Marked uptake of fluorodeoxyglucose in a vocal cord after medialization: Acute and subacute positron emission tomography/computed tomography findings

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ABSTRACT

A 60-year-old male who underwent left upper lobectomy because of recently diagnosed lung cancer was admitted to the nuclear medicine department. A whole body fluorodeoxyglucose positron emission tomography/computed tomography (CT) that was performed for staging purposes, revealed an intense hypermetabolism in left vocal cord region corresponding with hyperdense mass-like material on CT scan.

Keywords: Fluorodeoxyglucose, positron emission tomography/computed tomography, vocal cord medialization

A 60-year-old male who underwent left upper lobectomy because of recently diagnosed lung cancer was admitted to the nuclear medicine department. A whole body fluorodeoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) that was performed for staging purposes, revealed no abnormal FDG uptake in the thorax to indicate residual disease. There was a focus of intense hypermetabolism [maximum standardized uptake value (SUVmax: 9.2)] in left vocal cord region. CT scan showed hyperdense mass-like material that overlapped with hypermetabolism in the left vocal cord [Figure 1a]. Further investigation to clarify the diagnosis revealed, teflon injection to left vocal cord as a medialization procedure in ENT Department 1 week ago to treat postoperative hoarseness due to incision of recurrent laryngeal nerve was learned. After 3 months, follow-up FDG PET/CT scan showed persistence of similar findings in left vocal cord [Figure 1b, SUVmax: 8.7]. The expected FDG PET/CT finding in vocal cord paralysis is increased FDG uptake involving the nonaffected vocal cord due to hyperfunction. However, in our case there was an opposite condition. This unexpected situation could be compatible with primary laryngeal tumor due to the patient's excessive smoking and lung carcinoma history. Nevertheless, with anamnesia and typical CT images described below, differential diagnosis of benign inflamation due to medialization procedure was performed. In the literature; findings of medialization on FDG PET/CT scans was reported in only a few cases with history of esophagus, thyroid and lung carcinomas.[1-3] When these few cases were analysed, presentation of only chronic (6 months to 6 years) inflammatory changes were seen on FDG PET/CT images. Teflon that was injected during medialization process resulted in an inflammatory response characterized by granulomatous reaction (foreign-body granulomatous reaction) as shown in the literature.[2] This increased FDG uptake is due to chronic inflammatory response and FDG accumulation in macrophage-laden granulomas.[4] Similar to chronic changes, intense hypermetabolism due to medialization process was also seen in both acute and subacute periods without any interval change in our case. It could be related with neutrophil activation which is characterized metabolically by an increase in glucose utilization per cell and thus, increased FDG uptake.[5] CT scan can distinguish various types of vocal cord augmentation ("medialization"). Silastic implants are recognized by their hyperattenuated triangular configuration. Gore-Tex implants have unique heterogeneous attenuation with irregular medial margins. Fat injection has a low-attenuation ovoid mass. Teflon injections are hyperattenuated and mass-like and should not be mistaken for tumor.[6] Although the typical CT images of the materials used for vocal cord medialization process is well defined, their corresponding FDG uptake patterns except teflon not had been

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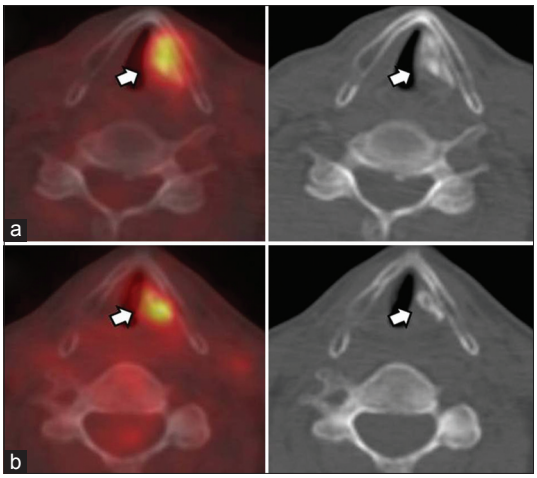

Figure 1: Focus of intense hypermetabolism overlapping hyperdense mass-like material in the left vocal cord region (arrows) were seen on both Initial staging (a) and follow-up (b) axial slices of the fluorodeoxyglucose, positron emission tomography/computed tomography

reported yet. In conclusion; when nuclear medicine physicians are faced with asymmetrical vocal cord hypermetabolizm; in addition to primary laryngeal tumor or unilateral vocal cord paralysis, the possibility of vocal cord medialization should also be kept in mind.

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