

Usefulness of I-123 MIBG Myocardial SPECT in patients with dilated cardiomyopathy for predicting cardiac events

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Purpose: We evaluated cardiac sympathetic nerve activity in patients with dilated cardiomyopathy (DCMP) using I-123 metaiodobenzylguanidine (MIBG) myocardial SPECT, and tried to find variables to predict disease progression (DP). **Methods:** MIBG SPECT was performed in 17 patients (M:F = 11:6, age 63.9±11.1 years) with DCMP (idiopathic = 14, ischemic = 2 and other = 1). At 15 min and 4 hs after IV injection of I-123 MIBG (5 mCi), planar and SPECT images were acquired. Using planar images, heart to mediastinum (H/M) ratios, and washout rate (WR) $100 \times [(H-M)_{15min} - (H-M)_{4hr}] / (H-M)_{15min}$ were calculated with ROIs drawn for heart contour and mediastinum (7×7 pixels). Using SPECT images, total uptake score (TUS) was defined as sum of 17 myocardial segments using 3-point scale. Using M-mode echocardiography, LV ejection fraction (LVEF) was calculated as follows: $(LVDd2-LVDs2)/LVDd2$. The decline of EF more than 5%, or hospitalization due to dyspnea aggravation was defined as DP. All the patients were observed for 339±106 days. **Results:** During follow up periods, no mortality cases were observed but 2 cases suffered from EF decline, 2 hospitalization and 1 both EF decline and hospitalization. However Cox proportion hazard regression analysis did not identify significant parameter for DP among H/M ratio, WR, TUS, and deltaTUS. Patients could be divided into 2 groups based on WR, the known prognostic marker. The high WR patients (more than 50%, n=9) had significantly lower H/M ratio (1.55±0.27 versus 2.01±0.32, p<0.01) and significantly lower TUS4hr (12.1±13.9 versus 32.7±11.4, p<0.01) than low WR patients (less than 50%, n=8). WR and TUS4hr showed negative correlation (rho=-0.705, p<0.01). **Conclusion:** MIBG SPECT was applied to DCMP patients for evaluation of DP. Longer follow up period of more than 1 year seems to be essential for prognosis evaluation. In addition to WR, TUS obtained at 4 hour MIBG SPECT may be used as a useful marker of DCMP.

Hypermetabolism of compensatory laryngeal muscles in unilateral vocal cord palsy: Comparison study between speech and silence with normal subjects by co-registered PET-CT fusion images

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Purpose: There are a few case reports on asymmetric vocal cord uptake on FDG-PET in patients with unilateral vocal cord paralysis, which could be a potential pitfall in the interpretation of FDG-PET images. We evaluated the metabolic activity of laryngeal muscles of patients with unilateral vocal cord paralysis in comparison to normal controls during both speech and silence. **Methods:** Eleven patients with iatrogenic unilateral vocal cord palsy (thyroidectomy = 7, lung cancer = 1, others = 3) and 12 normal controls underwent FDG-PET with usual protocol. They were divided into two groups respectively: one group read books aloud for 20 minutes (phonation group) and the other kept silence (non-phonation groups) after FDG injection. Recent neck CT scan were co-registered with FDG-PET to produce PET-CT fusion images to elaborate small laryngeal muscles. **Results:** In patients with unilateral vocal cord palsy, contralateral non-paralyzed vocal cord showed increased FDG uptake, more intense with phonation group (SUV=5.88, n=5) than non-phonation group (SUV=2.33, n=6)--mainly on thyroarytenoid muscle. Normal control subjects showed symmetric mildly increased FDG uptake (SUV=1.92, n=6) only in phonation group, which was significantly low against patient groups and was localized in lateral cricoarytenoid muscle. **Conclusion:** Hypermetabolism of contralateral thyroarytenoid muscle in patients with unilateral vocal cord paralysis could be encountered during FDG-PET imaging even with keeping silence. Phonation during FDG-PET study enhance FDG uptake on different laryngeal muscles between unilateral vocal cord paralysis and normal subjects.