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### Biofilm-forming Capacity of *Candida* Bloodstream Isolates from Neonatal Intensive Care Units Neonates

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**Background:** The incidence of candidaemia is steadily increasing in n is considered a virulence factor responsible for catheter-related candidaemia.
**Objective:** To investigate the capacity of bloodstream *Candida* isolates from NICU neonates to form BF and the degree of BF production.
**Methods:** 5x10 5 planktonic (PL) cells/mL were grown in YNB medium with 2% glucose at 37°C for 24h. For BF formation, 10 6 cells/mL were grown on silicone disks placed at the bottom of 96-well plates in RPMI-1640 under constant shaking at 37°C for 48-72 h. BF production was then evaluated by XTT metabolic assay, safranin staining and light microscopy (LM). Documented BF producers (CA-M61 and CP/PA71) were used as positive controls (metabolic activity by XTT assay: 100%). Isolates that a) showed XTT conversion $\geq$80% of positive controls, b) stained with safranin and c) produced a microscopically visible dense fungal network were considered high BF producers. XTT conversion of $<$80% defined non-BF producers, while conversion $\geq$80% with inconsistent safranin and LM findings defined low BF producers. All isolates were tested in triplicate at 3 different experiments.
**Results:** A total of 31 isolates coming from equal in number NICU neonates (12 male-19 female) with *Candida* bloodstream infections were examined. Among these isolates, 58% were *Candida albicans* (CA), 19% were *Candida parapsilosis* (CP), 7% were *Candida lusitaniae* (CL) and *Candida guilliermondii* (CG), respectively, 3% were *Candida glabrata* (CGl), *Candida tropicalis* (CT) and other *Candida spp*. (Cs), respectively. BF production was detected in all CG and CT isolates, in 88% of CA, in 50% of CL and in 17% of CP. CGl and Cs isolates did not produce BF. Among CG and CT isolates, all were high BF producers, 56% and 28% CA isolates were high and low BF producers, respectively.
**Conclusions:** BF-forming capacity is a frequent characteristic among *Candida* clinical isolates, especially for CG, CT, CA but not for CGl. These results may provide the means to design novel therapies for BF-related infections.

## Infections in Patients with Solid Organ Transplantation

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### Infection Complications of Immunosuppression in Liver Transplant Patients: A Microbiological Study

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**Background:** The consequences of immunosuppression post liver transplantation are, first, organ rejection, followed by bacterial and fungal infections. Increasing or decreasing the serum level beyond the advised doses of immunosuppresor has major impact on infections. Pre-transplant health status, the complexity of the surgery, post-transplant immunosuppression therapy, and possible rejection are factors that affect the potential for bacterial and fungal infections as determined in the laboratory.
**Materials and methods:** This study was a collaboration of the Center of General Surgery, Liver Transplantation, Microbiology Department and other departments of the Fundeni Clinical Institute. The study comprised 126 liver transplant patients, of whom 61 had fungal infections with *Candida albicans*/non-albicans and 89 had bacterial infections including Methicillin Resistant *Staphylococcus aureus* (MRSA), *Entorococcus spp.*, *Escherichia coli*, *Klebsiella spp.*, *Pseudomonas aeruginosa*, *Stenotrophomonas maltophilia*, *Acinetobacter baumanii* calcoaceticus complex, and others. Bacteria and fungi were isolated from typical biological products cultivated on usual and special media after fixing the direct smear from a fresh or colorized specimen (Gram, Fast Quick Giemsa, Methylene blue, etc).
**Results:** Colonizers, bacterial episodes, and multi-bacterial sepsis were detected.Microorganisms detected in various pathologic products from 126 liver transplant patients were: *Staphylococcus spp* (40-43%), *Enterococcus spp.* (7-10%), *Acinetobacter spp.* (21-25%), *Pseudomonas aeruginosa* (9-16%), Stenotrophomonas maltophilia (2-5%), Escherichia coli (57-60%), *Klebsiella spp.* (3-7%), *Enterobacter spp.* (3-5%), other bacteria (1-2%), *Candida albicans* (32-35%), *Candida glabrata* (5-7%), *Candida famata* (7-8%), and other non-albicans (2-3%).
**Conclusion:** More than 2/3 of liver transplant recipients experience infections, which are the primary cause of organ rejection. They occur after surgical re-intervention and high-dose immunosuppression. More than 60% of the infections were bacterial; and 8-9% fungal.

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### Respiratory Virus Infections in Lung Transplant Recipients: a Brazilian Study

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**Background:** Respiratory virus infections (RV) infections are increasingly recognized as a significant threat to immunocompromised hosts. Higher rates of progression to pneumonia and major impact on bronchiolitis obliterans are observed after lung transplantation (LT).
**Objectives:** Describe the epidemiology of RV infections in LT recipients.
**Methods:** Prospective cohort study of 45 LT recipients. All patients received the same triple immunosuppressive therapy. Nasopharyngeal wash (NW) and bronchoalveolar lavage (BAL) were obtained from Feb/07-Jan/08 whenever symptoms or image findings were present. DFA and PCR were used to detect influenza A and B virus (IFV), parainfluenza virus (PIV), metapneumovirus (hMPV), coronavirus, respiratory syncitial virus (RSV) and adenovirus (ADV).
**Results:** Twenty-six of the 45 alive patients (57.7%) followed-up at the InCor-LT program experienced 40 respiratory events (1.53 event/patient). Respiratory symptoms were mostly observed during fall and winter, with 86% of the events occurring between fall and spring (median time of 425 days after LT; range 19–1487). Patients' median age was 37 years old (18 to 67), 18 were male and 18 had bilateral LT. RV were detected in 16 of the 40 episodes (40%). Only 37% of the positive samples were obtained during winter. Three patients had RV co-infection and three had two episodes

Abstract 18 – Table 1. Characteristics of the 13 patients with positive samples for respiratory virus

| Patient | Sample | Virus | Symptom/Image | Treatment |
|---|---|---|---|---|
| 1 | NW | IFV A+RSV | Coryza, wheezing and dyspnea | Oseltamivir |
| 2 | BAL | hMPV | Coryza and sore throat | Aciclovir for oral herpes |
| 3 | BAL | ADV+hMPV | Respiratory failure | Prophylatic Ganciclovir |
| 4 | BAL | IFV A | Coryza | Oseltamivir |
| 5 | NW | hMPV | Coryza and cough | None |
| | BAL | hMPV | Pulmonary nodule | None |
| 6 | NW | IFV A | Coryza, cough and fever | Oseltamivir |
| 7 | NW | PIV | Intense cough | None |
| 8 | BAL | hMPV | Thickened airway at chest CT | None |
| | NW | PIV | Coryza and cough | Prophylactic oselltamivir |
| 9 | NW | IFV A | Respiratory failure | Oseltamivir |
| | NW | hMPV | Coryza and cough | None |
| 10 | NW | RSV+hMPV | Coryza and cough | None |
| 11 | BAL | hMPV | Dyspnea | Aciclovir for oral herpes |
| 12 | BAL | hMPV | Bronchi hyperemia | Ganciclovir for CMV colitis |
| 13 | NW | hMPV | Coryza and headache | None |

of RV infection. Other RV identified are shown in table 1. One patient died because of ADV infection.
**Conclusions:** Respiratory events are common after LT and may cause significant morbidity. Rapid diagnosis of RV infections favors early treatment and may help to differentiate from other conditions. In our country, RV circulate year round, though more frequently during winter months.

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## Etiological Agents of Bacterial Infections in the Early Posttransplant Period after Liver Transplantation: Bacteria and their Susceptibility

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**Introduction:** An analysis of bacterial infections in the early posttransplant period after liver transplantation in adults.
**Material and Methods:** The study covered 83 adult patients undergoing liver transplantation from 2001 to the end of 2004. All the patients were followed prospectively for infections from the LT date and during the first four weeks after surgery. Basic immunosuppression consisted of steroids and tacrolimus. Antimicrobial prophylaxis was administered intravenously from the day of transplantation: piperacillin/tazobactam, fluconazole and selective bowel decontamination (orally a liquid suspension of amikacin and nystatin) was carried out. Samples of clinical materials (blood, urine, wound swabs, stool and other) were investigated. The microorganisms were cultured and identified in accordance with standard bacteriological procedures. Susceptibility testing was carried out using (NCCLS) procedures. The statistical analysis was made by chi-square test.
**Results:** 913 clinical samples taken from liver recipients were investigated in microbiological laboratory. In total 469 strains were cultured. Among the bacterial strains, the most common were Gram-positive bacteria n=331 strains (70.6%), Gram-negative bacteria n=133 strains (28.4%) and yeast like fungi n=5 strains (1%). In the early posttransplant period the common isolates were taken from Surgical Site Area n=284 (60%) with predomination of Gram-positive strains n=222 (78%), Gram-negative strains n=61 (21.5%). From blood n=99 strains (21.1%) were cultured: Gram-positive n=75 (75.8%) and Gram-negative n=22 (22.2%). Urine samples n=73 (15.6%): among them Gram-negative n=46 (63%), Gram-positive n=25 (34%), fungi n=2 (3%). Samples taken from respiratory tract n=13 (2.8%) strains were cultured: Gram-positive n=9 (69%), Gram-negative n=4 (31%). From 54 stool samples *Clostridium difficile* toxins were positive in 63%, only in 16.7% of samples *C.difficile* strains were detected, 30% were negative. We analyzed the susceptibility of cultured strains to antibacterial agents. In total n=10 strains of (MRSA), n=138 of (MRCNS) *staphylococci* were detected, 86% of *enterococci* were (HLAR) strains and from *Enterobacteriaceae* family 12.5% (ESBL) rods were detected.
**Conclusions:** The presence of (MDR) bacterial strains after liver transplantation such as: methicillin-resistant *staphylococci* (MRSA) – 52.6%, (MRCNS) 81.7%, *enterococci* (HLAR) 86%, enteric Gram-negative bacteria (ESBL) 12.5% required better professional infection controls.

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## Urinary Tract Infections (UTI's) in the Early Period after Liver Transplantation

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**Introduction:** Urinary Tract Infection (UTI) is a one of the common infection in liver transplantation (LT).
**Patients and Methods:** The study covered 83 adult patients undergoing liver transplantation (piggy back technique) between September 2001 and October 2004. All the patients were followed prospectively for urinary tract infections from the LT date and during the first four weeks after surgery. Samples of urine were investigated for bacteriological cultures. The microorganisms were cultured and identified in accordance with standard bacteriological procedures. Susceptibility testing was carried out using National Committee for Clinical Laboratory Standards (NCCLS) procedures.
**Results:** Urine specimens were examined in 53 pre-operative recipients (63.9%) and in 64 patients (77.1%) during the first month after transplantation. Of the 182 samples investigated, 73 were positive. Bacterial strains were cultured from 17 recipients before LT and from 28 patients after surgery. Among the bacterial strains isolated in early period after LT (n=71), the most common were Gram-negative rods n=46 (63%) isolates, the *Enterobacteriaceae* family n=44 (95.6%) isolates among them n=12 (27.3%) of the Gram-negative rods were Extended-Spectrum Beta-Lactamases ESBL pos-