P1613
Paper Poster Session
Update in fungal resistance and susceptibility

Disagreement between the ETest performed directly on blood culture bottles and the standard microdilution procedures to detect fluconazole resistance in C. albicans

Pilar Escribano Martos[1], Laura Judith Marcos-Zambrano[1], Carlos Sánchez-Carrillo[1], Emilio Bouza Santiago[2], Jesus Guinea*[1]

[1]*Hospital General Universitario Gregorio Marañón, Clinical Microbiology and Infectious Diseases, Madrid, Spain*

[2]*Hospital General Universitario Gregorio Marañón, Madrid, Spain*

Background: Fluconazole resistance is infrequent in *Candida albicans*, although it can complicate patient management. Microdilution is the gold standard for detecting fluconazole resistance; however, the Etest performed directly on blood cultures (ET_{DIR}) provides reliable results in 24 hours (Rapid Antifungal Susceptibility Determination for Yeast Isolates by Use of Etest Performed Directly on Blood Samples from Patients with Fungemia; J Clin Microbiol, 2010, p. 2205–2212). ET_{DIR} for detection of fluconazole resistance in *C. albicans* has been poorly assessed. We studied agreement between ET_{DIR} and standard microdilution methods for detection of fluconazole resistance in *C. albicans*.

Material/methods: From January 2007 to October 2015, we detected 28 fluconazole-resistant *Candida* spp isolates from patients with candidemia. The fluconazole-resistant *C. albicans* isolates (n=3; isolates G, H, and I) and control fluconazole-susceptible *C. albicans* isolates (n=6; isolates A-F) were tested following the CLSI M27-A3 and EUCAST EDef 7.2 microdilution procedures. The isolates were also assessed using the Etest according to the manufacturer's instructions (ET_{STD}) and as the ET_{DIR}. In the non-albicans isolates (n=25), fluconazole resistance was assessed using the CLSI M27-A3 and EUCAST EDef 7.2 microdilution procedures and the ET_{DIR}. The amino acid composition of *ERG11* and *ERG3* was studied in the 9 fluconazole-resistant (MIC >4 µg/ml) and fluconazole-susceptible *C. albicans* isolates.

Results: Agreement between ET_{DIR} and microdilution was good for detection of fluconazole resistance in all of the non-albicans isolates. However, ET_{DIR} and microdilution were in agreement only for isolate H of the 3 *C. albicans* fluconazole-resistant isolates. ET_{STD} confirmed the results obtained by ET_{DIR}. *ERG* sequencing revealed amino-acid substitutions associated with resistance at positions A114S and G464S of *ERG11* in isolate H. The substitutions found in the remaining 2 fluconazole-resistant *C. albicans* isolates (isolates G and I) were not associated with resistance. Agreement between ET_{DIR} and microdilution procedures was good for the fluconazole-susceptible *C. albicans* isolates (isolates A-F).

Conclusions: Our study shows that ET_{DIR} and microdilution were discordant in 66% of the fluconazole-resistant *C. albicans* isolates tested. Although microdilution is the gold standard for analysis of fluconazole resistance, the mutations found in *ERG11* were consistent with the results obtained by ET_{DIR}.

Table:

Isolate	CLSI M27-A3	EUCAST Edef 7.2	ET_{SD}	ET_{DIR}	*ERG 11*	
A	0.062	0.125	0.25	0.38	D116E; V437I	
B	0.25	0.25	0.38	0.5	D116E; V437I	
C	0.062	0.25	0.38	0.5	D153E	
D	0.062	0.25	0.75	0.75	-	
E	0.062	0.125	0.25	0.25	D116E; V488I; E266D	
F	0.062	0.125	0.25	1	D116E; K128T	
G	>256/R	>128/R	0.094/S	0.125/S	D116E; V481I	H2
H	**16/R**	**8/R**	**32/R**	**32/R**	**A114S; G464S**	
I	>256/R	>128/R	0.38/S	0.75/S	-	