined with intrathecal chemotherapy or radiotherapy, mainly limited-field radiotherapy to ensure complete tumour eradication or relieving unremitting neuropathic pain attributed to a particular nerve, plexus or nerve root lesion [2-4]. Assessing therapy response is particularly challenging in NL as, even in absence of residual malignancy, neurological recovery and resolution of electrophysiological and MRI anomalies are often incomplete, probably reflecting persistent changes in neural and per neural structures [2]. Furthermore, in a patient who develops new neurological symptoms during or after therapy, NL relapse or progression has to be differentiated from, even in absence of residual malignancy, neurological recovery and resolution of electrophysiological and MRI anomalies are often incomplete, probably reflecting persistent changes in neural and per neural structures [2]. Furthermore, in a patient who develops new neurological symptoms during or after therapy, NL relapse or progression has to be differentiated from changes in neural and per neural structures [2]. Furthermore, in a patient who develops new neurological symptoms during or after therapy, NL relapse or progression has to be differentiated from changes in neural and per neural structures [2].

References


