Abstract

Objectives: 1) Discuss findings of metastatic breast adenocarcinoma within the pituitary; and 2) Recognize the potential of surgical seeding following endonasal endoscopic approach of pituitary tumor.

Study Design: Case report and review of the literature.

Methods: Patient chart analysis and literature review.

Results: A 72 year old female with history of breast adenocarcinoma treated with radiation and hormone therapies presented in 2011 with MRI findings suspicious for a pituitary macroadenoma. Complete resection of the mass was performed via an endoscopic endonasal approach with final pathology revealing metastatic breast adenocarcinoma. The patient was treated with localized radiotherapy to the sellar and suprasellar regions. Surveillance MRI 3 years after cells resection showed a mass in the inferior aspect of the sphenoid sinus, posterior nasal septum, and anterior skull base along the previous surgical tract (Figure 1). Endoscopic endonasal resection of the mass was performed in November 2014 with pathology revealing adenocarcinoma (Figure 3). The patient underwent postoperative localized radiotherapy to the sellar and suprasellar regions. Three years later, routine imaging revealed a mass in the inferior aspect of the sphenoid sinus, posterior nasal septum, and anterior skull base along the previous surgical tract with no evidence of recurrence within the pituitary sella. Endoscopic endonasal resection of the mass was performed with pathology revealing adenocarcinoma.

Conclusion: There have been few reported cases of surgical seeding with non-endoscopic resection of tumors such as chordomas and craniopharyngioma; however, there are no cases of surgical seeding following tumor resection using an endoscopic endonasal approach. More specifically, there are no cases of seeding to the surgical tract following resection of already rare, metastatic breast adenocarcinoma within the pituitary.

The Case

A previously healthy 72-year-old female with a distant history of breast adenocarcinoma, previously treated with radiation and hormone therapies, presented to the emergency department in June 2011 with symptoms of lower extremity weakness, slurred speech, and vision changes. Magnetic resonance imaging (MRI) of the head was ordered for further workup revealing a sellar and suprasellar lesion concerning for pituitary macroadenoma (Figure 1). Complete resection of the mass was performed via endoscopic endonasal transphenoidal approach in September 2011. The surgical pathology report of the pituitary mass revealed metastatic breast adenocarcinoma (Figure 3). The patient underwent post-operative localized radiotherapy to the sellar and suprasellar regions. Three years later, routine imaging revealed a mass in the inferior aspect of the sphenoid sinus, posterior nasal septum, and anterior skull base along the previous surgical tract (Figure 2). Endoscopic endonasal resection of the mass was performed in November 2014 with pathology revealing adenocarcinoma (Figure 4). The patient recovered well from surgery, and was ultimately discharged. Unfortunately, the patient’s clinical status ultimately declined, and she passed away four years after initial diagnosis.

Discussion

Breast cancer is one of the most common cancers, with recurrence frequently within five years after diagnosis. The most common locations of breast metastases include bone, liver, and lung. Less than 1% of metastases are to the pituitary. The most common metastases to the pituitary are from primary breast or lung cancers. Hematogenous spread directly to the pituitary parenchyma or to the diaphragm sellae through the portal vessels are the most common mechanism. These tumors are only symptomatic in about 8% of cases with symptoms including headaches, visual deficits, and ophthalmoplegia, resembling pituitary macroadenoma. This resemblance can lead to a delay in diagnosis. Our patient presented with similar symptoms, and was treated using an endoscopic endonasal transphenoidal approach to resect the lesion, which ultimately led to the seeding of adenocarcinoma along the surgical tract. Seeding is thought to occur due to neoplastic cells contaminating the surgical field during the operation, and then implanting and growing along the surgical tract. Although this has not been reported in endoscopic endonasal surgeries, it has been seen in approximately twelve cases following trans-cranial approaches for resection of primary suprasellar tumors, most commonly craniopharyngiomas.

Prevention of seeding can be difficult; however, studies have shown that meticulous protection of the surgical field and careful handling of the tumor during the operation is required. Some suggest covering the entire operative field with cotton prior to tumor resection to prevent seeding into the operative tract. If the mass is cystic, aspirating the capsule to avoid tumor spillage into the operative field can be helpful. Rinsing of the operative field has also been seen to be beneficial in the prevention of tumor seeding.

Because our patient’s lesion was thought to be a benign pituitary macroadenoma, these measures. It is important to consider other differentials, especially in a patient with history of adenocarcinoma, although metastases is rare.

Conclusion

There have been few reported cases of surgical seeding with non-endoscopic resection of skull base tumors such as chordomas and craniopharyngioma. There are no reported cases of surgical seeding following tumor resection using an endoscopic endonasal approach. More specifically, there are no cases of seeding to the surgical tract following resection of an already rare, metastatic breast adenocarcinoma within the pituitary.

To our knowledge, this is the first reported case of breast cancer seeding to the surgical tract following endoscopic endonasal transphenoidal approach for resection of metastatic breast cancer to the pituitary gland.

References


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