Indications for positron-emission tomography (PET): a brief update

Summary

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INDICATIONS FOR POSITRON-EMISSION TOMOGRAPHY (PET): A BRIEF UPDATE

The purpose of this report is to provide an initial response to various questions concerning the expansion of the clinical indications for positron-emission tomography (PET) and PET-CT[1] in oncology and for other types of diseases with regard to the current practice in Québec.

A targeted literature review identified 28 health technology assessments and systematic reviews on this topic published between 2004 and 2010, from which information concerning PET clinical indications was extracted. These indications were placed in two categories: the initial indications (diagnostic characterization and tumour initial staging) and follow-up indications (evaluation of treatment response, disease progression, and evaluation of recurrences).

In twelve cancers, initial and follow-up indications are accepted both in the literature and in Québec, with a low potential for expanding indications based on nuances or specificities that cannot be discussed in the context of this report. A potential expansion of the indications accepted in Québec was identified for six cancers, for two of which there is an international consensus, namely, glioma for the initial indications and gastrointestinal stromal tumours for both initial and follow-up indications. The other indications are the subject of debate because of a lack of interpretable evidence (kidney cancer for the initial indications and pancreatic cancer for the follow-up indications); emerging, thanks to the large number of recent studies (thyroid cancer for the initial indications); or included in another category (unspecified brain cancer placed together with glioma). With regard to non-oncological indications, only chronic osteomyelitis and prosthesis-related infections could constitute new, emerging indications.

As for the utility of PET in planning radiotherapy treatments, this question could not be resolved because of a lack of evidence. This is an emerging and mainly experimental field, and there is presently no systematic review of the available data. The current research mainly concerns technical issues specific to each cancer. The Unité d'évaluation des technologies et des modes d'intervention en santé (UETMIS) at the Centre hospitalier universitaire de Québec (CHUQ) is analyzing now the literature on this new technological application and its potential use in Québec.

In conclusion, the range of new or expanded indications for PET in relation to those currently accepted in Québec remains fairly limited. However, PET is a rapidly evolving technology, and its combined use with other technologies such as magnetic resonance imaging, is opening development prospects for new clinical applications.

Following an agreement with the Ministère de la Santé et des Services sociaux, it was agreed that the most concerned professional associations with PET would be consulted to check if the results of this update on the indications accurately reflect the current state of knowledge and their application in Québec clinical practice. The minutes of the meetings are presented in Appendix E, and the main points are summarized in Section 5.

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1. CT: computed tomography.