Isolated para-aortic node involvement in stage IB/II cervical carcinoma

P. Morice, J. C. Sabourin, P. Pautier, A. Gerbaulet, P. Duvillard, D. Castaigne

Department of Gynecologic Surgery, Pathology Oncology and Brachytherapy, Institute Gustave Roussy, Villejuif (France)

Summary

The aim of this report was to describe exceptional cases of patients treated for stage Ib and II cervical carcinoma with isolated para-aortic node involvement and to deduce therapeutic implications. Between 1985 and 1998, 491 women with stage IB or II cervical carcinoma underwent radical hysterectomy with systematic pelvic and para-aortic lymphadenectomy. Five patients had para-aortic metastatic nodes but no external iliac, obturator or common iliac node involvement. These five patients had a tumor size >3 cm. According to these cases, in patients with bulky cervical carcinoma systematic complete lymphadenectomy should be performed in order to avoid misdiagnosis of para-aortic node involvement.

Key words: Cervical carcinoma; Metastatic nodes; Para-aortic nodes; Lymphadenectomy; Bulky tumors.

Introduction

Para-aortic lymph node involvement is observed in 6% of stage IB and 12% of stage II cervical carcinomas [1]. The incidence of para-aortic node metastases correlates with tumor size [1-3]. Para-aortic spread is usually associated with pelvic node involvement. But is the absence of pelvic lymph node metastasis synonymous with the absence of para-aortic lymph node involvement? This report presents five cases of stage Ib or II cervical carcinoma and isolated para-aortic lymph node metastasis. Characteristics of patients and implications for surgical management are discussed.

Case Reports

Between 1985 and 1998, 491 women with stage IB or II cervical carcinoma were treated by combined radiotherapy-surgery with radical hysterectomy and systematic pelvic and para-aortic lymphadenectomy via laparotomy, according to a procedure previously described [1]. Five patients had para-aortic metastatic nodes but no pelvic node involvement.

Case 1: Mrs Y., a 32-year-old black woman, was referred for a bulky (7 cm) stage IIB well differentiated squamous cell cervical carcinoma. She was scheduled to receive external beam irradiation (20 Grays=Gy) and brachytherapy (40 Gy) before the surgical procedure. The dose delivered with brachytherapy was calculated according to the ICRU (International Commission for Radiation Units) recommendations, and adapted to the tumoral volume. The external beam irradiation was delivered in the pelvic area up to the level of the fifth lumbar vertebra. So the size of the pelvic field was 16 to 17 centimeters. During the operation, no suspicious nodes were observed. The histologic examination revealed two metastatic nodes with capsular rupture, located in the intercavoaortic and para-caval chains, among the 29 nodes removed. She received additional external pelvic irradiation (20 Grays) and cisplatin-based chemotherapy. Six months after the completion of this treatment she remained apparently recurrence-free but she returned to her country and was lost to follow-up.

Case 2: Mrs. Z. 43 years old, presented with a bulky (5 cm) stage IB well differentiated squamous cell cervical carcinoma diagnosed at the third trimester of a pregnancy. A cesarian section was carried out at 36 weeks. No suspicious nodes were found on tomography performed after the cesarian section. A pre-operative external pelvic beam irradiation (45 Gy) was started outside of our institution, up to 45 Gy because of a poor response of the tumor to radiation therapy. Pre-operative brachytherapy was not performed because the local anatomy was not suitable for brachytherapy (persistence of bulky cervical tumor). During the surgical procedure, no suspicious nodes were seen. The histologic examination revealed one metastatic node (micrometastasis), located in the aortic bifurcation, among the 72 nodes removed. She received postoperative brachytherapy (15 Gy). Ten months after this treatment Mrs Z. developed a pelvic recurrence.

Case 3: Mrs. B., 64 years old, was treated for a stage IIB well differentiated squamous cell cervical carcinoma. The tumor size was 3.5 cm. The lymphangiogram was normal. She was scheduled to receive pre-operative brachytherapy (60 Gy). Several suspicious para-aortic nodes were seen during the surgical procedure. The histologic examination revealed seven metastatic nodes with capsular rupture located in the intercavoaortic and para-aortic chains. She received an additional dose of external pelvic irradiation (20 Gy). Mrs B. was alive three years after the end of this treatment but she was lost to follow-up after this period.

Case 4: Mrs C., 45 years old, was treated for a bulky (6 cm) stage, well differentiated squamous cell cervical carcinoma. There were no suspicious nodes on tomography. She was scheduled to receive external beam pelvic irradiation (20 Gy) and brachytherapy (40 Gy) before the surgical procedure. No suspicious nodes were observed during the operation. The histologic examination revealed three metastatic nodes without capsular rupture, located in the intercavoaortic and para-caval chains, among the 52 nodes removed. She received a further 40 Gy

Revised manuscript accepted for publication October 20, 1999

dose of external pelvic irradiation and cisplatin-based chemotherapy. Four years after the end of this treatment Mrs Y. was alive without evidence of recurrence.

Case 5: Mrs M., 44 years old, presented a bulky (6 cm) stage IIA squamous cell cervical carcinoma. There were no suspicious nodes on tomography. She was scheduled to receive external beam pelvic irradiation (40 Gy) with concomitant radiosensitizing chemotherapy (based on *cisplatin*). Pre-operative brachytherapy was not performed because of persistent infection. During the surgical procedure, no suspicious nodes were seen. The histologic examination revealed 2 small metastatic nodes, located in the aortic bifurcation, among the 30 nodes removed. She received postoperative brachytherapy (20 Gy). Twenty-four months after this treatment, Mrs M. was alive without evidence of recurrence.

Discussion

Para-aortic metastasis is extremely rare in the absence of pelvic node involvement [4, 5]. How then do we account for this event in our cases? Four patients received external pelvic irradiation prior to surgery and one patient brachytherapy. In our institution, the dose delivered with radiation therapy is related to tumor size. When patients had a tumor size <5 cm a pre-operative brachytherapy was performed (patient no. 3). When tumor size was ≥5 cm a pre-operative external irradiation of 20 grays with brachytherapy (40 Gy) was usually performed (patients no. 2 and 4). But patients no. 2 and 5 received pre-operative radiation, external irradiation up to 40 and 45 grays because of a poor response of the tumor size at 20 grays. Radiation therapy alone is unable to sterilize bulky positive nodes [6, 7]. But, radiotherapy may have sterilized the small positive micrometastasis present in the pelvic nodes associated with para-aortic node involvement, so that after irradiation only involved para-aortic nodes were found. However, metastatic nodes sterilized by radiation therapy usually have a particular appearance at histologic examination (necrosis, fibrosis). These post-radiotherapy histologic features were not found in our cases. The only other possibility we consider plausible is that the para-aortic metastases found in our cases were truly isolated. These exceptional cases could be explained by the existence of a posterior cervical lymphatic trunk draining lymph directly from the cervix into the para-aortic lymph nodes [4].

Whatever the mechanism of para-aortic involvement in our five patients, four of them had a bulky tumor larger than 4 cm. In our institution, between 1985 and 1995, 187 women with a bulky (≥4 cm) stage Ib and II cervical carcinoma underwent radical hysterectomy with systematic pelvic and para-aortic lymphadenectomy [1]. Among those patients, 66 (35%) had positive nodes and 21 (11%) had para-aortic node involvement. Thus, 15% (3/21) of patients with tumor size ≥4 cm and para-aortic positive nodes had isolated para-aortic lymph-node involvement [1]. If frozen section of pelvic lymph nodes had been performed in these patients, metastatic pelvic nodes would not have been discovered. In such cases, the surgeon may decide not to perform para-aortic lymphadenectomy. If para-aortic lymph node involvement is isolated, as in our cases, it would remain undetected.

But is there any interest to remove involved para-aortic nodes? Recent reports seem to demonstrate that lymphadenectomy has a therapeutic value in patients with nodal involvement [8-10]. Several of these authors observed increased survival in patients with resected bulky para-aortic nodes compared to patients with unresected bulky nodes [8, 10]. In a personal series, overall survival at three years in patients with resected positive pelvic nodes was 55% and survival in patients with resected para-aortic nodes was 35% [11]. According to those data, surgical resection of bulky metastatic nodes seems to have had a therapeutic benefit. We did not perform postoperative para-aortic irradiation in patients with para-aortic node involvement who underwent a complete para-aortic lymphadenectomy to avoid radiation-related chronic morbidity affecting the bowel. So, convinced that surgical resection of bulky metastatic nodes would procure a therapeutic benefit, adjuvant treatment of patients with para-aortic positive nodes is based in our institution on external pelvic irradiation and chemotherapy [11].

Conclusion

Based on our five cases, isolated para-aortic metastases may be found particularly in patients with a bulky tumor. Frozen section analysis of pelvic lymph nodes may therefore be pointless in patients with tumors larger than 3 cm. In such cases, systematic complete lymphadenectomy should be performed to avoid misdiagnosis of para-aortic node involvement. In patients with small tumors (<3 cm), according to the low frequency of para-aortic metastases and the absence of isolated para-aortic node involvement observed in such patients [1, 12], para-aortic lymphadenectomy should be done only if nodes are found to be metastatic on frozen section analysis of pelvic lymph nodes [13].

In memory of Prof. Guy Michel

Acknowledgements to Lorna Saint Ange for editing the manuscript.

References

[1] Michel G., Morice P., Castaigne D., Leblanc M., Rey A., Duvillard P.: "Lymphatic spread of stage IB/II cervical carcinoma: anatomy and surgical implications". *Obstet. Gynecol.*, 1998, *91*, 360.

[2] Piver M. S., Chung W. S.: "Prognostic significance of cervical lesion size and pelvic node metastases in cervical carcinoma". *Obstet. Gynecol.*, 1975, *46*, 507.

[3] Girardi F., Haas J.: "The importance of the histologic processing of pelvic lymph nodes in the treatment of cervical cancer". *Int. J. Gynecol. Cancer*, 1993, *3*, 12.

[4] Buschbaum H. J.: "Extrapelvic lymph nodes metastases in cervical carcinoma". *Am. J. Obstet. Gynecol.*, 1979, *133*, 814.

[5] Deppe G., Lubicz S., Galloway B. T., Thomas W., Heredia R.: "Aortic node metastases with negative pelvic nodes in cervical cancer". *Cancer*, 1984, *53*, 173.
[6] Lagasse L. D., Smith M. L., Moore J. G., Morton D. G., Jacobs M., Jonhson G. H. *et al.*: "The effect of radiation therapy on pelvic lymph node involvement in stage I carcinoma of the cervix". *Am. J. Obstet. Gynecol.*, 1974, *119*, 328.
[7] Fletcher G. H., Rutledge F. N.: "Extended field techniques in the management of cancers of the cervix". *Am. J. Roentgol.*, 1972, *114*, 116.
[8] Hacker N. F., Wain G. V., Nicklin J. L.: "Resection of bulky positive lymph nodes in patients with cervical carcinoma". *Int. J. Gynecol. Cancer*, 1995, *5*, 250.
[9] Downey G. O., Potish R. A., Adcock L. L., Prem K. A., Twiggs L. B.: "Pretreatment surgical staging in cervical carcinoma: therapeutic efficacy of pelvic lymph node resection". *Am. J. Obstet. Gynecol.*, 1989, *160*, 1055.
[10] Cosin J. A., Fowler J. M., Chen M. D., Paley P. J., Carson L. F., Twiggs L. B.: "Pretreatment surgical staging of patients with cervical carcinoma. The case for lymph node debulking". *Cancer*, 1998, *82*, 2241.
[11] Morice P., Castaigne D., Pautier P., Rey A., Haie-Meder C., Duvillard P. *et al.*: "Interest of para-aortic lymphadenectomy in stage IB and II cervical carcinoma". *Gynecol. Oncol.*, 1999, *73*, 106.
[12] Pastner B., Sedlacek T. V., Lovecchio J. L.: "Para-aortic node sampling in small (3 cm or less) stage IB invasive cervical cancer". *Gynecol. Oncol.*, 1992, *44*, 53.
[13] Morice P., Sabourin J. C., Pautier P., Mercier S., Duvillard P., Castaigne D.: "Indications and results of extemporaneous examination of pelvic lymph nodes in the surgical strategy of stage Ib or II cancers of the cervix uteri". *Ann. Chir.*, 1999, *53*, 583.

Address reprint requests to:
P. MORICE, M.D.
Institut Gustave Roussy
39 rue Camille Desmoulins
94805 Villejuif (France)