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Locally Advanced Squamous Cells Carcinoma of the Maxillary Sinus: A Case Showing Complete Response to Exclusive Chemoradiotherapy

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Abstract **Case Report**

Maxillary sinus squamous cell carcinoma is the most frequent type of Maxillary sinus carcinoma, and over 80% of Maxillary sinus squamous cell carcinomas are detected at an advanced stage because of a lack of typical symptoms, and making curative surgery sometimes impossible. We report a case of advanced squamous cell carcinoma of the left maxillary sinus, which had an aggressive clinical course but a complete response to chemoradiation. A discussion of the clinical course and treatment of squamous cell carcinoma is presented, along with a review of the pertinent literature.

Keywords: Squamous cell carcinoma, maxillary sinus, chemoradiotherapy, Oncology, Case report.

INTRODUCTION

Maxillary sinus carcinoma is a rare neoplasm with an unclear prognosis [1]. Maxillary sinus squamous cell carcinoma is the most frequent type of Maxillary sinus carcinoma, and over 80% of Maxillary sinus squamous cell carcinomas are detected at an advanced stage because of a lack of typical symptoms [2, 3].

While the standard of care for Maxillary sinus squamous cell carcinoma has improved significantly in recent years, the 5-year overall survival rate remains disappointing [4]. According to the National Comprehensive Cancer Network (NCCN) recommendation, surgery-based treatment remains the first-line therapeutic strategy for Maxillary sinus squamous cell carcinoma [5]. Additionally, complete treatment comprising surgery has been shown to be more effective than surgery alone [6-8].

However, debate continues about whether preoperative chemotherapy and/or radiotherapy improve patient prognosis more than post-operative adjuvant chemotherapy and/or radiotherapy.

We report a case of advanced squamous cell carcinoma of the left maxillary sinus, which had an aggressive clinical course but a complete response to chemoradiation. A discussion of the clinical course and treatment of squamous cell carcinoma is presented, along with a review of the pertinent literature.

PATIENT AND OBSERVATION

A 60-year-old woman was referred to our institute due to increasing tumefaction in her left cheek over eight months. The patient was a non-smoker and a non-drinker. His past medical history was unremarkable.

The patient was in good general condition. Physical examination of the face showed facial asymmetry with a large, ulcerated, firm, and fixed swelling of the left cheek (Figure 1).

Figure 1: Large, ulcerated, firm, and fixed swelling of the left cheek before treatment

The endo-oral examination revealed an ulcerated bulging of the hard palate on the left side. There were no palpable lymph nodes on neck examination.

Computed tomography (CT) scanning revealed a tumor measuring 52*52*58 mm occupying and expanding the left maxillary sinus, destroying the maxillary bone and the left palatine bone.

The superior border of the tumor extended to the orbital floor, with an extension to the left infratemporal fossa.

The external border extends to the skin. The anterior border arrives to the left naso-labial fold.

The posterior border extends to the masticatory muscles and the left ramus of the mandible (Figure 2).

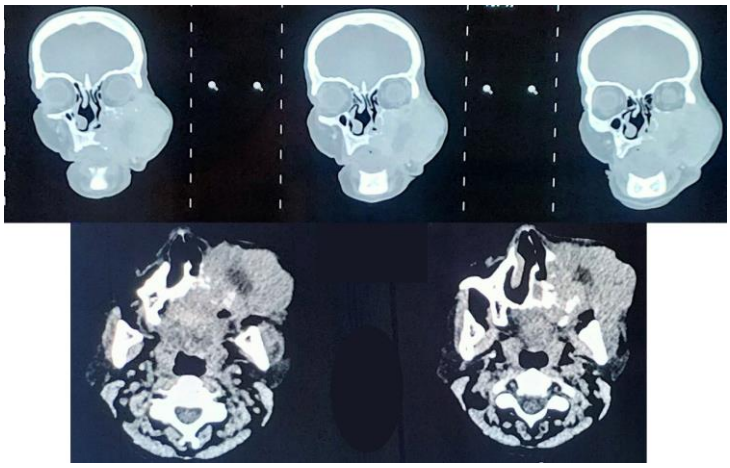

Figure 2: Computed tomography (CT) scanning revealing an invasive tumor occupying and the left maxillary sinus

Computed tomography scans of the chest and abdomen were negative for metastasis. A biopsy of the lesion was performed and showed a moderately-differentiated invasive SCC with vascular invasion. The final clinical and radiological staging for this tumor was T4a N0 M0 (stage IVA).

After reviewing the case, this patient was deemed unresectable. The patient then received a platinum-based radiochemotherapy (RCT): A dose of 66 Gy in 33 fractions with three doses of 100mg/m² of Cisplatin every 21 days without any significant complication.

Four weeks after treatment completion, physical examination showed complete regression of the left check swelling with skin retraction (Figure 3).

Figure 3: Complete regression of the left check swelling with skin retraction after treatment

Two Facial MRI done one month and one-year post-treatment revealed no evidence of local disease (Figure 4).

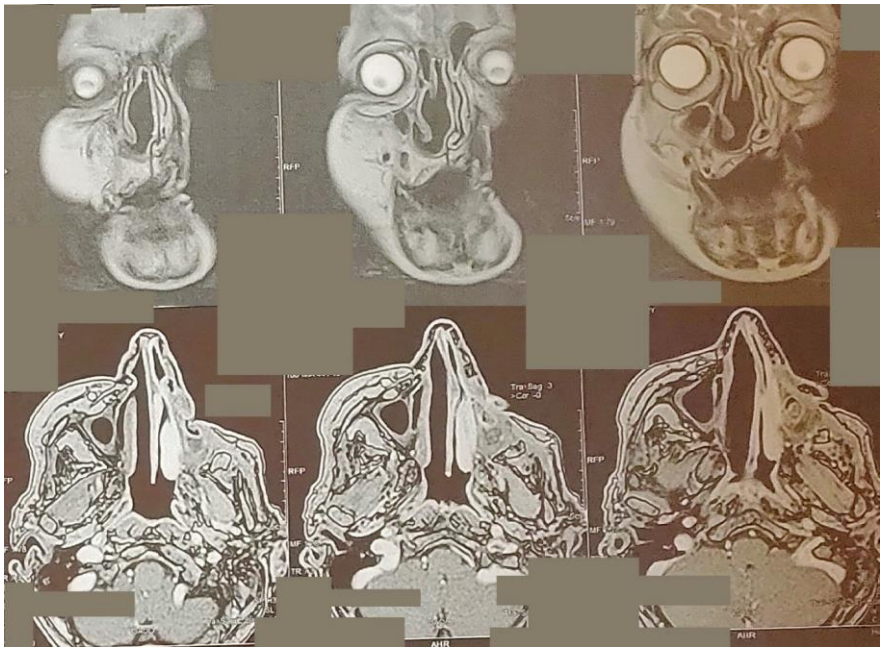

Figure 4: Facial MRI one year after treatment showing complete disappearance of the tumor

DISCUSSION

Paranasal sinus malignancies are rare neoplasms that present an ominous prognosis. They account for 0.2-0.8% of all human malignant neoplasms, and most cases are squamous cell carcinoma, representing approximately 70% of all cancer-developing paranasal sinuses [9, 10].

The Maxillary sinus squamous cell carcinoma is a highly aggressive human cancer with a relatively poor prognosis [11], accounting for approximately 80% of malignant paranasal sinus tumors [12]. Furthermore, about 90% of the cases are in an advanced T stage at the first visit to the hospital [13].

The primary goals of paranasal sinus cancer treatment are to eradicate the cancer, preserve or restore facial contour and function, minimize treatment-related complications and prevent secondary tumors. However, these targets are rarely met in patients with advanced tumors.

Numerous studies have reported that tumors beyond stage II require a multimodal approach [14-16].

Sole surgical treatment of advanced tumors leads to a significantly reduced overall survival and locoregional control, whereas definitive radiation therapy or chemoradiation therapy rarely results in complete remission and subsequent cure of the tumor [17, 18].

Maxillary sinus cancer is frequently unresectable due to the anatomical location in proximity of critical structures like cranial nerves or the orbit. Chemoradiation therapy may be an adequate treatment option for patients with locally advanced maxillary sinus cancer [19]. However, no large clinical trials focus on locally advanced maxillary sinus cancer, and an optimal radiation dose remains unclear. Here, we presented a patient with locoregionally advanced maxillary sinus cancer treated with chemoradiation therapy with complete response.

A limitation of our case is that the patient was treated with a 3D-conformal radiotherapy technique, whereas IMRT is now the standard of care for paranasal sinus tumors.

More recently, the advent of IMRT techniques has improved target volume coverage and minimization of OAR doses [20].

Reported outcomes in previous studies vary widely. For example, local control rates and overall survival rates are reported between 21–84 % and 9–89 % at 2 to 5 years follow-up [21]. Overall outcomes appear to be superior in the more recent series. For example, the IMRT series have reported 2-year local control rates of 62–76 % [21–24]; 2-year overall survival in these modern series ranged from 66–89 %. So the response control with RCC alone is still rare for this kind of tumor.

In this case report, a radiation dose of 65 Gy. Small studies like Giri *et al*., [25] reported local control rates of 45% in patients treated with tumor dose <65 Gy and 75% if treated to 65Gy. Le *et al*., [26] reported a 5-yr LPFS of 12% in patients receiving <65 Gy and a rate of 29% if the dose was 65 Gy ($p = 0.04$).

These findings are reasonable, implying that higher doses of radiation are needed in these patients with the gross disease to allow better local control and, as a result, improved survival.

CONCLUSION

Surgery-based comprehensive treatment is still the first-line approach for maxillary sinus squamous cell carcinoma.

Even so, exclusive chemoradiotherapy is believed to create curative opportunities for patients with unresectable tumors and bring about a higher quality of life to some extent.

Competing interests: The authors declare no competing interest.

Authors' Contributions: All the authors contribute to the diagnosis and treatment of the patient. All the authors contributed to the write-up of the manuscript and approved the final version.

REFERENCES

1. Hoppe, B. S., Stegman, L. D., Zelefsky, M. J., Rosenzweig, K. E., Wolden, S. L., Patel, S. G., ... & Lee, N. Y. (2007). Treatment of nasal cavity and paranasal sinus cancer with modern radiotherapy techniques in the postoperative setting—the MSKCC experience. *International Journal of Radiation Oncology* Biology* Physics*, *67*(3), 691-702.
2. Dooley, L., & Shah, J. (2015). Management of the neck in maxillary sinus carcinomas. *Current opinion in otolaryngology & head and neck surgery*, *23*(2), 107-114.
3. Turner, J. H., & Reh, D. D. (2012). Incidence and survival in patients with sinonasal cancer: a historical analysis of population-based data. *Head & neck*, *34*(6), 877-885.
4. Iyer, N. G., Tan, D. S., Tan, V. K., Wang, W., Hwang, J., Tan, N. C., ... & Tan, E. H. (2015). Randomized trial comparing surgery and adjuvant radiotherapy versus concurrent chemoradiotherapy in patients with advanced, nonmetastatic squamous cell carcinoma of the head and neck: 10-year update and subset analysis. *Cancer*, *121*(10), 1599-1607.
5. Colevas, A. D., Yom, S. S., Pfister, D. G., Spencer, S., Adelstein, D., Adkins, D., ... & Darlow, S. D. (2018). NCCN guidelines insights: head and neck cancers, version 1.2018. *Journal of the National Comprehensive Cancer Network*, *16*(5), 479-490.
6. Wang, F., Ren, M., Wu, J., & Zhang, C. (2019). Definitive radiation therapy versus postoperative radiation therapy for patients with maxillary sinus cancer invading the upper jaw. *Journal of Craniofacial Surgery*, *30*(4), 1234-1238.
7. Hanna, E. Y., Cardenas, A. D., DeMonte, F., Roberts, D., Kupferman, M., Weber, R., ... & Kies, M. (2011). Induction chemotherapy for advanced squamous cell carcinoma of the paranasal sinuses. *Archives of Otolaryngology–Head & Neck Surgery*, *137*(1), 78-81.

8. Noronha, V., Patil, V. M., Joshi, A., Krishna, M. V., Dhumal, S., Juvekar, S., ... & Prabhash, K. (2014). Induction chemotherapy in technically unresectable locally advanced carcinoma of maxillary sinus. *Chemotherapy research and practice*, *2014*, 487872.
9. Marchetta, F. C., Sako, K., Mattick, W. L., & Stinziano, G. D. (1969). Squamous cell carcinoma of the maxillary antrum. *The American Journal of Surgery*, *118*(5), 805-807.
10. Kreppel, M., Danscheid, S., Scheer, M., Lüers, J. C., Eich, H. T., Zöller, J. E., ... & Beutner, D. (2012). Neoadjuvant chemoradiation in squamous cell carcinoma of the maxillary sinus: a 26-year experience. *Chemotherapy research and practice*, *2012*, 413589.
11. Yoshimura, R. I., Shibuya, H., Ogura, I., Miura, M., Amagasa, T., Enomoto, S., & Kishimoto, S. (2002). Trimodal combination therapy for maxillary sinus carcinoma. *International Journal of Radiation Oncology* Biology* Physics*, *53*(3), 656-663.
12. Byrd, J. K., Clair, J. M. S., & El-Sayed, I. (2018). AHNS Series: Do you know your guidelines? Principles for treatment of cancer of the paranasal sinuses: a review of the National Comprehensive Cancer Network guidelines. *Head & neck*, *40*(9), 1889-1896.
13. Nishino, H., Miyata, M., Morita, M., Ishikawa, K., Kanazawa, T., & Ichimura, K. (2000). Combined therapy with conservative surgery, radiotherapy, and regional chemotherapy for maxillary sinus carcinoma. *Cancer: Interdisciplinary International Journal of the American Cancer Society*, *89*(9), 1925-1932.
14. Brasnu, D., Laccourreye, O., Bassot, V., Laccourreye, L., Naudo, P., & Roux, F. X. (1996). Cisplatin-based neoadjuvant chemotherapy and combined resection for ethmoid sinus adenocarcinoma reaching and/or invading the skull base. *Archives of Otolaryngology–Head & Neck Surgery*, *122*(7), 765-768.
15. Sakai, S., Hohki, A., Fuchihata, H., & Tanaka, Y. (1983). Multidisciplinary treatment of maxillary sinus carcinoma. *Cancer*, *52*(8), 1360-1364.
16. Kang, J. H., Cho, S. H., Kim, J. P., Kang, K. M., Cho, K. S., Kim, W., ... & Oh, S. Y. (2012). Treatment outcomes between concurrent chemoradiotherapy and combination of surgery, radiotherapy, and/or chemotherapy in stage III and IV maxillary sinus cancer: multi-institutional retrospective analysis. *Journal of Oral and Maxillofacial Surgery*, *70*(7), 1717-1723.
17. Katz, T. S., Mendenhall, W. M., Morris, C. G., Amdur, R. J., Hinerman, R. W., & Villaret, D. B. (2002). Malignant tumors of the nasal cavity and paranasal sinuses. *Head & Neck: Journal for the Sciences and Specialties of the Head and Neck*, *24*(9), 821-829.
18. Harbo, G., Grau, C., Bundgaard, T., Overgaard, M., Elbrønd, O., Søgaard, H., & Overgaard, J. (1997). Cancer of the nasal cavity and paranasal sinuses: a clinico-pathological study of 277 patients. *Acta Oncologica*, *36*(1), 45-50.
19. Nishimura, G., Tsukuda, M., Mikami, Y., Matsuda, H., Horiuchi, C., Satake, K., ... & Utsumi, A. (2009). The efficacy and safety of concurrent chemoradiotherapy for maxillary sinus squamous cell carcinoma patients. *Auris Nasus Larynx*, *36*(5), 547-554.
20. Claus, F., De Gersem, W., De Wagter, C., Van Severen, R., Vanhoutte, I., Duthoy, W., ... & De Neve, W. (2001). An implementation strategy for IMRT of ethmoid sinus cancer with bilateral sparing of the optic pathways. *International Journal of Radiation Oncology* Biology* Physics*, *51*(2), 318-331.
21. Wiegner, E. A., Daly, M. E., Murphy, J. D., Abelson, J., Chapman, C. H., Chung, M., ... & Chang, D. T. (2012). Intensity-modulated radiotherapy for tumors of the nasal cavity and paranasal sinuses: clinical outcomes and patterns of failure. *International Journal of Radiation Oncology* Biology* Physics*, *83*(1), 243-251.
22. Daly, M. E., Chen, A. M., Bucci, M. K., El-Sayed, I., Xia, P., Kaplan, M. J., & Eisele, D. W. (2007). Intensity-modulated radiation therapy for malignancies of the nasal cavity and paranasal sinuses. *International Journal of Radiation Oncology* Biology* Physics*, *67*(1), 151-157.
23. Dirix, P., Vanstraelen, B., Jorissen, M., Vander Poorten, V., & Nuyts, S. (2010). Intensity-modulated radiotherapy for sinonasal cancer: improved outcome compared to conventional radiotherapy. *International Journal of Radiation Oncology* Biology* Physics*, *78*(4), 998-1004.
24. Madani, I., Bonte, K., Vakaet, L., Boterberg, T., & De Neve, W. (2009). Intensity-modulated radiotherapy for sinonasal tumors: Ghent University Hospital update. *International Journal of Radiation Oncology* Biology* Physics*, *73*(2), 424-432.
25. Giri, S. P., Reddy, E. K., Getner, L. S., Krishnan, L., Smalley, S. R., & Evans, R. G. (1992). Management of advanced squamous cell carcinomas of the maxillary sinus. *Cancer*, *69*(3), 657-661.
26. Le, Q. T., Fu, K. K., Kaplan, M., Terris, D. J., Fee, W. E., & Goffinet, D. R. (1999). Treatment of maxillary sinus carcinoma: a comparison of the 1997 and 1977 American Joint Committee on cancer staging systems. *Cancer: Interdisciplinary International Journal of the American Cancer Society*, *86*(9), 1700-1711.