

Diet and ^{18}F bone imaging

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Dear Sir,

A recent editorial in this journal [1] discussed “The isotope bone scan: we can do better”. In it the authors pointed out that standardised uptake values (SUVs) can detect significant metabolic changes even when visual evaluation reveals little if any difference.

It is important therefore that patient preparation which might influence ^{18}F -fluoride bone imaging should be considered. In the treatment of differentiated thyroid cancer a low iodine diet is recommended to ensure that there is minimal competition between the normal daily intake of 150 μg of non-radioactive iodine and the radioiodine in the therapy activity [2]. The avoidance of iodine-containing medication is also recommended. The study by Pluijmen et al. [3] confirmed that a low iodine diet enhanced the efficiency of post-surgical thyroid remnant ablation.

In the case of ^{18}F -fluoride bone imaging it is worth considering if the ingestion of non-radioactive fluoride may also influence the tumour to normal bone ratio and therefore the sensitivity and quantification.

Guidelines published by the Society of Nuclear Medicine and Molecular Imaging for fluoride imaging indicate that patients do not need to fast and may take all their usual medications [4]. Studies have shown that ingestion or i.v. administration of diphosphonates do not affect the sensitivity of $^{99\text{m}}\text{Tc}$ -methylene diphosphonate (MDP) bone scanning [5, 6]. However, the impact of treatments such as diphosphonates or ingestion of exogenous fluoride on the uptake of ^{18}F -fluoride is yet to be determined.

The well-known low level sources of fluoride are in drinking water and toothpaste. However, a recent study by Chan

et al. [7] has shown that tea leaves contain fluoride and 4 cups (1 L) of tea can add up to an extra 6,000 μg daily to the normal intake of 4,000 μg . There can be from 50 to 100 % absorption of ingested fluoride depending upon the level of food intake. Approximately 50 % of absorbed fluoride is excreted in the urine within 24 h [7].

While it is unlikely that exogenous fluoride would alter the overall uptake and the appearance of ^{18}F -fluoride bone scans it is possible that the tumour to normal uptake ratio where there is increased mineral turnover may be altered reducing the sensitivity or quantitative analysis of the technique. The reduction of fluoride in the diet 2 days prior to ^{18}F -fluoride should be explored.

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