Abstract: P307

Efficacy and adverse effects of strict pretest preparation for 18F-FDG PET/CT for assessment of cardiac sarcoidosis

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Introduction

18F-fluorodeoxyglucose positron emission tomography computed tomography (18F-FDG PET/CT) plays an important diagnostic role in the assessment of cardiac sarcoidosis (CS). Optimal pretest preparation is essential since physiological myocardial 18F-FDG uptake precludes accurate image interpretation. The combination of prolonged fasting (12h-18h), dietary modification and adjunctive heparin administration are proposed in the latest joint SNMMI–ASNC expert consensus published in 2017. However, there have been limited studies to investigate the efficacy and adverse events of strict low-carbohydrate diet preparation combined with prolonged fasting.

Purpose

The purpose of this study was to determine the efficacy of suppressing physiological 18F-FDG uptake and the risk of hypoglycemia from using a strict low-carbohydrate diet combined with prolonged fasting in patients with suspected CS.

Methods

We studied consecutive patients with biopsy-proven extracardiac sarcoidosis who were referred for assessment of cardiac involvement. We compared two protocols [18 hours’ fasting with three low-carbohydrate (<5g) meals (strict protocol) prior to 18F-FDG PET/CT study and 12 hours’ fasting with intravenous unfractionated heparin (UFH) (50 IU/kg) (lenient protocol)] with regard to the efficacy of suppressing physiological myocardial 18F-FDG uptake and the risk of hypoglycemia (defined plasma glucose level <70 mg/dL). 18F-FDG PET/CT images were interpreted according to a predefined standard operating procedure with visual assessment of 18F-FDG uptake in the left ventricle and right ventricle.

Results

One hundred seventy-four scans were included from 100 sarcoidosis patients. Of the 85 scans in the strict protocol group, no scans (0%) showed physiological myocardial 18F-FDG uptake. In contrast, 47 of the 89 scans (53%) in the lenient protocol group showed physiological myocardial 18F-FDG uptake (P<0.0001). No hypoglycemic events occurred in the lenient protocol group. However, 25 hypoglycemic events (29%) were observed in the 85 scans of the strict protocol (P<0.0001). There were no heparin-related adverse events in the lenient protocol group.

Conclusions
The strict protocol was effective in inhibiting physiological myocardial 18F-FDG uptake; however, it could lead to hypoglycemia in patients with sarcoidosis. Patients must be carefully monitored for hypoglycemia.