Importance of gallium scan restaging for curative treatment of mediastinal lymphomas

In patients with mediastinal lymphoma, gallium-67-citrate single photon emission computed tomography (^{67}GaSPECT) provides unique information on the presence of residual active disease.[1-5] We provide an updated report on a large cohort of patients whose management following induction therapy was based on routine ^{67}GaSPECT restaging.

Between June 1994 and January 2000, 63 patients with Hodgkin's disease (HD) or aggressive non-Hodgkin's lymphoma (NHL) with initial mediastinal disease were treated at our Institute with induction chemotherapy and radiotherapy. Radiological clinical staging with evaluation of tumor size included compuuted tomography (CT) and ^{67}GaSPECT. CT was monitored at diagnosis, at the end of chemotherapy, and 2 months after radiotherapy; ^{67}GaSPECT was performed at the time of diagnosis and following combination therapy (i.e. 3 months after radiotherapy in order to avoid false negatives).

Thirty-six patients had HD and 27 patients aggressive NHL (27 males, 36 females; median age 35 years, range 19-72 years). All patients were previously untreated. Thirty-six (58%) patients had bulky mediastinal disease. HD patients were treated with ABVD[6] regimen and patients with aggressive NHL were treated with the MACOP-B[7] or VNCOP-B[8] regimen according to their age (< 60 years and ≥ 60 years, respectively). One month after the completion of either chemotherapy program, all patients received radiotherapy to the mediastinum.

Complete remission (CR) was defined when a complete regression of all assessable disease had occurred. During the follow-up the ^{67}GaSPECT was performed every six months for the first three years, and every 12 months thereafter. Patients who were ^{67}GaSPECT$^+$ at restaging were therefore considered as having persistence of active disease and underwent further treatment. Irrespective of CT findings, patients who had a ^{67}GaSPECT$^-$ restaging received close follow-up without further treatment.

After the combined modality treatment, thirteen out of 63 (21%) patients were ^{67}GaSPECT$^+$ and forty-two (67%) CT$^+$. As regards these 42 patients with a positive CT scan, the majority (35/42; 84%) were ^{67}GaSPECT$^-$. Whereas all 35 patients who were ^{67}GaSPECT$^-$/CT$^+$ remained in continuous complete remission (CCR), two of the 7 (28%) patients who were ^{67}GaSPECT$^+$/CT$^+$ subsequently experienced local relapse (after 11 and 16 months). Despite three cycles of a second-line conventional chemotherapy regimen, they always remained ^{67}GaSPECT$^+$. Among the seven patients who were ^{67}GaSPECT$^+$/CT$^+$, four were eligible for autologous bone marrow transplantation: these four patients all subsequently became ^{67}GaSPECT$^-$ after transplantation and are currently in CCR (at 35, 52, 60 and 62 months). The one other patient who was ^{67}GaSPECT$^+$/CT$^+$ received no second-line treatment because of advanced age and poor performance status after induction. Nevertheless, he spontaneously became ^{67}GaSPECT$^-$ at 18 months and is currently in CRR after 34 months. The median follow-up for the ^{67}GaSPECT$^+$/CT$^+$ and ^{67}GaSPECT$^-$/CT$^+$ subsets was 52 and 39 months, respectively. Figure 1 shows the different relapse-free survival (RFS) curves (p=0.003).

Among the 21 patients who were CT$^-$ after induction, 6 (29%) turned out to be ^{67}GaSPECT$^+$. Of these, only three out of 6 (50%) are currently in CCR, as compared with fourteen of the 15 (93%) in the ^{67}GaSPECT$^-$/CT$^-$ subset. In particular, among the three patients aged <60 years who were submitted to ABMT, two subsequently became ^{67}GaSPECT$^-$ and are currently in CCR (at 45 and 72 months); among the three elderly ones who were submitted to conventional second-line chemotherapy, one converted to being ^{67}GaSPECT$^-$ and is currently in CCR (at 58 months). The three patients in the ^{67}GaSPECT$^+$/CT$^-$ subset who never became ^{67}GaSPECT$^-$ all experienced local relapse within 12 months in spite of the salvage procedures. On the other hand, one of the 15 patients in the ^{67}GaSPECT$^-$/CT$^-$ subset had a mediastinal relapse after 11 months. The median follow-up for the ^{67}GaSPECT$^+$/CT$^-$ and ^{67}GaSPECT$^-$/CT$^-$ subsets was 45 and 48 months, respectively. Figure 2 shows the different RFS curves (p=0.017).

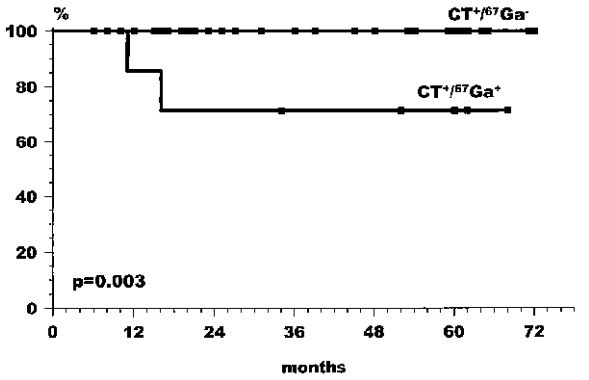

Figure 1. RFS curves comparing ^{67}GaSPECT$^+$/CT$^+$ and ^{67}GaSPECT$^-$/CT$^+$ subsets.

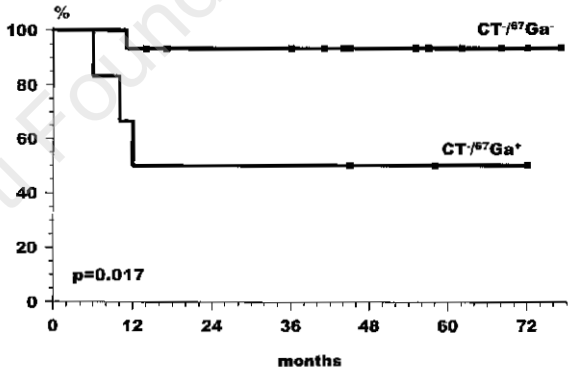

Figure 2. RFS curves comparing ^{67}GaSPECT$^+$/CT$^-$ and ^{67}GaSPECT$^-$/CT$^-$ subsets.

No differences between HD and NHL cases were recorded.

The present report provides further indications on the true clinical potential of ^{67}GaSPECT for the management of patients with HD and aggressive NHL with mediastinal disease. As expected, it was possible to stratify patients on the basis of the restaging results provided by ^{67}GaSPECT and CT after induction treatment. ^{67}GaSPECT positivity had a strong impact on RFS, both in the presence and absence of CT positivity.

In conclusion, the present study strongly reinforces the concept that ^{67}GaSPECT must now be considered the restaging method of choice for patients with mediastinal lymphoma.

^{67}GaSPECT should thus be routinely used whenever possible for early identification of any residual disease after induction so as to allow timely initiation of the appropriate form of second-line treatment in those patients who really need it.

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