^{18}F-FDG-PET, gallium-67 and somatostatin receptor scintigraphy, in ocular MALT lymphoma

To the Editor: I read with interest the brief review of Dr. OT. Yaylali et al, in the Hell J Nucl Med 2007; 10(3): 160-163 concerning marginal zone lymphoma (MZL) of the mucosa-associated lymphoid tissue (ocular MALT lymphoma) [1]. As noted by the authors, whole body gallium-67 scan (GS) is helpful in the diagnosis, treatment and follow-up of conjunctive MALT lymphoma. We would like to add that the various histological types of non-Hodgkin's lymphoma (NHL) differ in ^{67}Ga avidity as well as unilateral or bilateral orbital ^{67}Ga uptake needs different diagnostic approach. It has been reported that in low grade NHL, the sensitivity of GS was about 50% for MALT lymphoma [2]. The imaging protocol suggested by Even-Sapir et al. includes a baseline before treatment examination, in order to assess the ^{67}Ga avidity of the lymphoma, followed by GS during and after treatment [2]. It is noted that unilateral orbital increased ^{67}Ga uptake may indicate either a focal inflammatory or a neoplastic disease, thus requiring further evaluation. Eighty per cent of malignant orbital neoplasms and 20% of benign neoplasms show ^{67}Ga uptake [3]. Thus unilateral orbital ^{67}Ga uptake suggests further tests with other imaging modalities or direct pathology examination [3].

As for the bilateral orbital increased ^{67}Ga uptake, this is a fairly common incidental finding and usually needs no further tests, though it may be due to an inflammatory process especially in cases of a systemic disease such as sarcoidosis or Sjögren's syndrome [3].

Perhaps the authors of the above article would like to comment on the use of ^{18}F-fluoro-deoxy-glucose positron emission tomography (^{18}F-FDG-PET) and somatostatin receptor scintigraphy (SSR-S) in ocular MALT lymphoma. In most of NHL studies, ^{18}F-FDG-PET was useful for the diagnosis and evaluation of treatment response of aggressive NHL, while data regarding the role of ^{18}F-FDG-PET in different subtypes of indolent lymphoma were controversial [4-10]. Some authors found no focal tracer uptake with ^{18}F-FDG in MALT lymphoma [6, 7]. Later the same group showed ^{18}F-FDG uptake in 83% of the MALT lymphoma with plasmacytic differentiation [8]. Others reported that 81% of extranodal MZL patients had focal tumor tracer uptake [5]. The sensitivity of PET/CT in gastric MALT was found to be 38.9%, while in non-gastric MALT lymphoma it was 75% [4]. PET/CT detected active disease in 100% of the patients with advanced disease (stages III–IV) but only 42.3% in early stage disease (stages I–II). The sensitivity of this test depends on the location and the stage of the disease [4]. Normal glucose uptake in the stomach and the orbital region may sometimes interfere with the diagnosis of MALT lymphoma.

Others have reported that SSR-S was positive in 84% of the low-grade NHL patients with a specificity of 98%-100%. There has been a high proportion of negative results (44%) in MALT lymphoma [11]. Others found that SSR-S has comparable results with GS for the detection of MALT lymphoma [12] as in PET/CT studies. In primary gastric MALT lymphoma SSR-S scan was ineffective [13] while in primary extragastric MALT lymphoma, the uptake of the tracer was high (in all 10 patients studied) [13,14]. According to the present data, SSR-S is not recommended for routine use in MALT lymphoma, while GS and ^{18}F-FDG-PET imaging seem to be the methods of choice to diagnose ocular MALT lymphoma.

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Author's reply: We thank Dr D.Kakhki for his interest and comments on our paper, published in *Hell J Nucl Med* 2007;10(3):160-163, concerning marginal zone lymphoma of the mucosa-associated lymphoid tissue (conjunctival MALT lymphoma) [1]. As noted in our brief review, gallium-67 citrate (^{67}Ga-C) scintigraphy is known to be the best available functional imaging modality for evaluating patients with non-Hodgkin's lymphoma (NHL) and Hodgkin's disease (HD). Because ^{67}Ga-C is a tumour viability agent, the role of ^{67}Ga-C scan is primarily for the follow-up of these patients. ^{67}Ga-C scintigraphy can successfully differentiate between the presence of viable lymphoma, which requires further treatment, and fibrotic and necrotic tissues, which do not require treatment. Other tumour-seeking agents, such as thallium-201, technetium-99m methoxy isobutyl isonitrile and indium-111 octreotide, have been investigated in lymphoma, as an alternative to ^{67}Ga-C scintigraphy in specific clinical settings, but are of limited value. Fluorine-18 fluorodeoxyglucose (^{18}F-FDG) imaging is gradually replacing ^{67}Ga-C scan for the assessment of lymphoma. The ^{18}F-FDG overcomes some of the limitations of ^{67}Ga-C while sharing its tumour viability characteristics [2]. However, the utility of ^{18}F-FDG PET scans in staging and management of extranodal marginal zone lymphomas, remains unclear [3]. Many reports show a correlation between high ^{18}F-FDG uptake value and high histologic grade of lymphoma. Although there is evidence that ^{18}F-FDG PET imaging detects disease accurately in some low grade histologies such as follicular lymphoma and mantle cell lymphoma, a few studies with limited numbers of patients report that ^{18}F-FDG PET imaging is unreliable for extranodal MALT lymphomas [3, 4]. However, some authors showed that MALT lymphomas have ^{18}F-FDG avidity, and also that ^{18}F-FDG PET for MALT lymphomas is useful for staging and the detection of sites of involvement or areas of transformation not appreciated with other standard imaging modalities [5, 6].

We did not perform ^{18}F-FDG PET and ^{111}In- SSR-S studies to our patient because he had a low-grade marginal zone conjunctival MALT lymphoma . Previously published reports have shown that both imaging methods are not better especially in these cases and not more cost effective than the ^{67}Ga-C scan. Additionally, increased ^{18}F-FDG uptake can detect inflammatory lesions but can not differentiate them from MALT lymphoma. Because of that, we preferred to use ^{67}Ga-C rather than the other radiopharmaceuticals. Furthermore, our study demonstrated that ^{67}Ga-C scan findings may identify, stage and follow-up of patient with conjunctival MALT lymphoma.

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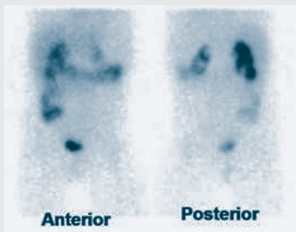
Correction: In our Journal: 2007; 10(3): 185-186 in the letter to the Editor under the title: Radionuclide renography: a seldom used test for the detection of vesicoenteric fistula and authors: R. Sadeghi, M. Hiradfar, V. R. D. Kakhki, M. Kajbafzadeh, Fig. 2B was not properly published. Fig. 2B, which shows the actual urinary-enteric fistula is as follows:



This letter with the correct Fig. 2B was published online on the 19th of November 2007.