

Brown adipose tissue: Evaluation with ^{201}Tl and $^{99\text{m}}\text{Tc}$ -sestamibi dual-tracer SPECT

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Brown adipose tissue is one kind of adipose tissue and regulates body temperature and balance of energy via non-shivering thermogenesis. The authors present a case that strongly suggested the presence of activated brown adipose tissue in the neck, shoulders and axillary space by increased ^{18}F -FDG uptake. $^{99\text{m}}\text{Tc}$ -sestamibi and ^{201}Tl dual-tracer SPECT study showed increased $^{99\text{m}}\text{Tc}$ -sestamibi uptake and non-increased ^{201}Tl uptake in the corresponding ^{18}F -FDG uptake sites. Brown adipose tissue has dense mitochondria in the cells, which play an important role in thermogenesis. $^{99\text{m}}\text{Tc}$ -sestamibi uptake and retention depend on the mitochondrial activity but ^{201}Tl uptake does not. Therefore, the activity of mitochondria in activated brown adipose tissue may explain the discrepant uptake between $^{99\text{m}}\text{Tc}$ -sestamibi and ^{201}Tl .

Key words: brown adipose tissue, ^{18}F -FDG, ^{201}Tl , $^{99\text{m}}\text{Tc}$ -MIBI, PET