

COMPUTED TOMOGRAPHY, MAGNETIC RESONANCE AND 67 GALLIUM SCINTIGRAPHY FOR THE IMAGING OF RESIDUAL LYMPHOMA

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The introduction of computed tomography (CT) has greatly improved lymphoma staging procedures and is presently the most common and most important radiologic technique employed for this purpose and for evaluating the response to treatment. However, since CT only gives an anatomic measure of the tumor, in some cases (particularly those with bulky mediastinal involvement), it is not useful in distinguishing between non-tumor images like fibrotic scars and residual neoplastic tissue following treatment. In such cases it may be difficult to reach a conclusion about the state of remission and to make an appropriate decision regarding subsequent treatment. Magnetic resonance (MR), with T1 and T2 sequences, and gallium 67 (67 Ga) scintigraphy (planar and SPECT) may help to elaborate a functional image that permits more careful appreciation of the nature of post therapeutic residual tissue.¹⁻⁵ Furthermore, 67 Ga planar total body scintigraphy can detect lymphomatous involvement in sites that usually cannot be explored by thoracic and abdominal CT, which is currently used for staging purposes. We report here the images from two patients affected by Hodgkin's disease (HD), obtained by CT, MR and 67 Ga planar and SPECT scintigraphy.

Case 1

C.R., an 18-year-old girl, presented in June 1993 with asymptomatic laterocervical lymphadenopathies. Lymph node biopsy and subse-

quent staging (which included physical examination, bone marrow biopsy, thoracic and abdominal CT, thoracic MR, 67 Ga scintigraphy) led to a diagnosis of HD, nodular sclerosis, stage II A (Ann Arbor) with bulky mediastinum. Figure 1 shows mediastinal involvement before treatment as documented by CT, T1-T2, MR and SPECT. The high intensity of the signal in the T2 MRI sequence and 67 Ga uptake revealed the presence of viable and metabolically active tumor cells. The patient received chemotherapy (6 ABVD courses) and was also subsequently treated with mantle field radiotherapy. Restaging with CT, MR and 67 Ga scintigraphy was performed 6 months after the end of radiotherapy (Figure 2). CT (2a) showed the persistence of a residual mediastinal mass but the low intensity of the MR T2 (2c) signal and the absence of 67 Ga (2d) uptake were not consistent with the presence of tumor cells and suggested that the CT image represented mediastinal scar tissue. No further treatment was given. The patient is alive and well in complete remission.

Case 2

C.B., a 28-year-old male, presented in July 1994 with an asymptomatic right supraclavicular lymphadenomegaly. Lymph node biopsy and subsequent staging which included physical examination, bone marrow biopsy, thoraco-abdominal CT, bipedal lymphangiography, but not MR and 67 Ga scintigraphy, led to a diagnosis of HD, nodular sclerosis, stage IIA. The

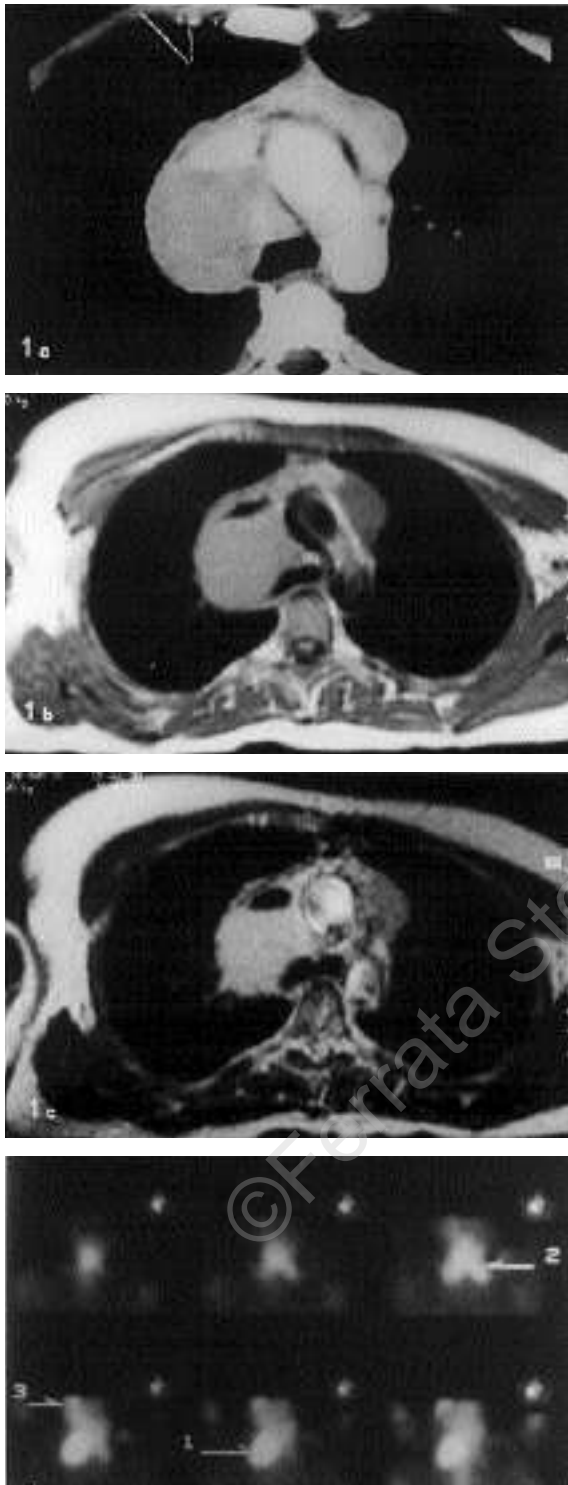


Figure 1. Case 1. Computed tomography (1a), magnetic resonance T1 (1b)-T2 (1c) and gallium 67 scintigraphy (1d) mediastinal images of lymphomatous involvement. The high intensity of the signal in T2 (1c) and gallium 67 uptake (1d) are consistent with the presence of metabolically active tumor cells.

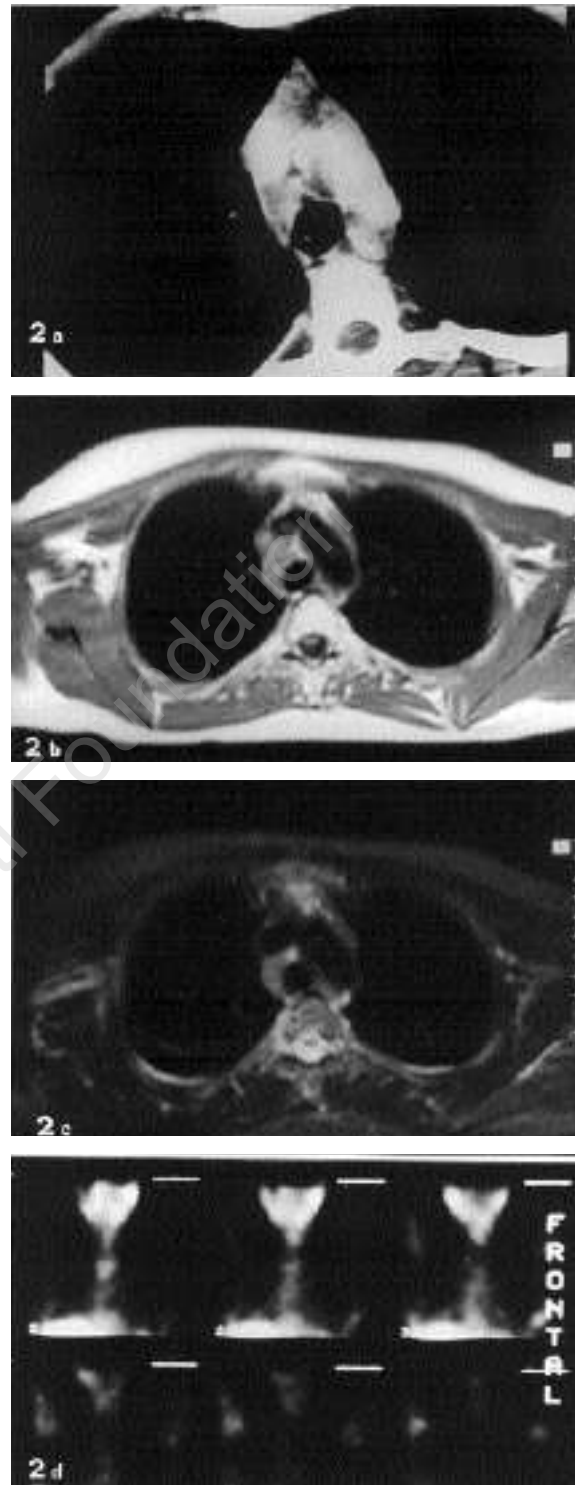


Figure 2. Case 1. Mediastinal images after radiotherapy, with computed tomography (2a), magnetic resonance T1 (2b)-T2 (2c) and gallium 67 scintigraphy (2d). The hypointensity in T2 sequence and the absence of gallium 67 uptake led to the conclusion that the radiologic image was not consistent with residual Hodgkin's disease.

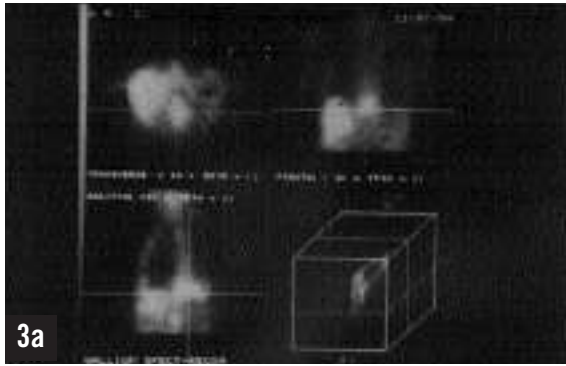


Figure 3. Case 2: scintigraphy (3a) showed abnormal gallium 67 uptake at the level of the tenth dorsal vertebra. Magnetic resonance (3b) of the dorsal spinal cord revealed lymphomatous involvement of the ninth and tenth dorsal vertebrae. Neither vertebral lesion was appreciated by abdominal TC scan (3c), which showed an enlargement of the lomboarctic lymph nodes.

patient was treated with mantle field and spade field radiotherapy. Six months after the end of radiotherapy, when the patient was well and physical examination was normal, an increase in the erythrocyte sedimentation rate and a slight increase in serum alkaline phosphatase raised the suspicion of relapse. Thoraco-abdominal CT was performed and showed an enlargement of the lomboarctic lymph nodes. Restaging was completed (Figure 3) with ^{67}Ga scintigraphy and abdominal MR, which confirmed the CT lymph node images but also revealed an asymptomatic lymphomatous involvement of the ninth and tenth dorsal vertebrae that was unsuspected and could not be appreciated with abdominal CT.

Discussion

The report of these two cases illustrated the usefulness of MR and of ^{67}Ga scintigraphy for interpreting of CT images, and therefore for the management of HD. The cost-to-benefit ratio may be prohibitive if all three techniques were applied to all patients, but may be rewarding when they are applied to cases with a bulky mediastinal involvement where the evaluation of the images after treatment is particularly difficult and is critical for a decision on subsequent treatment.

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