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INCIDENCE, RISK FACTORS AND OUTCOME OF CYTOMEGALOVIRUS IN KIDNEY TRANSPLANT RECIPIENTS: A SINGLE-CENTER EXPERIENCE

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Introduction

Cytomegalovirus (CMV) is a frequently encountered opportunistic viral pathogen in kidney transplant recipients (KTR). Approximately 60% of KTRs will have CMV infection and more than 20% will develop symptomatic disease [1]. The reported incidence of CMV infection ranges between 8% to 32% worldwide and is often associated with an increased risk of allograft failure and death [2]. Therefore, it is prudent to detect early and prevent the consequences of CMV infection and disease. We describe the incidence, risk factors, and outcome of CMV disease among KTRs in Hospital Selayang.

Method

- Single-center
- Retrospective
- JAN 2019 – DEC 2021
- 85 KTRs

CMV infection was defined by the evidence of viral replication in any bodily fluids or tissues and disease when they have clinical signs and symptoms. All adult KTRs who were treated for CMV disease during the time period were included in this study. The demographic background, clinical and laboratory presentation, and outcomes data were obtained via electronic medical records, and case notes. Results were analyzed with SPSS version 25.

Results

Background Demographics

The mean recipient age was 37.2±8.9 years, predominated by females at 55.3% (n=47), and chronic glomerulonephritis (36.5%) as primary renal disease. The majority KTRs were CMV-seropositive recipients (R+) from seropositive donors (D+) (84.7%), and deceased donors contributed to 55.3% (n=47) of kidney transplantations. The induction immunosuppression (IS) was essentially with intravenous (IV) Anti-Thymocyte Globulin (ATG) (48.2%) or Basiliximab (51.8%), and 92.9% were started on mycophenolate sodium, tacrolimus, and prednisolone as the initial maintenance IS regimen. CMV prophylaxis was adopted for 47.1% of recipients given their moderate risk (D+R+ or received IV ATG).

Figure 1: Baseline characteristics among total KTRs and KTRs with CMV

Characteristics	All KTRs = 85 N(%)	KTRs with CMV Disease = 6 N(%)
Age (Mean)	37.27±8.94	34±8.31
Gender (Female)	47(55.3)	3(50)
Primary Kidney Disease • Chronic GN	31(36.5)	3(50)
CMV status • D+R+ (Moderate Risk) • D+R- (High Risk)	72(84.7) 2(2.4)	3(50) 1(16.7)
Donor Source • Deceased	47(55.3)	4(66.7)
Induction Therapy • ATG • Basiliximab (IL-2)	41(48.2) 44(51.8)	2(33.3) 4(66.7)
Received CMV Prophylaxis	40(47.1)	3(50)
Initial IS • MTS • MT • TES	79(92.9) 5(5.9) 1(1.2)	6(100) - -
History of Acute Rejection	8(9.4)	1(16.7)
History of Infection	31(36.5)	3(50)
Diabetes Mellitus	10(11.8)	-
Hypertension	48(56.5)	4(66.7)
Leucocytes (Mean)	9.27±3.11	4.93±1.0

❑ M=Mycophenolate Sodium, T=Tacrolimus, P= Prednisolone.

Presentations

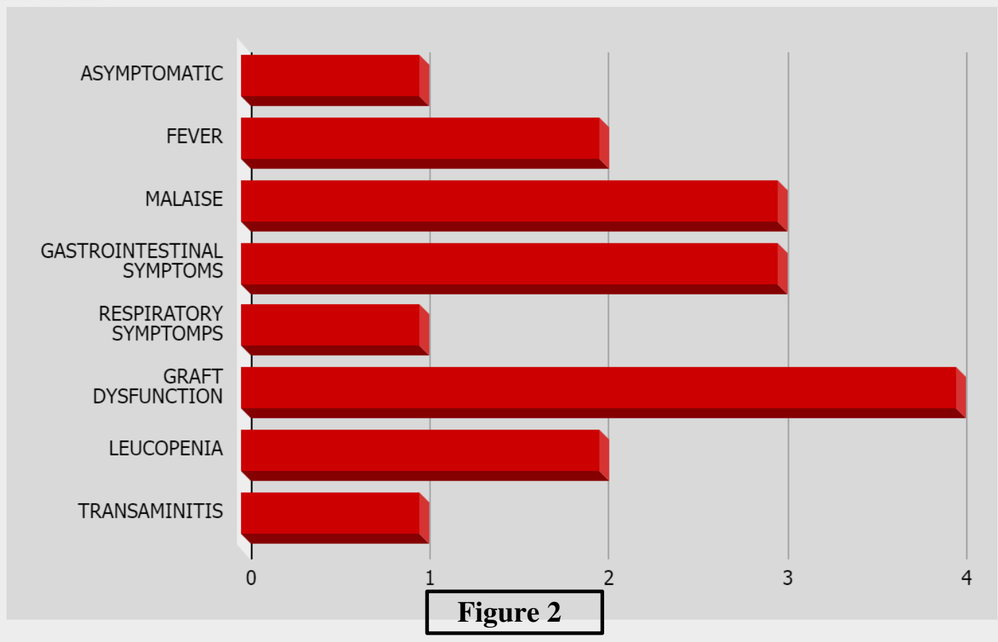
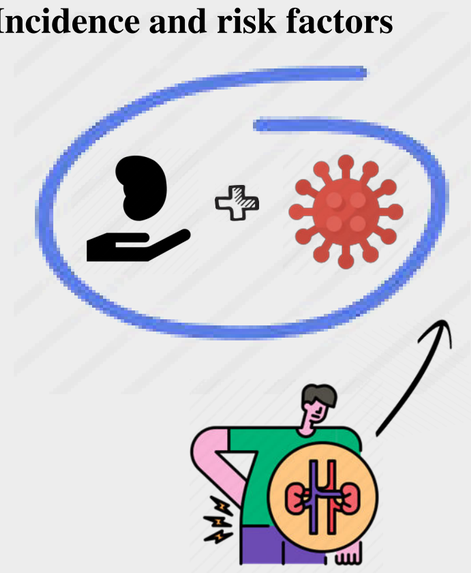


Figure 2

Incidence and risk factors

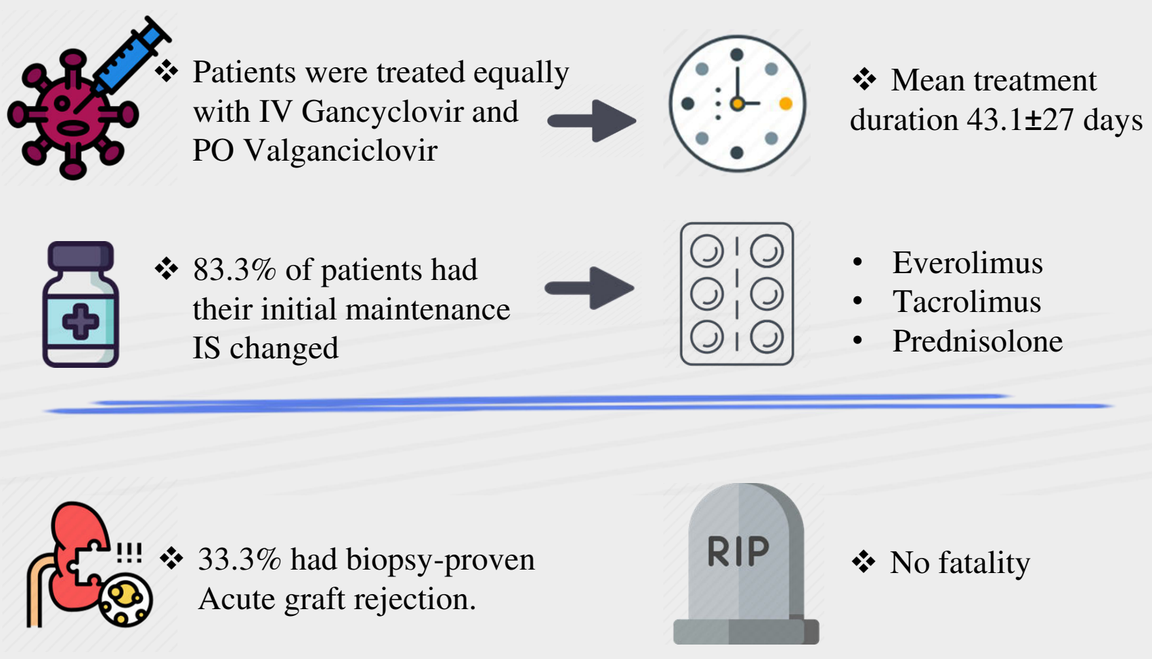


- 6 KTRs were affected by CMV disease
- Overall incidence in our cohort was 7%
- 66.7% developed the infection between 6-12 months post-transplant period.

❑ Graft Dysfunction **(OR 17.56; P=0.012)**

❑ Reduction in Leucocytes **(OR 2.23; P=0.019)**

Treatment and outcome



- Patients were treated equally with IV Gancyclovir and PO Valganciclovir
- Mean treatment duration 43.1±27 days
- 83.3% of patients had their initial maintenance IS changed
  - Everolimus
  - Tacrolimus
  - Prednisolone
- 33.3% had biopsy-proven Acute graft rejection.
- No fatality

Conclusion

The incidence of CMV disease in our cohort was 7%, which was low compared to other studies [5]. Graft dysfunction and reduction of leucocyte counts were significant risk factors associated with CMV disease. Age, CMV status, type of induction, and CMV prophylaxis did not show any significance in our cohort due to the small sample size. Biopsy proven acute rejection occurred in 33.3% of patients as a consequence of CMV disease, however, no fatality was reported.

References

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