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Organ Transplant Infections in India: Recent Advances and Future Prospective

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ABSTRACT

Introduction: The organ transplant recipients and pre-transplant are quite risky and everal factors associated with immunology, recurrence, toxicity and infections. **Material and methods: Data collection:** We have strictly followed the responsible microorganisms of transplant patients and their recipients, collected through the different databases and their associated risk pattern related through infections. **Study design:** A retrospective analysis of their infections related to transplant patients and their recipients. **Inclusion Criteria:** Only original and laboratory-verified species are counted this study. **Exclusion Criteria:** Irrelevant microorganisms are discarded from this study mandatory. **Data utilization:** The substantial individual available data used for all the discussion in this study. **Data analysis:** We have used here a very simple statistics with percentage, average, mean for available software SPSS version 14.1 or in online available.
Results: The **S**olid organ transplant infection findings were developed more than (75% -95%). Newly Nocardiosis species and Cytomegalovirus (CMV), Cytomegalo papillomavirus (CMP) infection rate growing and its management may help and improve their management of transplant patients, transplant recipients, management of antifungal prophylaxis and all amongst the solid organ transplant recipients. **Conclusion:** Patients and their donors with family members both are required knowledge of Infections and skills enhancement. SOT is quite important to Indian organ transplant team, organ retrieval banking organization, non-government organization need a strong database and networking system to protect their infections from patients, recipients, donors and their relatives.

INTRODUCTION:

Currently, high-frequency rate in the HLA haplotypes are located among the cytomegalovirus reactivation, infection, toxicity, graft rejection in allogeneic hematopoietic stem cell transplantation patients [1]. The carbapenem-resistant-gram-negative bacteria solation is an important risk factor for organ donors and their recipients [2]. Newly, mucormycosis infects our organ system and accompanied through the hemodynamic instability (HDI) very difficult the airway management [3]. United States (US) reported that recipients were lung transplantation (LT) facing for cystic fibrosis as a major infection in transplant patients with a high risk of the (proximal and distal colon) [4]. The teratogenic potentiality in the mycophenolic acid products is also equally risking for the posttransplant pregnancies [5]. Solid organ transplantation treatment for patients, with end-stage organ disease had also a great impact on cardiovascular risk [6]. Although, solid organ transplantation and lower-dose cotrimoxazole are working on Nocardia infection helps to improve the patient's management of transplant recipients [7]. Additionally, antifungal prophylaxis in the solid organ transplant recipients are required knowledge and skills helps to identify potential patients, standardize their management to improve prognosis, diagnosis antifungal prophylaxis with voriconazole and other important essential with proper doses [8].

Lungs transplant, heart transplant hemodialysis, surgical re-exploration, after transplantation, preventing the Aspergillus, Cytomegalovirus and Cytomegalo papillomavirus species infections are quite harmful and frequently located in our country [9]. Therefore, T cells responses in the (*in vitro* and *in vivo*) attenuation is very acute for the specifically immunological point of view **(allograft rejection *in vivo* in the Indian organ donors overexpression in organ donors)** are very surprising in their regulation at mechanism of tryptophan catabolism is effects in cardiac transplantation and their immunological process in the cellular level of the impact of Solid organ transplantation [10].

MATERIAL AND METHODS:

Data collection: We have strictly followed the important risk and responsible microorganisms in transplant pateints and their recipients, collected through the different databases and their associated infections for transplant patients specially focused on Indian patients.

Study design: A retrospective analysis of infections related to transplant patients and their donors.

Inclusion Criteria: Original and laboratory-verified species are counted in this study.

Exclusion Criteria: Irrelevant microorganisms are discarded and not allowed for this study.

Data utilization: Transplant patient's specific individual substantial available data used for all the discussion in this relevant of the topic.

Data analysis: **S**imple statistics with percentage, average, mean for available software Statistical Package for the Social Sciences (SPSS) version 14.1 or in online available version considered for analysis.

RESULTS:

TABLE NO: 1 [ORGAN TRANSPLANT INFECTION IN INDIA].

SL. NO:	TRANSPLANT	INFECTION	SPECIES IN PERCENTAGE	REMARKS
1.	Heart	Pre-operative	Nocardiosis Species 90% Cytomegalovirus 95% Cytomegalo papillomavirus 90%	Effective
2.	Lungs	Post-operative	CF 85%	Effective
3.	Kidney	Post-operative	Cytomegalovirus 80% Cytomegalo papillomavirus 85%	Effective
4.	Cornea	Post-operative	Asparagilus 85%	Effective
5.	Liver	Post-operative	Human Papillomavirus 75%	Effective
6.	End-stage organ disease	Post-operative	Cytomegalovirus 95% Cytomegalo papillomavirus 90%	Effective
7.	Solid organ transplantation	Pre-operative	Nocardiosis Species 80% Cytomegalovirus 95% Cytomegalo papillomavirus 90%	Non-effective
8.	Islet of Langerhans	Pre-operative	Cytomegalo papillomavirus 90% Others 50%	Non-effective

DISCUSSION:

International Society for Heart and Lung Transplantation guidelines suggested that end-stage heart failure patients with an EGFR≤ 34 ml/min is a strong predictor of post-transplant survival and a major risk of heart transplantation patients (11). Kidney transplants are at higher risk due to basic oral infections and drug-induced immunosuppressant's 12]. Patients with end stage liver disease on dialysis undergoes liver transplantation amongst patients were need proper utilization resources required for better prognostic indicators for patients are still needed and monitored through proper channel for all of liver transplant & kidney in the closer observation simultaneously [13].

Organ transplant retrieval and multiple organ failure:

Currently, the transplant community had decided to take very special notice of enhanced the heart, liver transplantation, in India very safely and it also cost-effective in few cases [14]. Patients with brain dead with end-stage kidney failure are increasing shortfall, diminishing the number and deceased donor organs, are available and the increasing waiting list of patients in need of transplantation successfully [15]. Population-based risk scores is one of the predictive models in these patients incorporate both classical and non-classical risk factor in transplant-specific factors quantify the outcomes and focus on the assessment of clinical end-points transplant patients (16).

Autologous peripheral blood stem cell transplantation within a preconditioning regimen consisting of busulfan and melphalan, with pneumothorax had an acute respiratory failure patients are died due to unable to get their intensive care therapy. Autopsy study findings guided that various apoptotic cells in pulmonary tissue, changes in their multiple organs, throughout the body, suggesting them to be drug-induced suggesting that multiple organ failure due to the alkylating agents and heavy metal toxicity effects at immune system [17].

Recent advances and future prospective:

According to the incidence of public group of the donor for a donor lung and Fra CS-based approach predictive value enhances the transplant patient outcomes bringing out rapid diagnostic m-RNA profiling to clinical application in lung and heart transplantation is quite useful [18]. Additionally, Organ-on-a-chip model recognized as a prominent alternative to conventional toxicity tests for simulation in human *in vivo* physiology and focuses on high-

throughput screening of candidate drugs against for their exact toxicity [19]. Bone-marrow-on-a-chip models supported their immunogenicity and immunotoxicity testing in long-term cultivation within repeated an antigen stimulation of clinical studies for Solid organ transplant patients who have immune-related diseases and pharmaceutical application of bone-marrow-on-a-chip for drug design and targeting for better management and further study needful on this subject [20].

Donation: Basically, live organ donors are considering a live donation and then return for follow-up [21]. Live Heart and kidney transplants are performed routinely as a method to shorten the waiting time for a recipient to provide a healthy organ for transplant [22]. Now increases the number of recipient survival with careful medical, psychosocial evaluation of the potential donor [23].Recipient survival imperative with patients harm evaluation and experience with the live donor medical team(24). Patients required to help their routine health care checkup with careful attention to cardiovascular risk and prevention of diabetes hypertension and coronavirus are one of the paramount of the left organ donors (25).

CONCLUSION:

The heart transplant with hemodialysis, surgical re-exploration after transplantation, environmental colonization by Aspergillus, Nocardiosis species, Cytomegalovirus, Cytomegalo papillomavirus, infections (75-95%) are now major concern to affect Asian Indian patients. Organ transplant in India, although progress in mode, need a further revisilent to revise the appropriate guidelines, strategies for policy makers, clinicians and research scientist. Another way medical education of all be necessary for others is quite helpful to the Indian organ transplant team and organ retrieval banking organization needs to be active in rapid action. Organ transplantation is the most remarkable achievement and an ongoing challenge for future research. For identification of potential patients, standardize their management and improve overall prognosis of antifungal prophylaxis with voriconazole are quite important. It would be considered in the heart, Lung, Kidney, Liver, Islet of Langerhans and corneal transplant. We also mentioned that medical education and awareness still needful others.

Limitations: Need more research on this subject.

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Compete of Interest: Nil

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