

## And when neither CT nor MRI provide enough accuracy? The promising contribution of PET-CT to evaluate patients with malignant head and neck lesions

*E quando a TC e a RM não oferecem acurácia suficiente? A promissora contribuição da PET-CT na avaliação de pacientes com lesões malignas de cabeça e pescoço*

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In a recent scientific journey held in Rio de Janeiro, the speaker who addressed the theme of PET-CT asked the audience whether anyone of the listeners worked or had experience with the method. In the audience comprising Brazilian and French attendees, there was not a single physician who practiced the method. Such small niche of people seems to reflect a wider reality, pointed out in the article published by Curioni et al.<sup>(1)</sup>, in the present issue of **Radiologia Brasileira**: the utilization of the method is restricted to few centers and is not yet included in routine protocols of imaging staging. Such a fact makes studies on PET-CT essential, and even urgent, as the technology progresses faster than the human capability of scientific validation of the diagnostic tool.

Because of the frequent combination of therapies in the management of head and neck cancer, considerable anatomical distortions are generated by postoperative and post-radiotherapy changes in relatively small areas that conceal numerous and "important" structures. In most cases, the consequences are devastating for the patients. So, early detection of tumors is highly desirable, as well as the individualization of the treatment, the estimation of the therapeutic response and prognosis definition as investment is made in novel imaging techniques. The addition of molecular data provided by PET-FDG to CT is extremely advantageous, since metabolic changes occur earlier than morphological ones<sup>(2-5)</sup>.

In a retrospective study, Curioni et al.<sup>(1)</sup> have included several small groups of patients with different histologic types of tumors, for which PET-CT demonstrated to be of great value, in agreement with the current literature, leading to changes in the therapeutic approach as the following parameters are considered: evaluation of regional lymph nodes involvement, presence of distant metastasis, occult primary site, presence of synchronous tumor, therapeutic response, presence of residual disease and recurrence. In all such situations, FDG PET-CT has contributed to a higher accuracy in the detection of lesions, however still at the expense of false-positive and false-negative results. The following limitations responsible for such picture can be mentioned: variable enhancement of normal head and neck structures by FDG; absence of FDG uptake by subcentimetric lesions; nonspecific FDG uptake by inflammatory tissues; delay (up to three months) in the analysis of post-treatment changes, hindering an early detection

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of such changes; presence of tumors with inherent low FDG avidity, as in the case of some tumors of salivary origin; and tumor necrosis<sup>(2-4)</sup>.

With greater knowledge and applicability of the method, one can outline a not very far future based on selective biological mapping. The development of new molecular biomarkers in association with anatomic-molecular fusion, will help even further in the early detection of tumors and will allow the evaluation of neoplasms with low FDG avidity. The molecular targeted therapy is on its way, together with powerful radiological techniques, to provide less toxicity and higher treatment effectiveness for this already suffering group of patients<sup>(6-8)</sup>.

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