

The False Positivity of Positron Emission Tomography Owing to Teething

In cancer treatment, diagnostic tools and treatment options have improved tremendously. However, the results of diagnostic tests sometimes may not be compatible with clinical course, and cause a dilemma whether the patient is in remission or relapse.

A 13-year-old-boy with T-cell lymphoblastic lymphoma was treated with chemotherapy (BFM-NHL-95). The patient was in remission after evaluation of protocol I Phase I. After protocol I phase II, all parts of body were normal except pathological 2-fluoro-2-deoxy-D-glucose (^{18}F -FDG) uptake of mentum anterior (SUVmax: 14.9) (**Fig. 1**). On physical examination, teething was seen in this region. The uptake was attributed to teething, and treatment was continued with protocol M. After this protocol, pathological FDG uptake was not detected in any part of body. The patient is in good condition with no tumor recurrence in the maintenance treatment.

Positron emission tomography (PET/CT) imaging can be used as an excellent tool in the diagnosis, staging and restaging of cancer. A glucose analog, ^{18}F -FDG, is taken up by cells via glucose transporter, which then undergoes phosphorylation by hexokinase to FDG-6 phosphate. This does not undergo further metabolism and becomes trapped in the cells with high metabolic rate – in malignant tumors pathologically, and some normal tissues physiologically [1]. Response criteria are updated in adult lymphoma to include PET/CT, but its utility is

under investigation in the pediatric lymphomas [2,3]. It is unclear whether the abnormal findings in PET/CT are enough to change therapy [4] because false positives and false negatives are possible on PET/CT. Physiologic ^{18}F -FDG uptake in lymphoid tissue, brown adipose tissue, glandular tissue, muscular system, gastrointestinal tract, and inflammation due to radiation, chemotherapy, trauma or infection are some of the causes of false positive interpretations [5].

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FIG. 1 FDG uptake on the mentum anterior (SUVmax:14.9).