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Image quality of myocardial perfusion-gated studies: effect of ingestion of different fat content in the reduction of extra-myocardial abdominal signal

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ABSTRACT

Myocardial perfusion-gated-SPECT (MP-gated-SPECT) imaging often shows radiotracer uptake in abdominal organs. This accumulation interferes frequently with qualitative and quantitative assessment of the infero-septal region of myocardium. The objective of this study is to evaluate the effect of ingestion of different fat content on the reduction of extra-myocardial uptake and to improve MP-gated-SPECT image quality. In this study, 150 patients (65 [^] 18 years) who were referred for MP-gated-SPECT underwent a 1-day-protocol including imaging after stress (physical or pharmacological) and resting conditions. All patients gave written informed consent. Patients were subdivided into five groups: GI, GII, GIII, GIV and GV. In the first four groups, patients ate two chocolate bars with different fat content. Patients in GV – control group (CG) – had just water. Uptake indices (UI) of myocardium (M)/liver(L) and M/stomach–proximal bowel(S) revealed lower UI of M/S at rest in all groups. Both stress and rest studies using different food intake indicate that patients who ate chocolate with different fat content showed better UI of M/L than the CG. The UI of M/L and M/S of groups obtained under physical stress are clearly superior to that of groups obtained under pharmacological stress. These differences are only significant in patients who ate high-fat chocolate or drank water. The analysis of all stress studies together (GI, GII, GIII and GIV) in comparison with CG shows higher mean ranks of UI of M/L for those who ate high-fat chocolate. After pharmacological stress, the mean ranks of UI of M/L were higher for patients who ate high- and low-fat chocolate. In conclusion, eating food with fat content after radiotracer injection increases, respectively, the UI of M/L after stress and rest in MP-gated-SPECT studies. It is, therefore, recommended that patients eat a chocolate bar after radiotracer injection and before image acquisition.

Keywords: Tc-99m tetrofosmin; MP-gated-SPECT; myocardial extra-myocardial activity; fat chocolate; water