

# Bilateral facial cutaneous angiomyolipomas: First case in the literature and a possible correlation with human immunodeficiency virus

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## ABSTRACT

Angiomyolipomas (AMLs) are benign tumors consisting of smooth muscle-like cells, adipocyte-like cells, and epithelioid cells. They are usually renal in origin, and extrarenal AMLs are rare. Cutaneous AMLs are even more rare. We present a case of 65 year old female, with no underlying genetic condition, who developed bilateral facial cutaneous AMLs. To the best of our knowledge, this is the first case in the literature. In addition, we investigate and suggest a correlation between human immunodeficiency virus and AMLs.

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## Introduction

Angiomyolipomas (AMLs) are a subtype of tumor in a family of benign neoplasms that consist of smooth-muscle-like cells, adipocyte-like cells, and epithelioid cells [1]. Although they are typically renal in origin, extrarenal AMLs have rarely been reported, both sporadically and in association with rare genetic conditions [2,3]. The majority of reported extrarenal AMLs are hepatic and retroperitoneal, and cutaneous AMLs are even more uncommon [4,5]. We present a case of cutaneous AMLs manifesting as bilateral facial masses with no underlying genetic condition. To the best of our knowledge, this is the first case in the literature of its kind.

## Case report

A 65-year-old woman with a medical history significant for rheumatoid arthritis, temporomandibular joint dysfunction, human immunodeficiency virus (HIV) for 20 years, asthma, and atrial fibrillation, presented with painless bilateral masses that she was feeling over her temples when yawning of one-

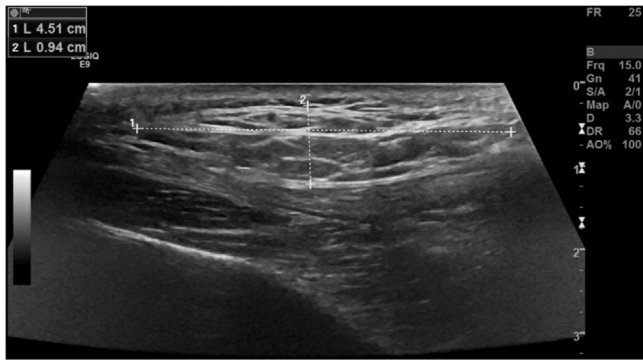
month duration. The patient's medications at the time were budesonide-formoterol fumarate 80–4.5 mcg 1 puff daily, hydroxychloroquine sulfate 200 mg BID, and prednisone 20 mg daily. For HIV, she was taking efavirenz-emtricitabine-tenofovir 600–200–300 mg daily for 6 years; however, she was switched to bicitgravir-emtricitabine-tenofovir 50–200–25 mg daily 18 months ago. Physical examination revealed bilateral prominences over the temporal areas that were felt just superior to the temporomandibular joint. There was no clicking or dislocation, and the masses were minimally tender. There was no gingival swelling or swelling over the parotid areas. Ultrasonography revealed symmetric and heterogeneous focal masses, measuring 4.2 × 3.7 cm (left) and 4.4 × 4.5 cm (right), not typical for lipomas (see Figs. 1 and 2). Computed tomography (CT) scan of the head showed increased opacity in the temporal regions consistent with angiomyolipoma's hypertrophy of fat with the greatest thickness of 18 mm measured on the left side (see Fig. 3). Due to the benign nature of the masses, no biopsy was obtained.

## Discussion

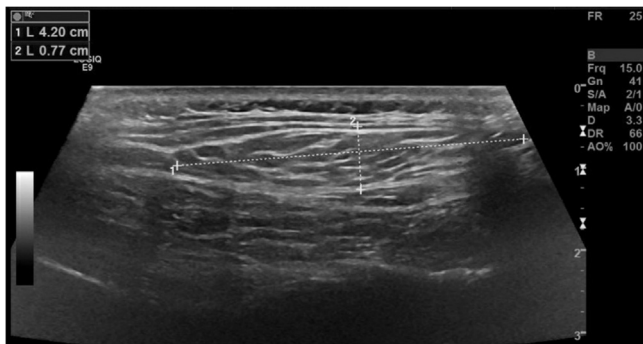
Imaging with CT scan is considered adequate to establish the diagnosis of AML [6,7]. The presence of regions of interest (ROI)-containing attenuations less than –10 HU can identify fat with high level of certainty [8]. Therefore, no biopsy was done in our patient, and the patient refused surgical removal for cosmetic reasons. Our extensive literature search identified no reported cases of bilateral facial cutaneous AMLs.

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**Fig. 1.** Ultrasound of the face showing a right-sided heterogeneous mass measuring 4.4 × 4.5 cm.



**Fig. 2.** Ultrasound of the face showing a left-sided heterogeneous mass measuring 4.2 × 3.7 cm.



**Fig. 3.** CT scan of the head showing opacities in the temporal regions consistent with angiomyolipomas.

The simultaneous appearance of symmetrical bilateral masses is likely secondary to an underlying systemic process, rather than a mere coincidence. One particular medical condition of interest in this patient is the HIV. Although HIV has not been identified as a cause of AMLs per se, angiomyolipomas (which is a benign tumor that consists of adipose and epithelioid cells, but no muscle cells as opposed to AMLs) have rarely been reported as a manifestation of human immunodeficiency virus (HIV) associated lipodystrophy [9,10]. Blanes et al. described a case series of 3

patients receiving highly active anti-retroviral therapy (HAART) that include protease inhibitors (PI) who later developed angiomyolipomas [10]. Lipodystrophy, in general, is a well-documented adverse effect in patients with HIV undergoing (HAART) with or without protease inhibitors (PI) [11,12]. Indeed, it has been reported in over 64 % of patients undergoing treatment with such therapy, but also was reported in HIV patients not yet on anti-retroviral treatment [13,14].

The pathogenesis of HIV-associated lipodystrophy is yet to be understood, but inhibition of mitochondrial enzymes, such as mitochondrial DNA polymerase-gamma enzyme, with resultant mitochondrial toxicity has been put forward as underlying mechanism, as biopsies from lipoatrophic tissues showed pronounced decrease in the number of mitochondria [15]. Other suggested mechanisms include disturbances in the function of the adipose tissue, elicited by alteration of the levels of adipocytokines (e.g. adiponectin) and pro inflammatory markers (e.g. tumor necrosis factor-alpha) secreted by adipocytes in HIV patient on NRTIs and PIs [16,17].

Simultaneously, benign tumors of smooth muscle cells have also been reported in patients with HIV. [18] Kanitakis et al. reported that 8.3 % of patients with cutaneous leiomyoma in their practice had HIV, which was more prevalent than HIV in their population [19]. Knowing that HIV can predispose to angiomyolipomas and leiomyoma, we raise a concern that HIV can potentially predispose to AMLs as well, especially, if we know that adipose and muscle cells proliferation in AMLs, not with underlying genetic conditions, can originate from independent clonal origins [20]. If that holds to be true, this predisposition of AMLs by HIV can explain the increasing prevalence of AMLs noticed over the past five decades [21]. We believe that larger studies to investigate this presumed correlation are warranted.

## Conclusion

Healthcare providers should be aware that angiomyolipomas (AMLs) are benign and can be diagnosed by imaging to avoid unnecessary invasive workup. There might be a correlation between human immunodeficiency virus and AMLs, and larger studies are warranted to investigate such correlation.

## Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request

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## CRediT authorship contribution statement

**Joshua Braganza:** Writing - original draft, Visualization. **Ahmed Aljwaid:** Writing - original draft. **Mohammed Alazzawi:** Writing - review & editing. **Abbas Alshami:** Conceptualization, Investigation, Writing - review & editing, Project administration. **Nitin S. Patel:** Writing - review & editing, Supervision.

## Declaration of Competing Interest

The authors declare no conflict of interest.

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