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*Case Report*

# Case Report: A Rare Case of an Atypical Lipomatous Tumor

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## A B S T R A C T

Liposarcomas are the most common histologic subtype of soft tissue sarcomas. The World Health Organization (WHO) recognizes five histological sub-types of liposarcoma: well-differentiated or atypical lipoma, undifferentiated, myxoid, round cells, and pleomorphic. This histological differentiation is important since it determines the prognosis and guides the treatment protocol. As well-differentiated liposarcomas of any type have no potential to metastasize unless they undergo dedifferentiation. Complete surgical removal of atypical lipomas is the treatment of choice. However, these tumors recur repeatedly, can dedifferentiate, and thus acquire metastatic potential. Radiotherapy may be needed if surgical margins are small or positive, then adjuvant or neoadjuvant. Here, we report a rare case of atypical lipoma in the left parotid region of a 57-year-old patient. The patient is HIV positive and had cervical cancer that was treated solely through hysterectomy but with no sign of progression. The patient could not be operated so radiotherapy alone was chosen as the sole treatment modality. The patient was prescribed 70 Gy in 2Gy daily fractions, but the patient stopped treatment at 40 Gy for many health problems not related to radiotherapy administration. Even with this dose, there was a significant response with about a 90% reduction in tumor volume and her pains were completely resolved.

**Keywords:** A typical pleomorphic lipomatous tumor; A typical spindle cell lipomatous tumor; Pleomorphic liposarcoma.

## Introduction

The treatment of choice for atypical lipomas is complete surgical removal. However, despite their benign nature, these neoplasms can dedifferentiate, acquiring the potential to metastasize. This underscores the importance of early and accurate diagnosis. In cases where surgical margins are small or positive, adjuvant or neoadjuvant, radiotherapy may be administered. The use of adjuvant/neoadjuvant chemotherapy on well-differentiated liposarcomas and undifferentiated liposarcomas remains a topic of debate. The classification of the previously unexplored group of atypical adipocytic neoplasms with spindle cell characteristics, now termed atypical lipomatous spindle cell tumor, presents a significant challenge. Recent research has identified atypical lipomatous spindle cell tumors as a distinct entities characterized by specific genetic abnormalities, mainly deletions/losses of 13q14, including RB1 and its adjacent genes, RCBTB2, DLEU1, and ITM2B. Similar genetic aberrations have been observed in pleomorphic liposarcomas[1,2,3]. The microscopic examination of these tumors

reveals a broad spectrum of histological features, each holding a key to understanding their nature. All cases consisted of slightly atypical spindle cells in a fibrous or myxoid stroma with a variable amount of adipocyte components showing variation in adipocyte size, scattered nuclear atypia, and frequent non- or multivacuolated lipoblasts[2,4]. The complete surgical removal of atypical lipomas is the treatment of choice, a decision backed by extensive research and clinical experience. However, these neoplasms recur repeatedly, can dedifferentiate, and thus acquire metastatic potential[5,6].

## The Case

The patient is a 57-year-old patient with a history of HIV infection and is under treatment. The patient previously had cervical cancer treated three years ago by total hysterectomy, but no chemotherapy or radiation therapy, and there is no sign of progression. She was admitted to the Cameroon Oncology Center with a painful left head mass located in the tempo parietal section of the brain. A biopsy of the mass carried out at another medical institution shows that it is an atypical lipomatous tumor. On physical examination, the patient has significant retro auricular swelling going upwards to the left temporal region and downwards to the mandible. The tumor was painful when touched. The cervical-facial CT contrast-enhanced scan highlighted mixed attenuation and bulging left retro-auricular soft tissue mass infiltrating the ipsilateral frontal, occipital, and parietal scalp. The mass extends into the cranium along the left temporal, frontal, and parietal lobes, where it remains extra-axial and epidural with marked contrast enhancement of the dura. The left temporal lobe has a mass effect with sulci and Sylvian fissure effacement and mild subfalcine midline shift. **(Figure 1)** shows a cross-sectional cut of the brain through the mass and a 3D rendering of the CT scan showing left sided mass.

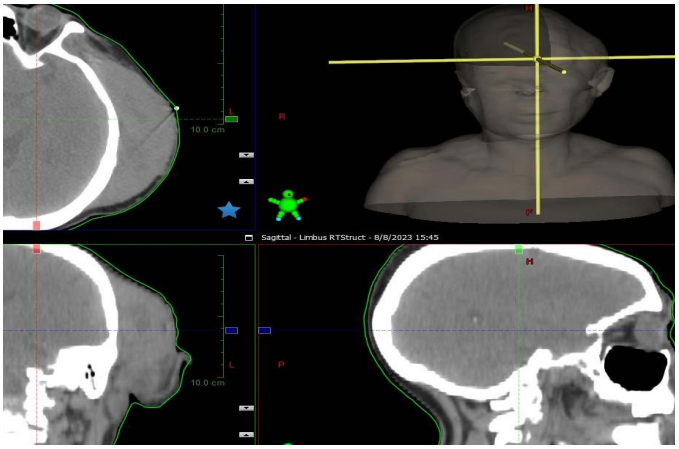


**Figure 1:** Cross-sectional cut the head showing the tumor and 3D reconstruction.

Given the patient's other health problems, including frequent infections and hospitalization, and the fact that the surgeons were not confident of total resection, radiotherapy was chosen as the monotherapy for this patient. For post-operative radiotherapy, the radiation prescription dose ranges from 50.4 Gy in 28 to 66 Gy in 33 fractions[7]. For radiotherapy alone, the prescription dose ranges from 60 Gy in 30 to 70 Gy in 35 fractions.

As the tumor was not resectable, after a multidisciplinary consultation meeting, it was decided to give radiotherapy at a dose of 70Gy in classic fractionation of 2Gy per session and five sessions per week. The Eclipse Treatment Planning System (version 15.6.8) was used in developing the plan. The plan was a five fields IMRT field technique. The reason for using IMRT was to limit risk organ doses in the brain and neck region. Except for the left parotid gland, which received the full prescription dose, most organs at risk received any dose close to the tolerance doses published by QUANTEC[8]. The left lens, about 1 cm from the PTV volume, only received 1.3 Gy **(see Figure 3)**. **( Figure 2)** shows the color-wash of the dose distribution in all three planes and the dose volume histogram. The doses shown in **(Figure 4)** range from 30Gy to 75Gy. D95=70Gy for the Planning Target Volume (PTV).

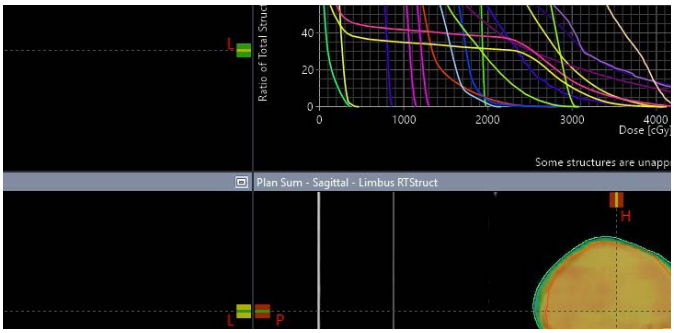


**Figure 2**: Isodose Distribution displayed as color-wash with a minimum dose of 30 Gy.

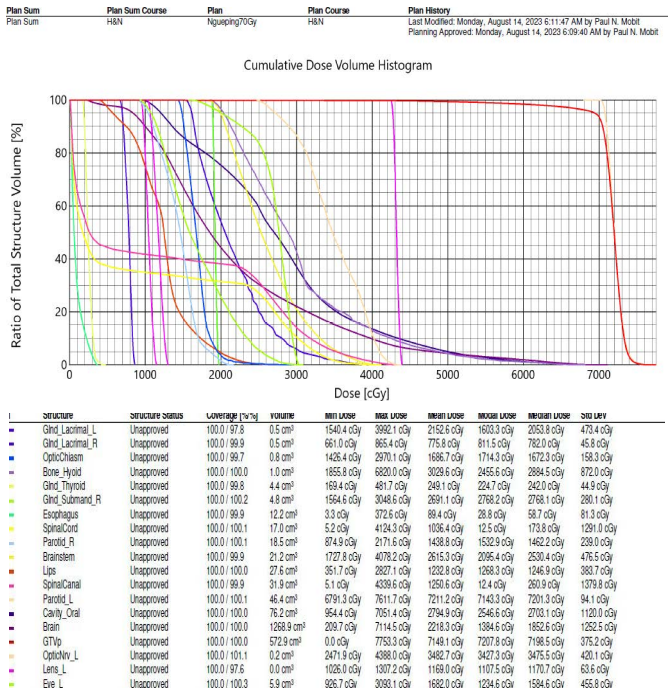


**Figure 3**: Dose Volume Histogram Analysis of the critical structures surrounding the tumor.

## Results & Discussions

The patient received 20 fractions of the 2 Gy per fraction for 40 Gy. The patient had many infections during the five weeks of treatment and was hospitalized throughout most her radiotherapy treatment. By the end of the 2nd week of treatment, the pain was much diminished. Still, given that the patient was not doing well health-wise, the radiation oncologist decided to discontinue her radiotherapy and considered the already administered radiotherapy as a good palliative dose. The patient was discharged from the hospital and returned home. Four months later, the patient returned for a post-radiotherapy follow-up, and it was a surprise to see that the tumor was more than 90% resolved. The patient's health condition has also improved remarkably during this period, and the pain

associated with the tumor is gone. Figure 4: the picture of the before the radiotherapy treatment and post-treatment.

**Figure 4**: Before the treatment and after the treatment picture.

## Conclusion

Liposarcoma is a rare malignant entity whose definitive diagnosis is anatomopathological. The histological differentiation is essential; it determines the prognosis and guides the treatment. Surgical resection as wide as possible constitutes the only therapeutic means. Radiotherapy is necessary when surgical limits are marginal. Despite the lower radiation therapy dose of 40 Gy administered to the patient rather than 70 Gy planned, there has been a remarkable reduction of at least 90% reduction in tumor volume. Given that we were significantly below the risk organ doses for the entire plan of 70 Gy, if the tumor recur then we can still replan to deliver a dose of 30-40 Gy efficiently without exceeding risk organ tolerances. So this case demonstrate the effective for radiotherapy even for lower administered dose of 40 Gy for liposarcoma.

**Conflicts of interest:** The authors declare no conflict of interest.

**Author contributions:** All authors read and approved the final version of the manuscript.

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