

Metastasis Of Squamous Cell Carcinoma Of The Uterine Cervix To The Cervical Spine

Ted J. Hudspeth, Sr., MD, Edward J. Mayeaux, Jr., MD, and Fleurette Abreo, MD

Squamous cell cancer of the cervix occurs in approximately 13,000 patients each year and results in 4500 deaths each year in the United States.¹ Appropriate screening by family physicians and gynecologists using cervical cytological smears and follow-up with colposcopy, combined with the loop electrosurgical excisional procedure (LEEP), can dramatically reduce the number of patients developing squamous cell carcinoma of the cervix and subsequent metastatic disease.² Three to 4 percent of all distant metastases of squamous carcinoma of the cervix are to bony structures.³ Of these bone metastases, 54.2 percent are to the spinal column.⁴ An extensive literature review, however, failed to reveal a reported case of squamous cell carcinoma of the uterine cervix metastasizing to the atlas or axis of the cervical spine. In this report, we describe such a case and highlight some features of metastatic squamous carcinoma of the uterine cervix and its prevention.

Case Report

A 23-year-old woman, gravida 0, para 0, complained to her family physician of a 1-week history of mild sore throat and left neck pain. The pain was approximately 2 cm posterior and inferior to the pinna of the left ear. Her medical history was noteworthy for stage IIB squamous cell carcinoma of the cervix, diagnosed after a complaint of abnormal vaginal bleeding. Her cancer had been treated with radiation and radium implants 5 months earlier. A cuff smear 5 months before this visit was negative. She was treated for a presumed pharyngitis with an injection of ceftriaxone and oral amoxicillin-clavulanate.

After 1 week the patient's pain worsened and she was admitted to the hospital. She had normal

findings on a cervical spine radiograph. She had neck pain on movement and some adenopathy on the left side of her neck, but the results of the physical examination were otherwise normal. A computed tomogram of her neck showed a possible abscess located left and anterior to the body of the second cervical vertebra. The body of the C-2 vertebra appeared to be involved, with some erosion (Figure 1.) A chest radiograph showed an 8-cm cavitory lung lesion with a small air fluid level in the right upper lobe, and a computed tomogram of her chest revealed two discrete lung lesions (Figure 2.) The patient was then transferred to the family practice service at Louisiana State University Medical Center, Shreveport. Her initial differential diagnosis included metastatic squamous cell carcinoma of the uterine cervix, tuberculosis with progression to the spine (Pott disease), and actinomycosis with two foci.

Findings from needle aspiration of the neck lesion revealed atypical cells suggestive of squamous cell carcinoma. Examination of brushings and biopsy from a bronchoscopy of the lung lesion confirmed squamous cell carcinoma. The findings from a histologic examination of the C-2 spinal lesion aspirate were similar to those of the aspirate recovered from the lung lesion. All cultures from the lesions were negative for bacteria, acid-fast bacilli, fungi, and actinomycosis. All sputum and blood cultures were negative for an infectious origin. The patient's condition was diagnosed as metastatic squamous cell carcinoma of the uterine cervix to the second cervical vertebra and lung. She was scheduled for palliative chemotherapy and was given an estimated 6-month life expectancy.

This patient's risk factors for developing squamous cell carcinoma of the cervix included 4 lifetime sexual partners, a positive history for 1 sexually transmitted disease, and early first intercourse at the age of 15 years. The patient was a non-smoker. She began routine annual Papanicolaou smears at the age of 19 years, and her cervical cytology smear from 2 years earlier was satisfactory

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From the North Oaks Medical Center, Hammond (TJH), and The Departments of Family Medicine (EJM) and Pathology (FA), Louisiana State University Medical Center, Shreveport. Address reprint requests to E.J. Mayeaux, Jr., MD, Department of Family Medicine, Louisiana State University Medical Center, 1501 Kings Highway, Box 33932, Shreveport, LA 71130 - 3932.



Figure 1. Lateral computed tomogram of the neck showing a large mass at C-2 involving the vertebral body.

and negative for malignant cells. She underwent hysterectomy and had cesium implants for her cancer. No koilocytic changes were noted in the pathology reports.

Discussion

Of the bone metastases encountered in squamous cell carcinoma of the uterine cervix, the spine is involved most commonly, with 54.2 percent reported in one study.⁴ In another investigation 23 of 46 (50 percent) of all vertebral metastases were to the lumbar spine, 19 of 46 (41 percent) were to the thoracic spine, 4 of 46 (9 percent) were to the sacral spine, and none were to the cervical spine.³ Squamous cell carcinoma of the cervix also metastasizes to the lungs in 36 percent of cases of single-organ metastasis, with lymph nodes being the next most common site,⁵ and it metastasizes to local organs through direct extension and lymphatic spread.³ Metastasis to the thoracic and lumbar spine occurs additionally through direct extension and lymphatic spread.^{4, 6-8} Metastasis to distant areas, including the cervical spine, is probably due to hematogenous spread.^{3, 7, 9, 10}

Only rarely do metastatic tumors from any primary neoplasm involve

the atlas and the axis.^{10, 11} Of these tumors, however, 15 percent of all single cervical spine metastases are to the C-1 and C-2 areas.⁹ Of 619 biopsies performed for various complaints, Ottolenghi, et al.,¹² found only four tumors of the C-1 and C-2 vertebrae. During an 11-year period, Phillips and Levine¹⁰ found 12 metastatic lesions in the C-1 and C-2 area. There was one metastasis of squamous cell origin from the breast, but there were none from the uterine cervix. Metastatic lesions to C-1 and C-2 vertebrae reported in the literature include those from breast, kidney, lung, multiple myeloma, prostate, bladder, tongue, thyroid, lacrimal gland, ovary, pharynx, brachial plexus, and lymphosarcoma.^{10, 11, 13} No studies found in the

literature listed uterine cervix as the site of primary metastasis of squamous cell carcinoma to the C-1 or C-2 vertebra.

There are several pertinent lessons to be learned from this case. The first is that cervical dysplasia and cancer can arise in young women. Cervical cancer was once believed to take decades to progress, but now aggressive cases in younger women are being more commonly found. Another important lesson involves the need for physicians to be vigilant when caring for patients with previous cancer. As in this case, atypical or persis-

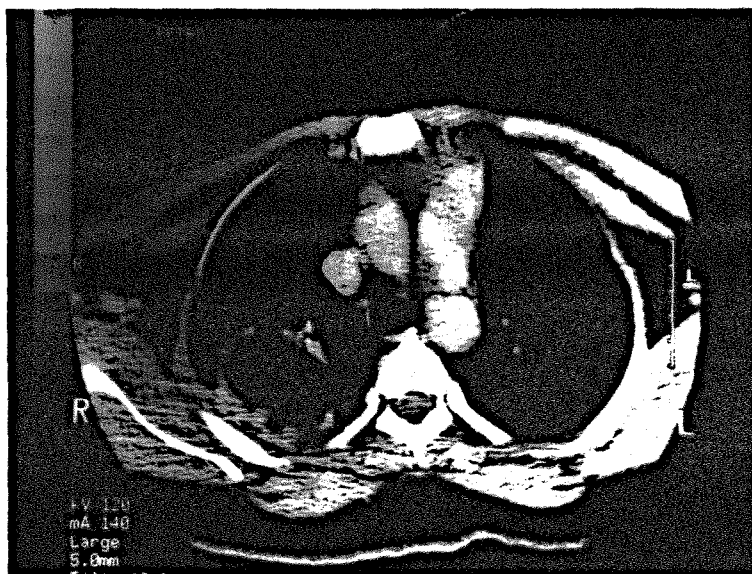


Figure 2. Computed tomogram of the chest showing a large lung lesion.

Table 1. Rates of Distant Metastatic Occurrence of Squamous Cell Carcinoma of the Uterine Cervix by Stage.*

Stage	Percent Metastatic Rate	Definition of Tumor Stage
Stage IA	0.74	Lesion <1 cm in diameter
Stage IB	4.74	Lesion >1 cm in diameter or involving two or more quadrants
Stage IIA	9.21	Involvement of 2/3 of vagina or the medial parametria
Stage IIB	16.18	Involvement of the lateral parametria with or without vaginal extension or massive corpus involvement
Stage IIIA	20.38	Involvement of one pelvic wall or the lower 1/3 of the vagina
Stage IIIB	20.74-24.13	Spread to both pelvic walls or spread to one pelvic wall and the lower 1/3 of the vagina
Stage IV	100	Invasion of the bladder or rectum or distant metastases

*Adapted from Carlson, et al.⁵

tent unexplained symptoms should prompt more aggressive work-up to rule out recurrent or occult metastatic disease. Finally, it must be emphasized that our patients must be screened appropriately and given proper follow-up if physicians are to prevent this type of disease process.

This case report also emphasizes that squamous cell carcinoma of the uterine cervix can be a very aggressive disease. Distant metastatic rates by stage are shown in Table 1.⁵ Survival rates for patients with distant metastases of squamous cell carcinoma of the cervix are shown in Table 2.⁵ For our patient, who originally had stage IIB squamous cell carcinoma of the cervix, the risk of developing distant metastases was originally estimated at 16 percent. Because she had multiple metastases involving the cervical spine and the lung, her mean estimated survival time was approximately 6 months.

Routine primary care for female patients should include regular Papanicolaou smears to detect cervical dysplasia while it is most treatable and to avoid metastatic disease, as occurred in this case. Any result indicating atypia or dysplasia is an indication for colposcopy with directed biopsy. Selected patients who have biopsy-proven low-grade disease and good access to follow-up could

be candidates for a course of watchful waiting with a repeat Papanicolaou smear in 6 months. Other patients, however, would be candidates for outpatient therapies, such as cryotherapy of the cervix, laser therapy, or LEEP. The choice of therapy is currently being debated in the literature. We favor LEEP for treatment of biopsy-proven dysplasia because it not only treats the patient's condition by removing the entire lesion, but also provides a specimen that can be reviewed by a pathologist to ensure diagnosis and complete removal.¹⁴ In addition, the LEEP procedure can be performed easily in a physician's office with little patient discomfort. While none of the treatment modalities listed above always prevent recurrence, all have high cure rates and have been found to decrease the progression of individual lesions to squamous cell cancer of the uterine cervix.

Prevention is the only effective treatment for distant metastatic cancer of the uterine cervix. To prevent squamous cell carcinoma of the cervix and subsequent metastatic spread, it is crucial that patients have access to routine cytological screening and to effective patient education about risk factors and how to reduce them. Patients must also have access to colposcopy, cryotherapy, laser therapy, and LEEP when indicated. Improving access for patients by putting these techniques into the hands of more primary care physicians will make possible earlier detection and treatment and, ultimately, better prevention of squamous cell carcinoma of the cervix.

Table 2. Length of Survival per Number of Metastasis from Squamous Cell Carcinoma of the Uterine Cervix.*

Length of Survival	Percent with Single Metastases	Percent with Multiple Metastases
<6 months	58.1	41.1
6-11 months	24.5	28.1
1-2 years	15.4	16.8
2-3 years	0.9	9.9
3-4 years	0.9	1.7
4-5 years	0	1.3
>5 years	0	0.8

*Adapted from Carlson, et al.⁵

References

1. Fagundes H, Perez CA, Grigsby PW, Lockett MA. Distant metastases after irradiation alone in carcinoma of the uterine cervix. *Int J Radiat Oncol Biol Phys* 1992; 24:197-204.
2. Caruthers B, Sheets KJ. Development of a curriculum in colposcopy. *J Fam Pract* 1991; 32:590-7.
3. Blythe JG, Cohen MH, Buchsbaum HJ, Latourette HB. Bony metastases from carcinoma of the cervix. Occurrence, diagnosis, and treatment. *Cancer* 1975; 36:475-84.
4. Barmeir E, Langer O, Levy JI, Nissenbaum M, DeMoor NG, Blumenthal NJ. Unusual skeletal metastases in carcinoma of the cervix. *Gynecol Oncol* 1985; 20:307-16.
5. Carlson V, Delclos L, Fletcher GH. Distant metastases in squamous cell carcinoma of the uterine cervix. *Radiology* 1967; 88:961-6.
6. Henriksen E. The lymphatic spread of carcinoma of the cervix and the body of the uterus: a study of 420 necropsies. *Am J Obstet Gynecol* 1949; 58:924-42.
7. Kim RY, Weppelmann B, Salter MM, Brascho DJ. Skeletal metastases from cancer of the uterine cervix: frequency, patterns, and radiotherapeutic significance. *Int J Radiat Oncol Biol Phys* 1987; 13:705-8.
8. Fisher MS. Lumbar spine metastasis in cervical carcinoma: a characteristic pattern. *Radiology* 1980; 134:631-4.
9. Rao S, Badani K, Schildhauer T, Borges M. Metastatic malignancy of the cervical spine. A nonoperative history. *Spine* 1992; 17(Suppl):S407-12.
10. Phillips E, Levine AM. Metastatic lesions of the upper cervical spine. *Spine* 1989; 14:1071-7.
11. Hastings DE, Macnab I, Lawson V. Neoplasms of the atlas and axis. *Can J Surg* 1968; 11:290-6.
12. Ottolenghi CE, Schajowicz F, De Schant FA. Aspiration biopsy of the cervical spine; technique and results in thirty-four cases. *J Bone Joint Surg* 1964; 46 (Pt 1) 715-33.
13. Raycroft JF, Hockman RP, Southwick WO. Metastatic tumors involving the cervical vertebrae: surgical palliation. *J Bone Joint Surg* 1978; 60:763-8.
14. Mayeaux EJ Jr, Harper MB. Loop electrosurgical excisional procedure. *J Fam Pract* 1993; 36:214-9.