ALOPECIA AFTER SWITCH TO TENOFOVIR ALAFENAMIDE IN 5 AFRICAN AMERICAN WOMEN

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BACKGROUND

- HIV poses a major global health concern with an estimated 1.1 million individuals living with this infection in the United States alone[1]
- Adverse drug reactions have been reported with all antiretroviral drugs and are a major cause for non-compliance with antiretroviral therapy (ART)
- Alopecia is a reported side effect of some ARTs, however, no cases of tenofovir alafenamide (TAF)-induced alopecia have been reported in the literature

METHODS

- This is a case series reported from an academic outpatient HIV practice located in Detroit, Michigan
- Five patients were identified between June, 2017 and August, 2018 presenting for routine HIV medical care and complained of alopecia during routine review of systems.
- This project was approved by the Institutional Review Board at Wayne State University (IRB# 110318M1X)

RESULTS

- We report 5 cases of alopecia in HIV-infected African American (AA) Female patients that started after switching from tenofovir disoproxil fumarate (TDF) to TAF containing regimens (Table 1)
- Their age ranged between 40 and 49 years
- Hair loss was diffuse and involved the scalp in all patients (Figures 1A-C)
- One patient initially had diffuse hair loss that later became patchy involving the back of the head and forehead (Figure 1A)
- Time-to-onset of alopecia after switching to TAF ranged between 2 months and 1 year
- No pain, pruritus or tenderness were present and there was no evidence of scarring or inflammation on physical examination

DISCUSSION

- Alopecia is a rare but reported side effect of some protease inhibitors (PIs), non-nucleoside reverse transcriptase inhibitors and nucleos(t)ide reverse transcriptase inhibitors (NRTIs)[2]
- Indinavir, lopinavir/ritonavir and lamivudine are the most common ARTs reported to cause alopecia
- The mechanism of NRTI induced alopecia is not well described and is thought to be related to inhibition of the mitochondrial polymerase- γ
- Alopecia in HIV infected patients can be multifactorial and an extensive workup is often needed to establish the cause (Table 2)
- One patient had been performing tight hair braiding for many years (Figure 1C), however, only developed alopecia after switching to TAF
- No new medications other than TAF were introduced at the time of development of alopecia and all medication were already being chronically taken by patients
- One patient was on bupropion therapy (which is associated with cases of alopecia) that was discontinued 1 year prior to initiation of TAF

Table 1: Patient's characteristics

Patient	Age (years); Gender; Ethnicity	ARVs before onset of alopecia	ARVs at onset of alopecia	Other medications	Time to onset	Management
1	45; F; AA	FTC/ATV/RTV/ TDF	FTC/DTG/TAF	Cetirizine	7 months	Switched to ABC/DTG/3TC
2	44; F; AA	FTC/RPV/TDF	FTC/RPV/TAF	Lisinopril Hydrochlorothiazide Amlodipine	1 year	Switched to DTG/RPV
3	40; F; AA	FTC/RPV/TDF	FTC/RPV/TAF	Bupropion (discontinued 1 year before switching to TAF)	3 months	Observation
4	49; F; AA	FTC/RPV/TDF	FTC/RPV/TAF	Albuterol sulfate Fluticasone/ salmeterol Atorvastatin Acetaminophen Zyrtec	3 months	Switched to DTG/RPV
5	42; F; AA	FTC/RPV/TDF	FTC/RPV/TAF	Cholecalciferol Ergocalciferol	2 months	Switched to DTG/ RPV

Abbreviations: F: Female**; AA**: African American**; FTC**: Emtricitabine; **ATV**: Atazanavir; **RTV**: Ritonavir; **TDF:** Tenofovir disoproxil fumarate**; RPV**: Rilpivirine; **TAF**: Tenofovir alafenamide; **DTG**: Dolutegravir; **ABC:** Abacavir; **3TC**: Lamivudine

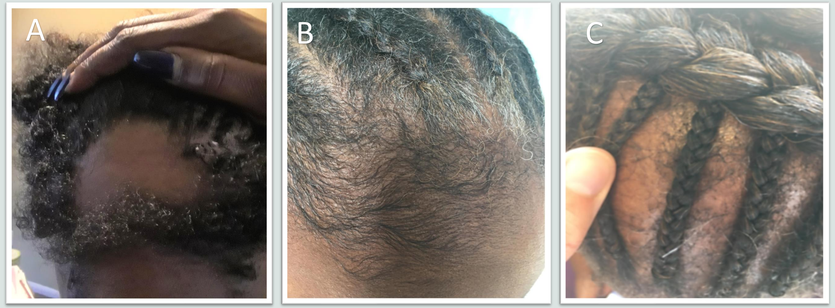

Figure 1: (A) Patchy alopecia involving the back of the head of a patient seven months after initiation of TAF, (B) Hair loss with no scaling or scarring involving the scalp, (C) Diffuse hair loss involving the scalp of a patient two months after initiation of TAF

DISCUSSION

Table 2: Potential causes of alopecia in HIV infected patients

Potential causes	Workup performed in our patients
Advanced AIDS	HIV viral load
Medication side effects	Detailed medication reconciliation and discontinuation of TAF when possible
Opportunistic infections	Detailed history and physical examination, CD4 T-lymphocytes count
Metabolic derangements	TSH level, 25-OH vitamin D level, basic metabolic panel, AST/ALT, ALKP
Sexually transmitted diseases	Chlamydia and gonorrhea DNA amplification, HBsAg, anti-Hepatitis C Abs, syphilis EIA,
Severe anemia	Complete blood count
Psychological distress	Detailed history
Calorie restriction	Detailed dietary history, physical examination, albumin level
Lifestyle changes or habits - Change in shampoos/ hair products - Damaging hair practices (braiding , straightening)	Detailed history and physical examination

- All workup for potential alternative causes of alopecia returned negative and no explanation for the alopecia could be identified other than initiation of TAF
- African Americans account for half of all HIV diagnoses in the United States while representing only 12% of the population [1]
- African American women account for 60% of HIV diagnoses among all women and despite being disproportionately affected, they are poorly represented in clinical trials [1]
- The percentage of African Americans recruited in TAF trials ranges between 11 % and 30% [3,4]
- The percentage of female patients in general ranges between 4% and 15% suggesting that the participation of African American females is low [3,4]

CONCLUSION

- Diversity of subjects in clinical trials is crucial to assess the safety and efficacy of new treatments across a broad population and to assure generalizability of findings
- Hair loss is likely to affect the quality of life and healthy social functioning of women as hair is often a social reflection of a women's femininity and attractiveness
- It is important that healthcare providers be aware of alopecia as a potential distressing side effect of TAF
- Further investigations are needed to determine causality

CONCLUSION

1. Centers for Disease Control and Prevention. HIV Surveillance Report. 2016
2. Woods EA et al. Ann Pharmacother. 2014;48:1187-93
3. Sax PE et al. Lancet. 2015;385:2606-15
4. Eron JJ et al. Aids. 2018;32:1431-42.