Pulmonary aspergillosis complicating non-influenza respiratory viral infections (non-flu-RVI) among solid organ transplant (SOT) recipients

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BACKGROUND

- Invasive pulmonary aspergillosis (IPA) complicating influenza (flu) has been increasingly recognized
- Our group has shown that 22% of SOT patients developed IPA after flu infection
- Respiratory viral infections (flu and non-flu RVI) can cause direct damage to the respiratory epithelium and decreased ciliary clearance → development of secondary infections, including IPA
- The goal of this study was to evaluate the rate of IPA after RVI due to adenovirus (ADV), parainfluenza (PIV) or respiratory syncytial virus (RSV) among SOT recipients

METHODS

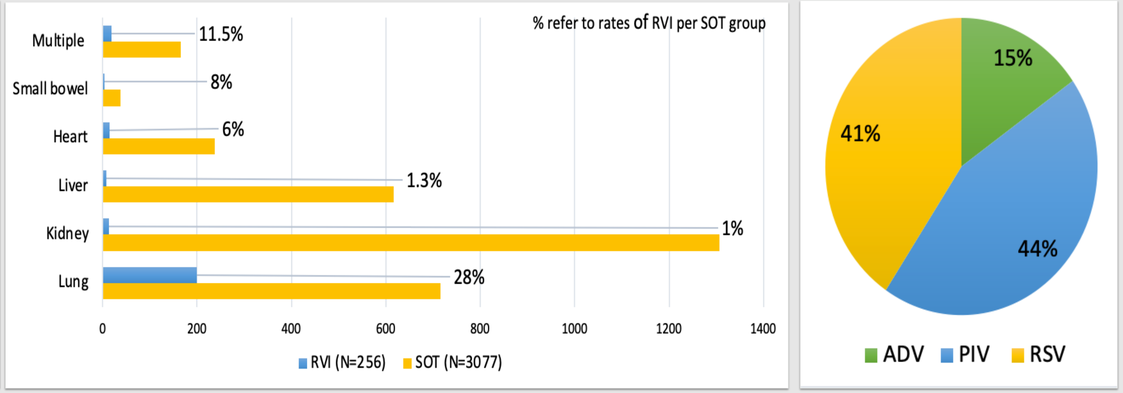
- Retrospective chart review of SOT performed from Jan 2010-Dec 2017
- IPA was defined according to revised EORTC/MSG criteria and had to occur within 100 days of non-flu-RVI
- Colonization (COL) was defined as recovery of mold from airways in absence of IPA
- Statistical analyses: Fisher's exact test (binary variables); Wilcoxon's (continuous variables)

RESULTS

A. Epidemiology of non-flu RVI (Fig. 1)

- 3,077 SOT were included. Incidence of non-flu RVI in SOT was 8.3% (256/3,077)
- Most prevalent was PIV (N=113, 44%), followed by RSV (N=104, 41%) and ADV (N=39, 15%)
- Median time from day of transplant to non-flu RVI = 18.1 months
- 59% of SOT pts with non-flu-RVI required admission, and 64% received augmented steroids. ADV was associated with longer hospital stay (median 14.5 days) than PIV (6.5 days) or RSV (6 days) (p=0.004).

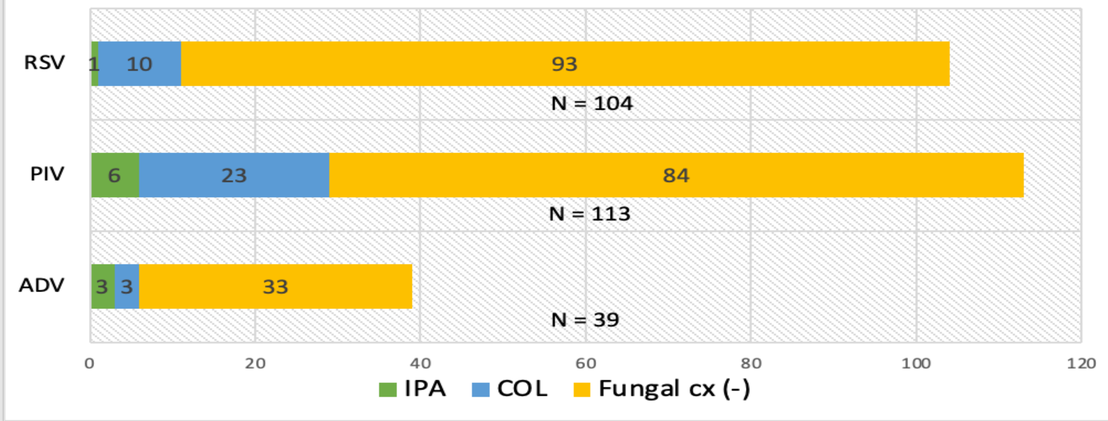
Fig. 1. Rates of non-flu RVI per types of transplanted organ and viruses



B. Epidemiology of IPA post-non-flu-RVI

- 17% (44/256) of SOT recipients had *Aspergillus* recovered from respiratory culture within 100 days of non-flu-RVI (Fig. 2)
  - IPA (N=10): 7 proven, 3 probable; 36 colonization (COL)
- Median time from non-flu-RVI to *Aspergillus* (+) culture = 29 days
- 36% of pts were treated with a mold-active azole after an *Aspergillus* (+) culture

Fig. 2. Recovery of *Aspergillus* post-RVI per virus

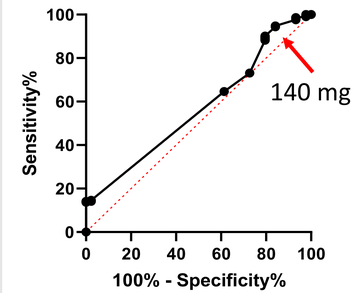


C. Risk Factors for RVI-associated IPA

	IPA (N=10)	No IPA (N=246)	p-value
Median cumulative steroid dose at 7 days after RVI (mg of prednisone-equivalent dose)	96	35	0.02
Receipt of total prednisone dose of ≥140 mg at 7 days after RVI	50% (5)	5.3% (13)	<0.0001 *

* Odds ratio= 17.9 (95% CI: 4.6-69.8)

Fig. 3. ROC curve for cut-off of cumulative prednisone-equivalent dose that discriminates IPA from non-IPA



CONCLUSIONS

- IPA and COL occurred in 4% and 13% of non-flu RVI in SOT patients, respectively.
  - Routine antifungal prophylaxis is not recommended in SOT with non-flu RVI
- Augmented steroids can likely increase incidence of IPA in SOT recipients.
  - The value of prophylaxis for SOT patient with recent steroid augmentation should be studied