

Rapid MRI of the lungs in children with pulmonary infections*RM pulmonar rápida em crianças com infecções pulmonares*

Dear Editor,

We read with interest the review article entitled “Chest magnetic resonance imaging: a protocol suggestion” by Hochhegger et al.⁽¹⁾. The authors have reviewed the technical aspects and suggested a protocol for performing chest MRI. The authors have also described three major clinical indications for MRI of the lungs: staging of lung tumors; evaluation of pulmonary vascular diseases; and investigation of pulmonary abnormalities in patients who should not be exposed to radiation. Radiation exposure is particularly more serious in children, as they are at a greater risk of experiencing harmful effects from radiation compared to adults⁽²⁾.

In our recent prospective study in 26 children with leukemia presenting with febrile neutropenia⁽³⁾, we evaluated role of rapid lung MRI in the detection of nodules, consolidation and ground glass opacity (GGO) in this population. The duration of all the four sequences combined in our study was less than 2 minutes. The findings of HRCT and MRI were compared, with HRCT as the standard of reference. No significant difference was observed between the two modalities by the McNemar test ($p > 0.05$). For the detection of nodules and consolidation by MRI, per-patient sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were all 100%. For the detection of GGO by MRI, per-patient sensitivity, specificity, PPV and NPV were 66.67%, 100%, 100% and 90.91%, respectively. The kappa test showed perfect agreement between MRI and CT scan for the detection of nodules and consolidation ($\kappa = 1$), and a substantial agreement in the detection of GGO by MRI and CT scan ($\kappa = 0.755$). The results of our study indicated that pulmonary MRI has great potential as a diagnostic modality for the detection of lung parenchymal findings in patients with febrile neutropenia.

Similarly, we determined the diagnostic utility of rapid lung MRI for the detection of various pulmonary and mediastinal ab-

normalities in 75 children with suspected pulmonary infections⁽⁴⁾. MRI demonstrated sensitivity, specificity, PPV, and NPV of 100% for detecting pulmonary consolidation, nodules (> 3 mm), cyst/cavity, hyperinflation, pleural effusion, and lymph nodes. The kappa test showed almost perfect agreement between MRI and MDCT in detecting thoracic abnormalities ($\kappa = 0.965$). No statistically significant difference was observed between MRI and MDCT for detecting thoracic abnormalities by the McNemar test ($p = 0.125$).

As MRI does not have any radiation risks, it can be repeated to assess disease progression or regression without exposing the patients to radiation (as against performing the CT scan). We propose rapid lung MRI may also be used as an initial radiological investigation in patients with suspected pulmonary infections especially where repeated follow up imaging is required.

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Incidental diagnosis of struma ovarii through radioiodine whole-body scanning: incremental role of SPECT/CT*Contribuição da SPECT/CT no diagnóstico incidental de struma ovarii em pesquisa de corpo inteiro com iodo-131*

Dear Editor,

A 76-year-old woman with papillary thyroid cancer (staging: pT3pN1pMx) was referred for radioiodine (I-131) therapy after total thyroidectomy. The thyroglobulin titer was elevated (190 ng/mL) and thyroid stimulating hormone (TSH) levels remained suppressed despite thyroxine withdrawal. A radioiodine whole-body scan (WBS) evinced an area of intense pelvic uptake (Figure 1A), which corresponded to a heterogeneous pelvic mass posteriorly to uterus on fused single-photon emission computed tomography/computed tomography (SPECT/CT) images (Figure 1B). The SPECT/CT findings suggested a diagnosis of struma ovarii. Complementary pelvic magnetic resonance imaging depicted a lobulated multicystic pelvic mass with a solid component, probably originating from the left ovary (Figures 1C and 1D). Total hysterectomy was performed, revealing a mature teratoma with thyroid tissue (struma ovarii). Five months after surgical resec-

tion, the patient was treated with 7400 MBq (200 mCi) of I-131. A post-treatment radioiodine WBS evinced a cervical thyroidal remnant and a focal area of increased radioiodine uptake in the proximal diaphysis of the left femur, with no matching alteration on CT images (not shown). The TSH-stimulated thyroglobulin titer was 2.4 ng/mL (normal value, < 35.0 ng/mL). At month 3 of clinical follow-up, the patient had not presented any symptoms concerning the left lower limb and the thyroglobulin titer remained at a normal range.

Images obtained in a radioiodine WBS are noisy and have low spatial resolution. It is therefore often difficult to do proper anatomical localization, basically due to the high-energy characteristics of radioiodine⁽¹⁾. At our institution, we often resort to SPECT/CT to further evaluate cases with inconclusive findings on standard planar scintigraphic images. The role of SPECT/CT for the evaluation of patients with well-differentiated thyroid carcinoma has not yet been established, although a few studies have demonstrated its superiority in the localization and identification of metastatic lesions^(2,3). In the case presented here, we believe that SPECT/CT played an important role in the correct anatomical location of the pelvic focal uptake, as well as improving the