

Local Antibiogram for *Mycobacterium abscessus* Shows Variability from Previously Published Susceptibility Data

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Background

- *Mycobacterium abscessus* complex (MabsC) is a rapidly growing mycobacteria with multiple drug resistances that causes a wide variety of diseases in humans.
- The empiric choice of therapy is based on previously published susceptibility data which suggests that amikacin (AMK), ceftazidime (FOX), clarithromycin (CLR), and imipenem (IPM) should be utilized.
- However, there is considerable variability reported in susceptibility pattern according to locale.

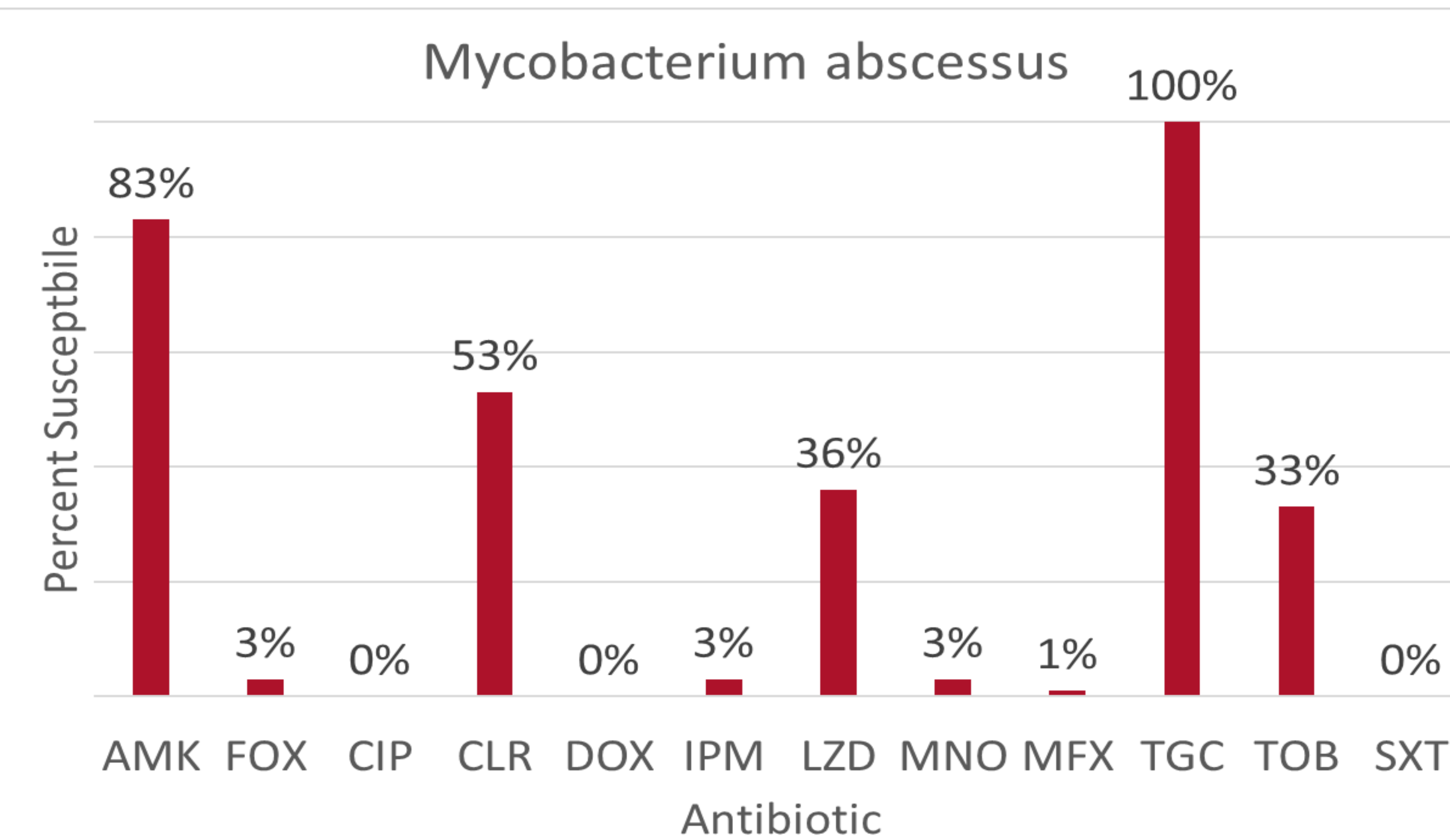
Purpose

- We sought to generate an antibiogram based on local isolates and then compare these to previously reported susceptibility data in order to understand any variation that may exist at the local level.

Methods

- Non-duplicate local isolates of MabsC from 2011-2021 for which *in vitro* susceptibility data based on broth microdilution per CLSI guidance was available were included in the generation of a local antibiogram.
 - This included standard 14-day incubation for inducible macrolide resistance.
- A review of the literature was undertaken to generate comparator susceptibility patterns. Search was generated with PubMed with search parameters of “abscessus” and “susceptibilities” which generated a preliminary list
- Abstracts were reviewed as well as references and a list of 21 publications were identified for inclusion
- Mean and median susceptibility rates were calculated for the four agents evaluated

Mycobacterium abscessus Susceptibility (N=61)

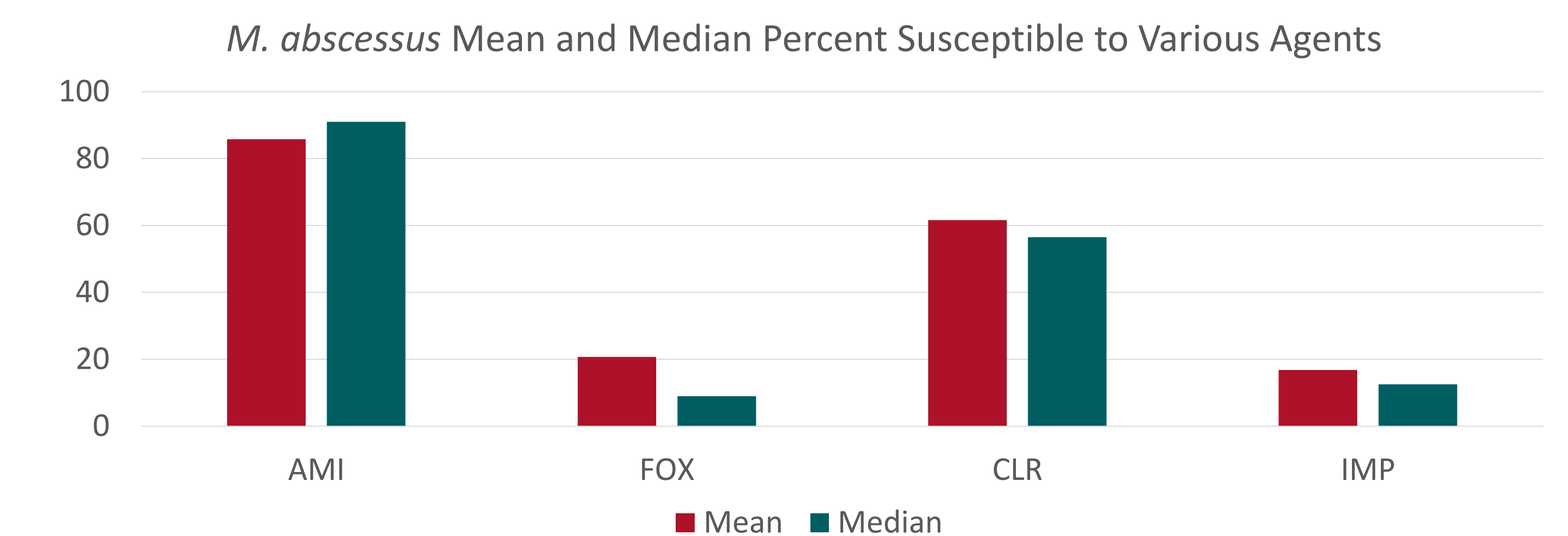


Location	Year	Number of isolates	AMK	FOX	CLR	IPM
Central USA	2022	61	84%	3%	53%	3%
Singapore	2021	214	94%	4%	72%	4%
Japan	2021	86	93%	N/A	45%	26%
China	2020	129	65%	7%	19%	14%
South Korea	2019	546	76%	24%	53%	21%
Thailand	2018	68	82%	0%	49%	0%
SE USA	2018	64	94%	34%	94%	34%
China	2018	20	45%	40%	65%	25%
Taiwan	2017	67	87%	3%	69%	4%
South Korea	2017	110	67%	18%	49%	11%
UK	2016	127	86%	4%	96%	N/A
China	2016	22	95%	14%	82%	14%
China	2016	53	98%	72%	32%	2%
Australia	2015	38	95%	0%	53%	3%
Singapore	2015	313	90%	4%	96%	2%
South Korea	2015	59	95%	46%	46%	N/A
China	2015	55	100%	69%	67%	N/A
China	2014	70	97%	39%	41%	71%
South Korea	2014	404	69%	N/A	53%	N/A
China	2013	70	90%	9%	60%	43%
Japan	2013	143	92%	N/A	83%	13%
Taiwan	2003	92	96%	3%	79%	12%

All but Cowman et al used broth microdilution technique, disc diffusion method used in that study

Results

- Twenty-two studies were reviewed with the majority from Asia (N=18), 2 from the US and one each from the UK, and Australia
- All studies were published within the last 20 years and median number of isolates evaluated was 70
- Susceptibility rates for the antibiotics analyzed varied greatly
 - AMK 45-100%, FOX 0-72%, CLR 19-96%, IPM 2-71%



Conclusion

- We noted lower rates of susceptibility to all agents compared to previous reports, but particularly to ceftazidime and imipenem
- The lack of consistently active agents beyond amikacin and tigecycline makes choosing empiric therapy for *M. abscessus* infection challenging
- Institutions should consider generating a local antibiogram for rapidly growing mycobacteria as this may lead to increased likelihood of initially active therapy
- We plan to explore if the presence of an antibiogram would have impacted empiric choices in past infections and improved time to active therapy
- In addition, the clinical value of susceptibility results is unknown – is there a discordance between *in vitro* and *in vivo* response and can the be meaningfully measured when multi-drug regimens are routinely used?

