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Transcatheter Arterial Embolization (TAE) for Zygoma Malignant Epithelial Tumor: A Case Report

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Abstract: Malignant epithelial tumors of the zygoma are rare and difficult to manage. Treatment options include surgery, radiotherapy, and chemotherapy. The primary indication for transarterial embolisation (TAE) involved the selective delivery of embolic agents via a catheter into the blood vessels supplying the tumor, leading to ischemia and subsequent tumor necrosis. This study aimed to evaluate the effectiveness and safety of TAE therapy in managing malignant epithelial tumors of the zygoma. We reported a 64-year-old female presented with an 8-month history of a progressively larger and ulcerated mass on the left zygoma, accompanied by pain. Previous FNAB examination in 2023 confirmed a malignant epithelial tumor. Physical examination revealed a fragile mass measuring 10x8 cm. The patient underwent TAE, resulting in significant tumor reduction. After TAE, the patient showed significant clinical improvement. Pain was reduced, and the tumor size was markedly reduced. Ulceration on the tumor surface also began to improve. A few days after TAE, the patient was discharged in stable condition. At the follow-up evaluation one month later, the tumor size continued to reduce, and there were no signs of recurrence. In conclusion, transcatheter arterial embolization is a promising therapeutic modality for managing malignant epithelial tumors in the cheek, especially in inoperable cases or as palliative therapy. This case report provides additional evidence regarding TAE's effectiveness and safety in managing malignant epithelial tumors. Further studies with a larger number of patients are needed to confirm these findings and determine TAE's role in the comprehensive management algorithm of malignant epithelial tumors.
Keywords: malignant epithelial tumor; transcatheter arterial embolization

INTRODUCTION

Malignant epithelial tumors of the zygoma are rare and difficult to manage. Treatment options include surgery, radiotherapy, and chemotherapy. The primary indications for transarterial embolisation (TAE) involved the selective delivery of embolic agents via a catheter into the blood vessels supplying the tumor, leading to ischemia and subsequent tumor necrosis.[1] Malignant epithelial tumors of the zygoma are exceedingly rare. Thus, epidemiological data and therapeutic guidelines remain limited. These tumors may present with local invasion, pain, and bleeding due to their proximity to critical vascular structures.[2] The majority of malignant tumors in the head and neck regio, including the zygoma, originate from local invasion or metastasis from tumors at other sites such as the paranasal sinuses, salivary glands, or skin. These tumors often exhibit aggressive characteristics with a tendency for local tissue infiltration and hematogenous or lymphatic metastasis, making their diagnosis and management a significant clinical challenge.[3]

Transarterial embolisation offers a minimally invasive option to manage these challenges. Although specific data on TAE for zygomatic epithelial tumors is scarce, studies on similar head and neck malignancies suggest its potential utility in reducing vascularity and improving surgical outcomes.[4] Management of malignant epithelial tumors depends on the tumor's location, stage, and histopathological characteristics, as well as the patient's general condition. Surgery, radiotherapy, and chemotherapy are the main therapeutic modalities often used. However, in cases where the tumor is large, ulcerated, or inoperable for various reasons, transcatheter arterial embolization (TAE) may be a promising treatment option. This TAE works by inhibiting the blood supply to the tumor, leading to necrosis and reduction in tumor size.[5]

In this case report, we describe the clinical course of a 64-year-old woman diagnosed with malignant epithelial tumor of the left zygoma. The patient presented with a rapidly growing mass on the mucosa of the left zygoma, and fine needle aspiration biopsy (FNAB) confirmed the diagnosis of malignant epithelial tumors. Given the patient's underlying comorbid conditions and the size of the tumor, TAE was chosen as the primary treatment modality. The procedure was carefully planned and executed, involving a PVA Embolization agent through a catheter directly into the arterial supply of the tumor.

CASE PRESENTATION

A 64-year-old woman presented with a chief complaint of a mass with an ulcer on her left cheek, which had progressively worsened over the past year. Initially, the mass was approximately the size of a pin but had grown significantly larger over time. The patient reported associated symptoms, including pain and easy bleeding from the site. Additional complaints included the presence of headaches. The patient's medical history revealed that she had previously undergone FNAB two months earlier. The tumor size had increased rapidly over the past month. The patient had also lost 3 kg of weight in the past two months. She denied any family history of similar conditions.

After referral to Prof. Dr. R. D. Kandou Hospital for further evaluation and management, a comprehensive physical examination was performed. The patient's vital signs were within normal limits, and her pain was assessed with Visual Analog Scale (VAS), which resulted in a score of 2. Her functional status was excellent, with a Karnofsky Performance Status score of 90%. Physical examination findings were generally unremarkable. Local examination of the left zygoma region revealed a 10x8 cm mass with well-defined borders. The mass appeared loose and showed signs of sloughing, with blood, without necrotic tissue. No significant lymphadenopathy was detected, and the FNAB examination revealed multiple epithelial cell tumors.

Taking into account the patient's age, comorbid conditions, and local tumor extent, the multidisciplinary team decided to proceed with TAE as the primary treatment modality. The first step was to puncture the left common femoral artery (CFA), inserted a 6fr sheath, and cannulated the left external carotid artery. This was followed by selective cannulation of the tumor's feeding arteries, and portal vein arterialization (PVA) was used to embolise the tumour feeding arteries.

Figure 1. Clinical view before TAE procedure




Figure 2. Clinical view post TAE procedure

Patients tolerate the procedure well, with minimal complications. After TAE, the patient showed significant clinical improvement. Pain was reduced, and the tumor size was markedly reduced (Figure 2). Ulceration on the tumor surface also began to improve. The patient was discharged in stable condition a few days after TAE. The patient returned for a follow-up at the hospital one month after the procedure, showing a reduced tumor size, no complaints of pain, no easy bleeding from the wound, and there were no signs of recurrence.

DISCUSSION

In this case, a 64-year-old female presented with a progressively enlarging ulcerated mass on her left cheek over the past year. Initially, the size of a pinhead, and then the lesion grew substantially, accompanied by pain, easy bleeding, headaches, and unintentional weight loss of 3 kg over two months. Physical examination revealed a 10 x 8 cm mass with well-defined borders and signs of sloughing without necrosis. No significant lymphadenopathy was noted. Fine needle aspiration biopsy indicated the presence of multiple epithelial tumor cells. Considering the patient's age, comorbidities, and the extent of the local tumor, a multidisciplinary team opted for TAE as the primary modality. This TAE involved the injection of embolic agents into the tumor's feeding arteries to restrict its blood supply, leading to tumor necrosis. This technique has been successfully employed in treating various malignancies, including hepatocellular carcinoma and liver metastases.[6]

The procedure entailed puncturing the left common femoral artery, inserting a 6 fr sheath, and cannulating the left external carotid artery. Selective cannulation of the tumor's feeding arteries was performed, followed by embolization using polyvinyl alcohol (PVA) particles. Post procedure, the patient tolerated TAE well with minimal complications. Significant clinical improvement was observed, including reduced pain and a marked decrease in tumor size. Ulceration on the tumor surface began to heal. The patient was discharged in stable condition, and at a one-month follow-up, continued to show tumor regression without sign of recurrence. This case report shows that TAE can effectively treat malignant epithelial tumors in the cheek, and can provide significant palliative benefits, such as tumor size reduction, pain reduction, and improvement in patients' quality of life.[7] In addition, TAE can also be used as a bridging therapy to allow surgery or radiotherapy after tumor size reduction. While TAE has great potential benefits, it is important to remember that the procedure also carries the risk of complications, such as infection, bleeding, and non-target embolization.[8]

Related to TAE benefit, another study showed that the hepatic cyst size was reduced after TAE procedure. In an aging society, the occurrence of hepatic cyst hemorrhage may become more frequent, necessitating a range of treatment options. Transarterial embolization could serve as a flexible and minimally invasive approach for managing hemorrhagic rupture of hepatic cysts. Ongoing evaluation of the appropriate use of the TAE for symptomatic simple hepatic cyst is essential, with consideration of cases involving polycystic liver disease (PCLD).[9]

The TAE is an effective and potentially life-saving treatment for managing tumor-related

hemorrhages, offering both safety and therapeutic benefits. When coils are used for embolization of bleeding tumors, there is a higher occurrence for non-selective proximal embolization, which may be associated with lower clinical success rates and an increased likelihood of rebleeding episodes.[8] Therefore, proper patient selection and careful action planning are essential to minimize the risk of complications and maximize the benefits of TAE. Moreover, the TAE procedures are a safe option with minimal procedural risk and low mortality rates. By applying standardized criteria, a moderate significant partial response to embolization led to a notable reduction in lesion size. This response remains consistent, regardless of the lesion's size of vascularity.[10]

CONCLUSION

Transcatheter arterial embolization (TAE) is a promising therapeutic modality for the management of malignant epithelial tumors in the cheek, especially in inoperable cases or as palliative therapy. This case report provides additional evidence regarding the effectiveness and safety of TAE in the management of malignant epithelial tumors. Further studies with a larger number of patients are needed to confirm these findings and to determine the role of TAE in the comprehensive management algorithm of malignant epithelial tumors.

Conflict of Interest

The authors affirm no conflict of interest in this study.

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