

**Pre-hospital risk factors for invasive fungal disease in patients with acute myeloid leukaemia at diagnosis: preliminary results from the SEIFEM 2010 Study**

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**Objectives:** To investigate the potential relationship between pre-hospital exposures to fungal sources and the development of invasive fungal diseases (IFDs) in adult acute myeloid leukemia patients (AMLs). **Methods:** From January 2010 to March 2011, in 31 Italian participating centers, all consecutive patients (pts) with newly diagnosed AMLs were registered. Information about personal habits and possible environmental exposures were investigated. In particular we collected data about: comorbidities, job, hygienic habits, work and living environment, voluptuary habits (i.e. smoking, alcohol, illicit substances abuse), hobbies, pets. We also included data on other well-known risk factors, such as age, neutropenia, mucosal damages, etc. In order to make our study population very homogeneous, we focuses on pts treated with conventional chemotherapy only. All cases of proven/probable IFDs occurred until the 30th day from the end of first induction were recorded. **Results:** 593 pts were enrolled in the study; of them, 447 were included in the present analysis and 43 developed a proven/probable IFDs (30 molds and 13 yeasts) (incidence 9.6%). Median age was 61 (range 18-81). Main variables included in the risk analysis have been reported in the table. In particular, at preliminary analysis a significant association with IFDs development was found for performance status ( $p < 0.001$ ), chronic obstructive pulmonary diseases ( $p 0.04$ ), urinary catheter ( $p < 0.001$ ), neutropenia ( $< 500$  neutrophils/ $\mu\text{l}$ ,  $> 7$  days) ( $p 0.03$ ). A not significant trend was noted for incidence by gender (males 12% vs females 7%), for diabetes (yes 18%, no 9%), construction sites in the last 3 months to less than 500 meters from home (yes 12%, no 8%), home restructuring in the last 6 months (yes 14%, no 9%). We did not find any association for weight, occupational exposure, geographical origin. For mold infections only, those patients living in a flat resulted to be at higher risk when compared to those living in house with garden ( $p 0.03$ ). Other variables showing a correlation with the onset of invasive yeast diseases were chronic kidney failure ( $p 0.006$ ) and liver diseases ( $p < 0.001$ ). **Conclusions:** Several hospital-independent fungal sources emerged at univariate analysis to potentially influence IFDs onset. Investigation of these factors at time of admission may be helpful in defining patients' risk category and in better targeting prophylactic strategies.

**Table:** univariate analysis of main risk factors for IFD.

VARIABLES	IT* pts	IT* cases	p-value
Gender			
- male	232	35 (12%)	0.04
- female	215	15 (7%)	
Performance status			
- 0-1	342	22 (4%)	<0.001
- 2-3	97	18 (19%)	
- 4	8	3 (38%)	
Diabetes			
- No	409	34 (9%)	0.054
- Yes	38	7 (18%)	
Chronic kidney failure			
- No	434	40 (9%)	0.09
- Yes	13	3 (23%)	
COPD			
- No	424	38 (9%)	0.04
- Yes	23	5 (21%)	
Liver disease			
- No	428	39 (9%)	0.08
- Yes	19	4 (21%)	
Cigarette smoking			
- No	327	31 (9%)	0.8
- Yes	120	12 (10%)	
Mucosal damage*			
- 0	207	17 (8%)	0.34
- >0	240	24 (11%)	
CVC			
- No	112	9 (8%)	0.5
- Yes	335	34 (10%)	
Urinary catheter			
- No	349	24 (7%)	<0.001
- Yes	78	19 (24%)	
Neutropenia <sup>†</sup>			
- No	37	0	0.03
- Yes	410	43	
Type of house			
- flat	248	18 (7%)	0.018
- house with garden	199	25 (13%)	
Home restructuring			
- No	388	34 (9%)	0.24
- Yes	49	7 (14%)	
Construction sites near home			
- No	310	24 (8%)	0.18
- Yes	157	17 (11%)	

**Legend:**

CVC: central venous catheter; COPD: chronic obstructive pulmonary disease

\*: it comprehend oral mucositis, esophagitis, vomiting, diarrhea. Zero means none of them.

†: Neutrophils <500/ $\mu$ l, duration > 7 days.

‡: In the last 6 months.

§: in the last 3 months, within 500 meters.