Scientific Research Publishing

Open Journal of Urology, 2024, 14, 324-332
https://www.scirp.org/journal/oju
ISSN Online: 2160-5629
ISSN Print: 2160-5440

Management of Testicular Cancers in Brazzaville

Roland Bertile Banga-Mouss[1], Yanick Dimi Nyanga[1], Brice Nkoua Epala[2], Armel Melvin Atipo Ondongo[1], Steve Aristid Ondziel-Opara[1], Eliane Ndounga[2], Alexis Bolenga[2], Louis Constant Mbele Mantsouaka[2], Judith Nsonde Malanda[2], Aanani Séverin Wencesl Odzébé[1*], Prosper Alain Bouya[1]

[1]Departement of Urology and Andrology, University Hospital of Brazzaville, Brazzaville, Republic of the Congo
[2]Departement of Medicale Oncology and Radiotherapy, University Hospital of Brazzaville, Brazzaville, Republic of the Congo
Email: *odzebe_s@yahoo.fr

How to cite this paper: Banga-Mouss, R.B., Nyanga, Y.D., Epala, B.N., Ondongo, A.M.A., Ondziel-Opara, S.A., Ndounga, E., Bolenga, A., Mantsouaka, L.C.M., Malanda, J.N., Odzébé, A.S.W. and Bouya, P.A. (2024) Management of Testicular Cancers in Brazzaville. *Open Journal of Urology*, **14**, 324-332.
https://doi.org/10.4236/oju.2024.145034

Received: March 6, 2024
Accepted: May 18, 2024
Published: May 21, 2024

Abstract

Introduction: Testicular cancer accounts for 5% of urological tumors, predominantly affecting young men. The aim of our study was to report the diagnostic and evolutionary aspects of testicular cancer cases treated in our center. **Patients and Methods:** A retrospective study conducted over a 15-year period involving 12 patients treated for testicular cancer at the University Hospital of Brazzaville. **Results:** The median age was 31 years (range 11 to 49 years), with a median consultation delay of 10.6 months (range 3 to 27 months). Scrotal mass was the most common reason for consultation. Cancer was bilateral in two patients. Two patients were admitted with metastatic disease. Histopathological examination favored germ cell tumors in 7 cases, two cases of non-Hodgkin's malignant lymphoma, and one case of epididymo-testicular adenocarcinoma. Adjuvant chemotherapy resulted in complete remission in patients with germ cell tumors. However, neoadjuvant chemotherapy was not effective in patients admitted with advanced-stage disease. **Conclusion:** Testicular cancer is a rare condition that is curable in the majority of cases, but its management is often complicated in our setting due to delayed diagnosis caused by taboos surrounding genital organ pathologies.

Keywords

Testicular Cancer, Germ Cell Tumor, Cisplatin, Testicular Lymphoma, Testicular Adenocarcinoma

1. Introduction

Malignant testicular tumor is a rare form of cancer [1] [2]. It accounts for 0.5%

of cancers and 5.9 new cases per 100,000 men in the United States [1]. It is the most common cancer among young adults aged 20 to 30 years [2] [3] [4]. Risk factors are dominated by testicular dysgenesis syndrome (cryptorchidism, hypospadias, infertility), testicular atrophy (<12 ml), personal or family history (in first-degree relatives) of germ cell tumor [3]. Patients with a history of germ cell testicular tumor have a relative risk of developing contralateral malignancy approximately 25 times higher than the general population of the same age [4] [5]. Currently, testicular cancer diagnosis is increasingly incidental, at a localized stage, thanks to the frequent demand for scrotal ultrasound [3], yet in our contexts, patients still present at advanced stages of the disease due to taboos surrounding genital organs. However, testicular cancer remains highly curable when detected early [3] [6]. We conducted this study to report on the diagnostic and evolutionary aspects of testicular cancer cases treated at the University Hospital Center (CHU) of Brazzaville and to supplement with a literature review.

2. Patients and Methods

We conducted a retrospective study in the urology-andrology, medical oncology, and radiotherapy departments of the University Hospital Center (CHU) of Brazzaville from January 2005 to December 2023 (a 19-year period). The Brazzaville University Hospital Center is the single largest health center in the country (Republic of Congo). With barely 5,468,622 inhabitants, the Republic of Congo is a country with low demographic density (on average 13 inhabitants/km^2). Its population is predominantly young and 47% is under 18 years old. Brazzaville is the capital of the country with a demographic which increased from 1,373,382 inhabitants in 2007 to 2,638,000 inhabitants in 2023.

We collected data from medical records, hospitalization registers and patients' operating reports. We included all usable medical records of patients who were admitted for treatment of a testicular tumor. The variables studied were age, circumstances of discovery, clinical and biological examination data, imaging data, anatomopathological results of orchidectomy specimens, diagnostic stage (TNM 2016), and post-therapeutic surveillance elements. Orchidectomy was performed via high inguinal approach after ligature of the spermatic cord in all operated patients. Computed tomography was performed before orchidectomy in patients received at clinically advanced stage. Neoadjuvant treatment was proposed before orchidectomy in advanced stage patients with poor general condition. All forms of therapy received in addition to orchidectomy were grouped into an adjuvant therapy category. Patients were reviewed every three months in the first year, then every six months in the second year, and then once a year from the third year in the absence of carcinological recurrence. The average postoperative surveillance follow-up period was 4.1 years (2.4 and 6 years). A thoraco-abdomino-pelvic CT scan was requested during each consultation during surveillance. Tumor marker sampling was performed before orchidectomy and was checked after surgery within 1 to 2 weeks before the start of adjuvant che-

motherapy. Patients' records were discussed in a multidisciplinary consultation meeting. After orchidectomy, patients were systematically referred to the medical oncology department for adjuvant treatment. Patients were considered in complete remission if tumor markers normalized and there were no suspicious radiological images (on TAP CT) during the two years following orchidectomy.

3. Ethical Consideration

This work was carried out as part of scientific research. As a result, it was approved by the Health Science Research Ethics Committee (CERSSA). Approval from the hospital ethical review board was sought prior to data collection.

4. Results

During the study period, 12 cases of testicular tumors were treated at the University Hospital Center (CHU) of Brazzaville, representing an average annual incidence of 0.6 cases per year. The median age of the patients was 31 years, ranging from 11 to 49 years. The age group of 30 to 49 years was the most represented with 07 cases. Testicular cancer ranked fourth (1.13%) among urological cancers after prostate cancer (77.30%), urinary tract cancers (10.81%), and kidney cancer (8.76%). The main circumstance of discovery was scrotal mass (Figure 1) in 9 cases. The discovery was made during a scrotal ultrasound (Figure 2) in two patients during an assessment for testicular pain. In one patient, the tumor was discovered intraoperatively during a procedure for a large hydrocele. The mean consultation delay was 10.6 months (ranging from 3 to 27 months). Table 1 reports the diagnostic features of the patients at admission. One patient had gynecomastia associated with bilateral testicular tumors. Tumor markers were normal in five patients. LDH was elevated in 7 patients, while alpha-fetoprotein and Beta-HCG were elevated only in 2 of our patients. Thoraco-abdomino-pelvic CT scan revealed two cases of distant

Table 1. Diagnostic aspects.

Age groups	11 à 19 years	3
	20 à 29 years	2
	30 à 39 years	3
	40 à 49 years	4
Circumstances of discovery	Scrotal swelling	9
	testicular pain	2
	Cryptorchidism	1
Tumor site	Bilateral	2
	Right	5
History of surgery for cryptorchidism*		1
Patients living as a couple		4

*Operated on at 9 years old and tumor of the same testicule at 36 years old.

metastases, including one pulmonary localization and one dual pulmonary and hepatic localization. Bilateral partial orchidectomy via inguinal approach was performed in one patient with bilateral localization. Sperm preservation before orchidectomy was performed in one patient. The results of anatomopathological analyses of orchidectomy specimens are reported in Table 2. Table 3 reports the distribution of patients according to the discovery stage of testicular cancer.

Chemotherapy involved the BEP protocol (combining Bleomycin 30 mg total dose on days 1, 8, 15; Etoposide 100 mg/m^2 on days 1 to 5, and Cisplatin 20

Table 2. Results of anatomopathological analyzes of operating specimens.

Pathology of surgical specimens[a]		
Germ Cell Tumor	Embryonic carcinoma	3
	Seminoma	2
	Choriocarcinoma	1
	Malignant teratoma	1
Malignant non-Hodgkin lymphoma		2
Epididymo-testicular adenocarcinoma		1

[a]Two patients admitted in poor general condition died before orchiectomy.

Table 3. Histological types and diagnostic stages of testicular cancer of patients.

Ages	Pathology (classification American Joint Committee on Cancer: AJCC 2009)	Classification TNM	tumor markers
11 ans	Small cell non-Hodgkin lymphoma *(stade IIA)*	pT3cN1M0	S0
17 ans	Embryonic carcinoma *(Stade IS)*	pT1acN0M0	S3
19 ans	Seminomatous germ cell tumor (séminoma) *(stade IA)*	pT1bcN0M0	S0
20 ans	Patient not operated on, died in the urology department *(stade IIIC)*	cT4cN3M1b	S3
23 ans	Non-operated patient died *(Stade IIIC)*	cT4cN3M1a	S3
32 ans	Right epididymo-testicular tubulopapillary adenocarcinoma with massive infiltration of the spermatic cord *(Stade IS then relapse IIIC).*	pT3cN0M0 N3M1b	S3 S3
35 ans	Embryonic carcinoma *(Stade IS)*	pT1bcN0M0	S3
37 ans	Spermatocytic seminoma *(Stade IS)*	pT1bcN0M0	S1
40 ans	Seminoma without epididymal involvement *(Stade IA)*	pT1bcN0M0	S0
42 ans	Malignant non-Hodgkin lymphoma (Stade IS)	pT2N0MO	S1
46 ans	Embryonic carcinoma *(Stade IA)*	pT1bcN0M0	S0
49 ans	Immature teratoma *(Stade IB)*	pT2cN0M0	S0

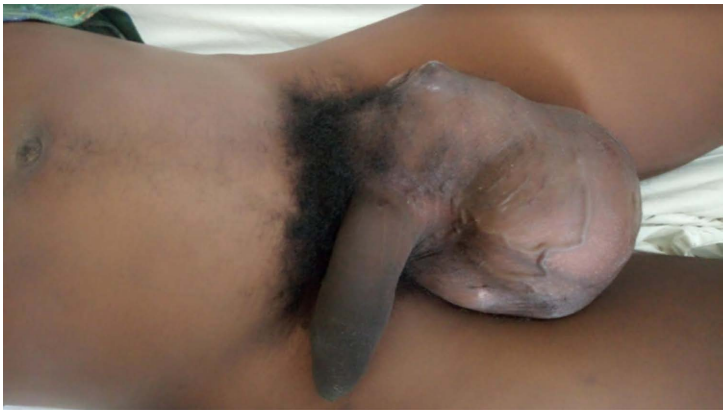

Figure 1. Large left bursa related to a testicular tumor in a 20 year old boy.

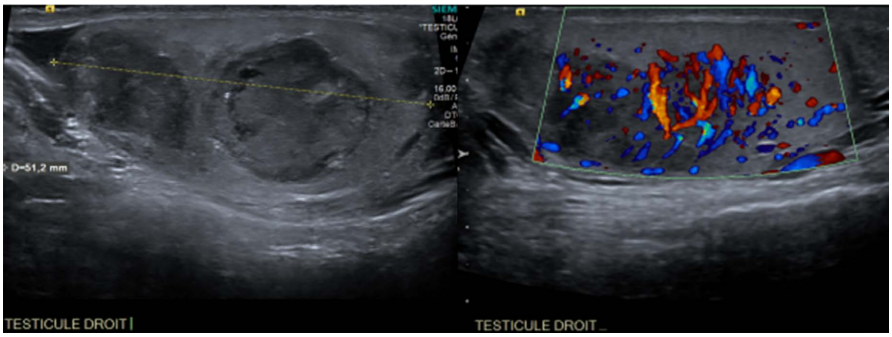

Figure 2. Color doppler ultrasound showing a testicular mass linked to a tumor.

mg/m^2 on days 1 to 5 every 3 weeks) for patients with germ cell tumors and tubulo-papillary epididymo-testicular adenocarcinoma. For non-Hodgkin's malignant lymphoma, the CHOP protocol (Cyclophosphamide 600 mg/m^2, Doxorubicin 60 mg/m^2, Vincristine 1.5 mg/m^2, and Prednisone 1 mg/kg) was used. No lymph node dissection was performed, and no patient received radiotherapy. Neoadjuvant chemotherapy was administered in two patients admitted at an advanced stage of unilateral testicular tumor. Poor general condition precluded primary orchidectomy.

In terms of evolution, we noted good progress with complete remission without secondary focus in 9 patients, including 7 cases of germ cell tumors and two cases of non-Hodgkin's malignant lymphoma. One patient with tubulo-papillary epididymo-testicular adenocarcinoma experienced late recurrence after a remission period of 27 months. The patient died due to complications related to retroperitoneal and pulmonary metastases. The two patients admitted in poor general condition died before orchidectomy during neoadjuvant chemotherapy. One patient experienced neglected torsion of the spermatic cord on the contralateral single testicle at the eleventh month postoperatively. The patient developed symptomatic and biochemical hypogonadism, requiring testosterone treatment. One of the cured patients reported having fathered a full-term pregnancy.

5. Discussion

The incidence of testicular cancer worldwide exhibits geographical and ethnic

differences: it is low in African and Asian countries and higher in white populations in Northern European countries [4] [7]. Our incidence of 0.6 cases of testicular cancer per year is comparable to that reported in the literature [1] [2] [8]. Concerning the low number of cases observed in this single-center study, we can confirm that this cancer is rare in Africa because another study, conducted in Burkina Faso by Goumbri [9], identified 10 cases of testicular cancer over a period of 20-year study, period similar to ours. This pathology is more observed in young subjects [2] [4] [6] [10], at a peak time for career and reproductive life [11]. In this age group, patients cured of testicular cancer have a long life expectancy. This underscores the importance of not downplaying the long-term effects on reproductive health and quality of life. Knowing the harmful effect of systemic cancer treatments on fertility [3], sperm cryopreservation should be considered in these patients immediately after diagnosis [6] [8] [12]. Cryopreservation has medicolegal value [3], it is ideally carried out before orchiectomy and imperatively before any chemotherapy, radiotherapy, or retroperitoneal surgery. In our study only one patient was able to have sperm preserved abroad because we do not have a sperm bank.

In developed countries, the diagnosis of testicular cancers is increasingly being made incidentally, in the form of small asymptomatic and non-palpable testicular tumors, due to the rising demand for scrotal ultrasound [3] [12] [13] [14]. In our context, all patients were symptomatic, and the testicular mass, evident on clinical examination, was the most commonly observed reason for consultation, as reported in African series [10] [15]. In the majority of cases, these symptoms are associated with advanced-stage disease. The low socio-economic level, the limits caused by modesty and the taboos on subjects which affect the genito-external organs mean that patients consult late at the advanced stage of the disease. Yet most germ cell tumors are curable even at an advanced stage [1] [4] [16].

In the literature, the two main categories of testicular cancer are "germ cell tumors," accounting for up to 95% of testicular malignancies, compared to "non-germ cell tumors" [1] [2] [4]. Testicular germ cell tumors represent 1% of all male malignancies [4] [17]. Non-seminomatous testicular tumors were the most observed in our series, consistent with Kane's series [10] in Senegal, which observed 10 cases of non-seminomatous germ cell tumors out of 17 testicular cancer cases. The frequency of lymphomatous testicular tumors is low in our series compared to what was reported in Sow's series [15], which reported 43.90% of testicular cancer cases being lymphomatous in Cameroon.

This study has some limitations regarding the detection of serum markers because the measurement of human chorionic gonadotropin (HCG) in plasma was not available for all patients; only beta-HCG measurement was available. All patients who had elevated tumor markers had a high lactate dehydrogenase (LDH) level. Elevated LDH levels favor an advanced tumor [18] [19]. In the literature, only 60% of patients present with elevated serum markers [4] [20].

Platinum-based chemotherapy has contributed to improving the overall cure

rate of germ cell tumors to over 90% [4]. It is indicated in patients with intermediate or poor prognosis disease [6]. In patients with life-threatening metastatic disease, orchidectomy may be deferred. In such cases, orchidectomy should be performed after chemotherapy [3] [6]. Two of our patients were referred for neoadjuvant chemotherapy due to poor general condition precluding surgical intervention. Adjuvant chemotherapy or radiotherapy are standard treatment options [6]. Chemotherapy and radiotherapy achieve similar disease control [21], with disease-specific overall survival close to 100% with either approach [6]. Although adjuvant therapy reduces the risk of relapse, discussions with patients should go beyond the risk of relapse to include potential long-term toxicities of adjuvant treatment and equivalent cancer-specific survival [6].

In our series, given the fact that the patients were received at an advanced stage with large tumors, given the lack of lymph node dissection and also given the unavailability of conformal radiotherapy, adjuvant chemotherapy was the only option at our disposal. Patients not consulting until late, by ridding them of the main complaint, they often lack the motivation to adhere to close post-operative monitoring. Kane et al emphasize that once operated, patients no longer consider it necessary to return to the hospital believing they are cured [10].

The 5-year specific survival rate for this disease is greater than 90%, all stages combined [22]. Late relapses may have disease more resistant to chemotherapy and, therefore, surgical resection is an integral part of this [23].

6. Conclusion

Testicular cancer is a rare condition in Brazzaville. It occurs in young adults at a time when most men are considering starting a family. In our setting, its management is often carried out at advanced stages of the disease due to late presentations. Platinum-based chemotherapy has improved the management of patients with germ cell tumors, regardless of stage.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Zuniga, K.B., *et al.* (2020) A Comparison of Stage-Specific All-Cause Mortality between Testicular Sex Cordstromal Tumors and Germ Cell Tumors: Results from the National Cancer Database. *BMC Urology*, **20**, Artile No. 40. https://doi.org/10.1186/s12894-020-00609-2

[2] Konan, P.G., Dekou, A., Kouame, B., *et al.* (2005) Tumeurs malignes du testicule en Côte d'Ivoire: Aspect anatomo-pathologique à propos de 54 cas. *African Journal of Urology*, **11**, 191-196.

[3] Murez, T., *et al.* (2020) Recommandations françaises du Comité de Cancérologie de l'AFU—Actualisation 2020-2022: Tumeurs germinales du testicule. *Progrès en urologie*, **30**, 280-313. https://doi.org/10.1016/S1166-7087(20)30754-5

[4] Baroni, T., Arato, I., Mancuso, F., Calafiore, R. and Luca, G. (2019) On the Origin of Testicular Germ Cell Tumors: From Gonocytes to Testicular Cancer. *Frontiers in Endocrinology*, **10**, Article 343. https://doi.org/10.3389/fendo.2019.00343

[5] Dieckmann, K.P. and Pichlmeier, U. (2004) Clinical Epidemiology of Testicular Germ Cell Tumors. *World Journal of Urology*, **22**, 2-14. https://doi.org/10.1007/s00345-004-0398-8

[6] Hamilton, R.J., Canil, C., Shani Shrem, N., *et al.* (2022) Canadian Urological Association Consensus Guideline: Management of Testicular Germ Cell Cancer. *Canadian Urological Association Journal*, **16**, 155-173. https://doi.org/10.5489/cuaj.7945

[7] Ferlay, J., Soerjomataram, I., Dikshit, R., Eser, S., Mathers, C., Rebelo, M., *et al.* (2015) Cancer Incidence and Mortality Worldwide: Sources, Methods and Major Patterns in GLOBOCAN 2012. *International Journal of Cancer*, **136**, E359-E386. https://doi.org/10.1002/ijc.29210

[8] Stephenson, A., Eggener, S.E., Bass, E.B., Chelnick, D.M., Daneshmand, S., Feldman, D., Gilligan, T., Karam, J.A., Leibovich, B., Liauw, S.L., Masterson, T.A., Meeks, J.J., Pierorazio, P.M., Sharma, R. and Sheinfeld, J. (2019) Diagnosis and Treatment of Early Stage Testicular Cancer: American Urological Association Guideline. *The Journal of Urology*, **202**, 272-281. https://doi.org/10.1097/JU.0000000000000318

[9] Goumbri, O.M., Lompo Domagni, O.E., Sanou, A.M., Konsegre, V. and Soudre, R.B. (2009) Aspects épidémiologiques et histopathologiques des cancers au Burkina Faso. *Journal africain du cancer*, **1**, 207-211. https://doi.org/10.1007/s12558-009-0052-x

[10] Kane, R., Zakou, A.R.H., Diao, B., Ndiaye, A., Thiam, A., Sow, Y., Ze ondo, C., Fall, B. and Diagne, B.A. (2014) Cancer du testicule: Particularités cliniques et limites thérapeutiques en milieu hospitalier urologique au Sénégal. *African Journal of Urology*, **20**, 149-153. https://doi.org/10.1016/j.afju.2014.04.003

[11] Huddart, R.A., Norman, A., Moynihan, C., *et al.* (2005) Fertility, Gonadal and Sexual Function in Survivors of Testicular Cancer. *British Journal of Cancer*, **93**, 200-207. https://doi.org/10.1038/sj.bjc.6602677

[12] Pozza, C., Pofi, R., Tenuta, M., *et al.* (2019) Clinical Presentation, Management and Follow-Up of 83 Patients with LEYDIG CELL TUMORS of the Testis: A Prospective Case-Cohort Study. *Human Reproduction*, **34**, 1389-1403. https://doi.org/10.1093/humrep/dez083

[13] Ates, F., Malkoc, E., Zor, M., Demirer, Z., Alp, B.F., Basal, S., Guragac, A. and Yildirim, I. (2016) Testis-Sparing Surgery in Small Testicular Masses Not Suspected to Be Malignant. *Clinical Genitourinary Cancer*, **14**, E49-E53. https://doi.org/10.1016/j.clgc.2015.07.016

[14] Lagabrielle, S., Durand, X., Droupy, S., Izard, V., Marcelli, F., Huyghe, E., Ferriere, J.M. and Ferretti, L. (2018) Testicular Tumours Discovered during Infertility Workup Are Predominantly Benign and Could Initially Be Managed by Sparing Surgery. *Journal of Surgical Oncology*, **118**, 630-635. https://doi.org/10.1002/jso.25203

[15] Sow, M., Nkegoum, B., Essame Oyono, J.L., Garoua, M. and Nzokou, A. (2006) Aspects épidémiologiques et histopathologiques des tumeurs urogénitales au Cameroun. *Progrès en Urologie*, **16**, 36-39.

[16] Kollmannsberger, C., Tandstad, T., Bedard, P.L., Cohn-Cedermark, G., Chung, P.W., Jewett, M.A., *et al.* (2015) Patterns of Relapse in Patients with Clinical Stage I

Testicular Cancer Managed with Active Surveillance. *Journal of Clinical Oncology*, **33**, 51-57. https://doi.org/10.1200/JCO.2014.56.2116

[17] Van de Geijn, G.J., Hersmus, R. and Looijenga, L.H. (2009) Recent Developments in Testicular Germ Cell Tumor Research. *Birth Defects Research Part C: Embryo Today: Reviews*, **87**, 96-113. https://doi.org/10.1002/bdrc.20140

[18] Fossa, A. and Fossa, S.D. (1989) Serum Lactate Deshydrogenase and Human Choriogonadotrophin in Seminoma. *British Journal of Urology*, **63**, 408-415. https://doi.org/10.1111/j.1464-410X.1989.tb05228.x

[19] Klein, E.A. (1993) Tumor Markers in Testis Cancer. *Urologic Clinics of North America*, **20**, 67-73. https://doi.org/10.1016/S0094-0143(21)00462-6

[20] Barlow, L.J., Badalato, G.M. and McKiernan, J.M. (2010) Serum Tumor Markers in the Evaluation of Male Germ Cell Tumors. *Nature Reviews Urology*, **7**, 610-617. https://doi.org/10.1038/nrurol.2010.166

[21] Giannatempo, P., Greco, T., Mariani, L., *et al.* (2015) Radiotherapy or Chemotherapy for Clinical Stage IIA and IIB Seminoma: A Systematic Review and Meta-Analysis of Patient Outcomes. *Annals of Oncolog*, **26**, 657-668. https://doi.org/10.1093/annonc/mdu447

[22] Miladi, M., Peyromaure, M., Remi, J., Beuzeboc, P., Debre, B. and Zerbib, M. (2003) Tumeurs germinales du testicule: Etude pronostique. *Progrès en Urologie*, **13**, 92-97.

[23] Sharp, D.S., Carver, B.S., Eggener, S.E., *et al.* (2008) Clinical Outcome and Predictors of Survival in Late Relapse of Germ Cell Tumor. *Journal of Clinical Oncology*, **26**, 5524-5529. https://doi.org/10.1200/JCO.2007.15.7453