PROGRAM - ABSTRACT BOOK

2nd Italian Young Investigator Meeting in Cystic Fibrosis

Rome, April 15th-16th 2016

Welcome Piram Hotel
Via Giovanni Amendola, 7 – 00185 Roma

SIFC

Second Italian Young Investigator Meeting

Rome April 15th-16th 2016

Organizing Committee:
Italian Society of Cystic Fibrosis
(Committee for Basic Research)

Chairpersons

Cirilli Natalia

Esposito Speranza

Maiuri Luigi

Tosco Antonella

Vilella Valeria

April 15

1:00 pm – 2:00 pm Light Lunch

2:00 pm - 2:30 pm: Welcome / Introductory Comments

2:30 pm - 4:00 pm: Oral presentations 1-4 (15 min + 5 discussion each)

1. Development of inhalable hyaluronal/mannitol composite dry powders to reposition flucytosine for antivirulence therapy of lung infections. (Costabile G.)
2. Cysteamine and epigallocatechin gallate improve deficient expression of the CFTR in mice. (Saluzzo F.)
3. The Activation of Calpain and Protein Kinase C is Involved in the Abnormal Release of Matrix Metalloproteinases 9 from Cystic Fibrosis Peripheral Blood Mononuclear Cells". (Bavestrello M.)
4. Restoration of CFTR function in cystic fibrosis patients by combined treatment with cysteamine and epigallocatechin gallate. (Casale A.)

4:00 pm - 4:30 pm: Coffee Break

4:30 pm - 5:30 pm: Oral presentations 5-7 (15 min + 5 discussion each)

5. Novel aminoarylthiazole derivatives as correctors of the chloride transport defect in cystic fibrosis computer assisted drug design synthesis and biological evaluation. (Liessi N.)
6. Clinical implication of cellular senescence on CFTR expression. (Comegna M.)
7. Olfactory performance in Cystic Fibrosis patients. (Di Lullo A.M.)

5:30 pm - 6:00 pm: Talk: Sweat test: is it a reliable "surrogate" marker of CFTR function? PROS and CONS

6:00 pm - 6:30 pm: Round Tables: Methodological Approach to Research.

April 16

9:00 am - 11:00 am: Oral presentation 8-13 (15 min + 5 discussion each)

8. Development of a CFTR functional test suitable for human primary leukocytes. (Vercellone S.)

9. Relationship between *Pseudomonas aeruginosa* and defective autophagy in Cystic Fibrosis bone marrow derived murine macrophages. (Ferrari E.)

10. The distribution pattern of metabolic modules and antibiotic resistance genes reveals differences in the airway microbiome of cystic fibrosis patients. (Bacci G.)

11. Evidence of *Bdellovibrio bacteriovorus* predation against Cystic fibrosis bacterial isolates. (Iebba V.)

12. Genetic background of Methicillin-Resistant *Staphylococcus aureus* (MRSA) isolates from persistently infected Cystic Fibrosis patients. (Dolce D.)

13. Individuation and evaluation of new bacteriophages for the treatment of cystic fibrosis lung infection caused by *Pseudomonas aeruginosa.* (Rossitto M.)

11:00 am - 11:30 am: Coffee Break

11:30 am - 12:30 am: Talk: Highlights from the European CF Basic Research Conference

12:30 pm- 1:00 pm: Conclusions

OLFACTORY PERFORMANCE IN CYSTIC FIBROSIS PATIENTS.

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Background: Cystic Fibrosis (CF) is characterized by multiorgan manifestations which include chronic rhinosinusitis (CRS) and nasal polyposis. CRS is one of the most common causes of sinonasal–related olfactory dysfunction. The principal symptoms of rhinosinusitis are chronic nasal congestion, rhinorrea, mouth breathing, anosmia/hyposmia, and facial pain.

Aims: Olfactory performances in CF patients have not been studied. Because of a large percentage of CF patients present CRS we evaluated the olfactory performance in: i) CF patients with CRS without polyps; ii) age-matched healthy controls.

Methods:
We enrolled:

- group I: 20 CF patients with CRS without polyps with different mutations (mean age: 31.5±9.4 years);
- group II: 20 age-matched healthy volunteers (mean age: 29.6±6.9 years);

There were not statistical differences between the two groups with respect to age, sex, and the distribution of age groups. All cases were not smokers. Subjects should not assume food or beverages other than water within 6 hours of the test. Subjects with acute nasal infection and/or nasal polyps were excluded.

All subjects underwent the Sniffin'Sticks (Burghart Medical Technology) (SS) olfactory test to assess the olfactory performance. SS is a test of nasal chemosensory performance based on pen-like odor-dispensing devices. The SS test includes three olfactory evaluations:

- odor threshold (T)
- odor discrimination (D)
- odor identification (I)

The result of the three evaluations is the TDI score. Based on the TDI score:

- anosmia was defined by a TDI<16
- hyposmia was defined by 16≤TDI <25 for subjects younger than 16, by 16≤TDI <29 for those aged between 16 and 35, and by 16≤TDI <28 for those older than 53.

Results:

	Group I	Group II
Normosmic	10%	70%
Hyposmic	60%	15%
Anosmic	15%	0%
Borderline (hypo-normosmic)	15%	15%

Only 5 of our CF patients complained olfactory impairment.

CF patients (Group I) presented mean odor identification of 10.6±3.36, mean odor discrimination of 10.1±2.86, mean odor threshold of 2.34±2.86, mean TDI score of 23.35±7.04.
Healthy controls (Group II) presented mean odor identification of 13.30±1.17, mean odor discrimination of 12.50±1.82, mean odor threshold of 7.28±2.17, mean TDI score of 25.8±2.02.

Results of single odor identification, discrimination and threshold SS differed with statistical significance between the CF patients (Group I) and healthy controls (Group II) ($p<0.001$).

Conclusions:
The assessment of olfactory performance in CF patients is of utmost interest, because olfactory deficiency impairs the overall course of this life threatening disease, decreasing appetite and aggravating nutritional problems. In this study, we found a significant frequency of smelling disorders in CF patients and in particular a major impairment of odor threshold than of odor identification and discrimination. In conclusion, our data suggest that the olfactory deficiency in CF patients can result from dysfunction at the level of the olfactory periphery due to either problems in conduction and/or a functional lesion due to the inflammatory process. Indeed in CF patients the olfactory periphery is characterized by impaired mucociliary clearance, caused by a defective ion channel function of sino-nasal mucosa and mucosal inflammation with thickened mucus. From a perspective point of view, it seems that therapies improving the mucociliary clearance might recover olfactory performance in CF patients with CRS. Moreover this olfactory test could represent a new tool to help clinicians in the follow-up of treated patients.