Current Role of Retroperitoneal Lymph Node Dissection in Testicular Cancer

Review Article [1] | May 01, 1997
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The article by Drs. Steele and Richie is a well-written, extremely important review of the natural history, treatment options, and current role of surgery in the management of nonseminomatous germ cell tumors of the testis. The authors present their rationale for retroperitoneal lymph node dissection (RPLND) in a thoughtful and provocative way. Their philosophy mimics that practiced at the University of Southern California (USC), which is very similar to that espoused by Drs. John Donohue and Larry Einhorn, who pioneered the current management practices that have made germ cell testicular tumors the most curable solid tumor in humans.[1,2]

Although the cure rate for this malignancy now approaches 100%, several management questions and controversies continue:

1. Is RPLND necessary (desirable) in clinical stage I disease?
2. Is there a role for primary chemotherapy in high-risk clinical stage I disease?
3. Initial RPLND vs initial chemotherapy for clinical stage II disease
4. The role of surgery in high stage II and III disease following chemotherapy

The authors provide an excellent and provocative discussion regarding the controversial areas related to the current role of RPLND in testicular carcinoma. In general, we concur with their management conclusions. A few points, however, deserve further emphasis and expansion.

Management of Clinical Stage I Disease
We too agree that clinical stage I patients should not be managed as a homogeneous group. Surveillance studies have shown that while approximately 30% of these patients have microscopic retroperitoneal nodal disease at the time of orchiectomy, it may be possible to identify which patients are at high risk. Patients with lymphovascular invasion, T-stage greater than T1, or primary tumor composed of more than 40% embryonal carcinoma have nearly a 60% probability of false-negative staging. In contrast, those patients without lymphovascular invasion who have pathologic T1 disease and less than 40% embryonal carcinoma in their primary tumor have only an approximate 5% probability of false-negative staging. Most patients harboring micrometastasis fall into the stage IIA (B1) category (fewer than six positive nodes and no node more than 2 cm in diameter). Those patients can be cured with a template or nerve-sparing RPLND alone, with only 10% to 15% ever requiring chemotherapy for pulmonary relapse.

It should also be emphasized that experience and accurate interpretation of quality CT scans are essential, as we have seen a number of CT scans initially interpreted as being negative, but, upon review, were highly indicative of nodal metastasis found at RPLND.

The advantages of RPLND in clinical stage I patients at high risk are: (1) the high curability of surgery without the need for chemotherapy and the associated side effects; (2) preservation of ejaculatory function in 98% of patients; and (3) the fact that, when the operation is properly performed, it reduces the risk of retroperitoneal recurrence to less than 1%, which simplifies follow-up and eliminates the need for CT scans during subsequent surveillance. Furthermore, as mentioned by the authors, a significant savings can be effected with RPLND in this group of patients, which is an
important issue, particularly in the current era of managed care and cost containment. Some have advocated primary chemotherapy for clinical stage I patients at high risk based on histologic criteria or those with low-volume retroperitoneal disease on CT scan. We believe that this practice is hazardous in patients with any teratomatous component to their primary tumor, and results in the administration of unnecessary platinum combination chemotherapy in 40% of high-risk clinical stage I patients and 25% of low-volume clinical stage II patients. (Donohue has demonstrated the incidence of false-positivity in low-volume clinical stage II patients to be 25%.) Also, it commits these patients to frequent, expensive CT surveillance of the retroperitoneum and an approximate 50% rate of permanent infertility to those patients receiving three to four cycles of platinum/etoposide/bleomycin chemotherapy, along with the unknown long-term sequelae of platinum-based combination chemotherapy. Lastly, from the standpoint of cost-effectiveness, Donohue and his associates have shown that the overall cost of managing clinical stage I and low-volume stage II patients is less expensive and the fertility rate is higher when RPLND is used, compared with chemotherapy.[3,4]

Management of Clinical Stage II Disease
Management of clinical stage II patients should be based largely on judgment of the extent of retroperitoneal disease. If the CT scan suggests low-volume disease, we believe that RPLND should be used as primary therapy, using adjuvant chemotherapy based on pathologic stage. Approximately 25% of patients with low-volume disease on CT will have negative nodes (false-positive scan). Those who fall into the pathologic IIA (BI) category (fewer than six positive nodes and no node more than 2 cm in diameter) have less than 20% risk of pulmonary recurrence. Retroperitoneal lymph node dissection in this setting can be performed in a nerve-sparing fashion, resulting in preservation of ejaculatory function in 98% of patients, and is curative in 80%. We closely observe these patients and feel that the 20% who recur can be cured by platinum/etoposide/bleomycin chemotherapy. If pathologic staging reveals stage IIB (BII) disease (more than six positive nodes or any node more than 2 cm), we recommend two cycles of platinum/etoposide/bleomycin chemotherapy, which will reduce the risk of supradiaphragmatic or pulmonary recurrence to less than 2%, as compared to approximately 65% recurrence when observed without adjuvant chemotherapy. Once again, interpretation of the CT scan by an experienced urologic oncologist is essential, since the CT often underestimates the extent of retroperitoneal and metastatic disease. If there is any question about the technical feasibility of RPLND based on the CT scan, it is best to treat the patient initially with chemotherapy. An effective response to chemotherapy may also allow for a nerve-sparing RPLND and preservation of ejaculatory function. In addition, there is no place in current surgical management for inadequate RPLND, which carries a significant risk of retroperitoneal recurrence.

Management of Stage IIC and III Disease
Finally, the role of surgery following chemotherapy for high stage II and III disease should be emphasized. We believe that any patient with teratomatous elements in the primary tumor should undergo RPLND following chemotherapy regardless of the response, as determined by CT. We agree with the authors that if a patient with a pure embryonal cell carcinoma demonstrates a more than 90% response in the retroperitoneum, CT surveillance can continue without surgery despite the fact that the retroperitoneum does not completely clear, provided that the markers remain normal. However, any change in subsequent CT scans or elevation of markers should lead to prompt RPLND and probably indicates a need for salvage chemotherapy. One area not addressed by the authors is the management of residual CT abnormalities in patients with initial high-stage pure seminoma following chemotherapy. Retroperitoneal lymph node dissection in this setting is extremely difficult technically, and to date we have not encountered residual seminoma or carcinoma; rather, we have always observed extremely desmoplastic scar tissue and necrosis. At USC, these patients are followed by serial CT scans, reserving surgical exploration and removal of a mass only if there is evidence of CT progression.

References:

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