Disclosures. Cornelius J. Clancy, MD, Merck (Grant/Research Support) Minh-Hong Nguyen, MD, Merck (Grant/Research Support)

117. Trends in Four-class HIV Drug Resistance in Treatment-experienced Patients in the United States

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Session: O-24. New Developments in Infectious Diseases Diagnostics

Background. Despite the availability of potent antiretroviral therapy, only 56% of people living with HIV in the US were virally suppressed in 2018. Drug resistance can hinder suppression, especially among treatment-experienced patients, in whom the prevalence of 4-class drug resistance (4CR) is unknown.

Methods. Genotypic results of PhenoSense GT® Plus Integrate (Monogram Biosciences, South San Francisco, CA) obtained from Apr 2014 to Dec 2020 were used to assign susceptibility to nucleoside reverse transcriptase, non-nucleoside reverse transcriptase, integrase, and protease inhibitors (NRTIs, NNRTIs, INIs, and PIs). Data were analyzed using summary statistics, 2 proportion Z test, one-way ANOVA and Tukey-Kramer; p < 0.05 was significant.

Results. Among 13,651 patients with 15,372 tests, median age was 43 years; most had HIV-1 subtype B infection (95.09%), followed by AG (1.32%). Among 12,303 patients with only one test, 4CR prevalence was 1.55%. Among 1,348 patients with more than one test, 4CR was seen in 3.64% of patients, and in 4.60% if cumulative resistance reports were assembled for each patient. Patients with 4CR were significantly older than those with less resistance.

The incidence of 4CR fluctuated, with a decline from 2.61% of patients tested in 2014 to 1.38% in 2017, an increase to 2.56% in 2018, and a decline to 1.56% in 2020. Among patients with more than one test, 21.01% gained resistance to a drug in a new class over an average of 19.5 months.

Most new resistance each year was to NNRTIs, followed by NRTIs, INIs, and PIs. The incidence of PI resistance declined for PIs from 13.34% of patients tested in 2014 to 11.82% in 2020, but increased for INIs from 14.56% in 2014 to 16.49% in 2020. The regimen expected to be suppressive in the greatest proportion of patients was dolutegravir + raltegravir + cabotegravir/cobicistat (94.51%).

Conclusion. The prevalence of 4CR has declined over time, but remains clinically relevant, particularly in older patients who may struggle with adherence due to complex regimens, comorbidities and polypharmacy. New drug classes may benefit this group. The concurrent increase in INI and decline in PI resistance may reflect changes in prescribing practices. Drug resistance may be underestimated unless cumulative resistance is determined.

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with either R. delmar or M. coccidioides versus placebo mice (0% survival, P < 0.02). Importantly, VX01 acted synergistically in protecting mice when combined with liposomal amphotericin B or posaconazole in a severe model of mucormycosis with treatment starting 48 h post infection (~70% survival for combination vs. 0-20% survival for monotherapy and reduced lung fungal burden by 1.5 log, P < 0.001), GLP-tissue cross-reactivity studies of VX01 showed favorable safety profiles.

**Conclusion.** VX01 shows enhanced binding to ColeHI protein and maintained the protective features of C2 MAb against murine mucormycosis. Clinical testing of combination therapy of VX01 + antifungals is warranted. VX01 is currently in manufacturing.

**Disclosures.** Yiyou Gu, PhD, VitaeLux Biosciences (Shareholder) Ashraf S. Ibrahim, PhD, VitaeLux Biosciences (Shareholder)

120. An open-label comparative trial of SUBA-itraconazole (SUBA) versus conventional itraconazole (c-itra) for treatment of proven and probable endemic mycoses (MSG-15): a pharmacokinetic (PK) and adverse event (AE) analysis Peter G. Pappas, MD1; Andrej Spec, MD, MSC1; Maria Miceli, MD1; Gerald McGwin, M.S., Ph.D1; Rachel McMullen, MS1; George R. R. Thompson III, MD1; University of Alabama at Birmingham, Birmingham, Alabama; Division of Infectious Diseases Washington University in St. Louis, ST LOUIS, MO; University of Michigan, Ann Arbor, Michigan; UC-Davis, Sacramento, CA

**Session:** O-25. New Findings in Medical Mycology

**Background.** c-itra is the drug of choice for treatment of most non-CNS, non-life-threatening forms of endemic mycoses (EM), including histoplasmosis, blastomycosis, coccidioidomycosis, sporotrichosis and talaromycosis. SUBA represents a new formulation of itraconazole that utilizes nanotechnology to improve bioavailability when administered orally. SUBA is formulated as nanoparticles for absorption in the small bowel while not relying on gastric acidity for optimal absorption. MSG-15 is an open-label, comparative clinical trial comparing SUBA to c-itra for the treatment of EM. Herein we report the final PK and AE profiles of these two compounds.

**Methods.** Subjects with proven and probable EM were eligible for this open-label comparative study. The protocol allowed up to 14 d of prior therapy with any antifungal for this episode of EM. Subjects were randomized to receive either SUBA 130 mg po bid or c-itra 200 mg po bid for up to 6 months. Follow up occurred at days 7, 14, 28, 42, 84, and 180 d post enrollment. PK samples were obtained at days 7, 14, and 42. Clinical assessment, including symptom assessment, AEs and overall drug tolerance, and quality of life were assessed at each visit. We used descriptive statistics for this analysis.

**Results.** 89 subjects with EM entered the trial, including 43 on SUBA and 46 on c-itra. We measured PK serum levels of itra and hydroxyl-itra at days 7, 14, and 42 and these data are depicted in Figures 1-3. There were no significant differences in these levels, including combined itra/hydroxyl-itra levels, among the two study arms. AUC for itra and hydroxyl-itra were similar for both arms. AEs as assessed at each study evaluation were also quite similar among the two study arms. Overall, any AE occurred in 74% vs 85% of SUBA and c-itra recipients, respectively (NS). Drug-related AEs occurred in 35% vs 41% of SUBA and itra recipients, respectively (NS). Most common drug-related AEs included cardiovascular (edema and hypertension), nausea and loss of appetite.

**Conclusion.** Compared to c-itra, SUBA demonstrates almost identical serum levels despite being dosed at roughly 60% standard dosing for c-itra (130 mg po bid vs 200 mg po bid). SUBA is slightly better tolerated than c-itra, although the specific AEs are similar.

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121. Mucormycosis and COVID-19 in the United States: a Real-World Evidence Analysis of Risk Factors and Survival Among Patients with Mucormycosis, with and without COVID-19 Preceding the Infection Kaylen Brzozowski, MPH1; TriNetX, LLC, Cambridge, Massachusetts

**Session:** O-25. New Findings in Medical Mycology

**Background.** Mucormycosis has been associated with COVID-19 infections, notably in India, and known risk factors for mucormycosis such as diabetes mellitus have been studied in this context. This analysis aims to characterize patients in the US with mucormycosis, with and without COVID-19, by risk factor and mortality.

**Methods.** Data from the TriNetX Research Network representing over 66M de-identified patient-lives in the US was used to examine characteristics and outcomes among mucormycosis patients with and without preceding COVID-19 infection. Patients must have had a mucormycosis diagnosis recorded from 1/1/2020 to 6/8/2020. Patients were then identified as having either a COVID-19 diagnosis or positive SARS-CoV-2 RNA laboratory result (M+COV) or no COVID-19 diagnosis or positive RNA result (MnCOV) any time prior to or through one day after the mucormycosis diagnosis. These cohorts were evaluated across characteristics recorded in the EMR within 1 year prior to and including the date of mucormycosis record. Mortality was evaluated with Kaplan-Meier statistics as survival until recorded death on or after mucormycosis diagnosis.

**Results.** Of 302 patients with mucormycosis from 1/1/2020-6/8/2021, 30 patients (10%) had M+COV, and 272 (90%) had MnCOV. Among the M+COV cohort, 22 patients (73%) had mucormycosis recorded within 2 weeks of COVID-19 infection. The M+COV and MnCOV cohorts had majority male sex (60.59%; p=0.93) and a similar prevalence of transplant patients (40.28%; p=0.16), long-term drug therapy (60.54%; p=0.56), chronic kidney disease (43.31%; p=0.16), and glucocorticoid treatment (67.64%; p=0.76). The M+COV cohort had a greater prevalence of type II diabetes mellitus (67.5%; p<0.01), cardiomyopathy (53.22%; p<0.01), and posthemorrhagic anemia (43.14%; p<0.01) than the MnCOV cohort. MnCOV patients seem to progress to mortality more quickly than M+COV patients (p=0.01, see Figure 1).

Figure 1. Survival until all-cause mortality after mucormycosis diagnosis, 0-180 days, among patients with (M+COV) and without (MnCOV) COVID-19 preceding the infection.

**Conclusion.** This study found that patients in the US with mucormycosis and current or previous COVID-19 infection have a greater prevalence of underlying conditions, including diabetes, and more rapid progression to mortality than those...