

# PREVENTION AND TREATMENT OF CYTOMEGALO VIRUS (CMV) IN KIDNEY TRANSPLANTATION: A MULTI-CENTRIC RESEARCH

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## **Background and purposes**

Cytomegalovirus (CMV) infection is associated with significantly decreased outcomes of kidney transplantation (KT) due to CMV reactivation and CMV disease, a fatal complication; and also to activate acute rejection. Need a procedure to follow up, to prevent, to detect and early treatment CMV the urgent needs.

The study has two main objectives:

a. To find out the prevalence of CMV infection among patients (pts) after kidney transplant (KT).

b. To evaluate the effectiveness of CMV treatment in KT.

The detailed objectives are:

- To survey on CMV infection rate of pts after KT.
- To evaluate the outcome of anaphylactic treatment and CMV disease treatment of pts after KT.

## **Materials and method:**

- Group I: Retrospective study and analysis of the disease: on CMV infection; CMV disease on recipient patients (pts), draw back the consequences and experience.
- Group II: Prospective descriptive and case-control analysis: prospective solutions to prevent and treat CMV on pts (performed 2 years).

Sample size: 1000 cases

Patients (pts): All of the pts were been post-operative follow-up (FU) in 7 centers of the country (performed KTx in or outside the country).

The pts agree to participate voluntarily in the study.

Exclusion criteria: subjects in the study who did not agree to participate in the study; cases lack of FU data ; cases of allergy to drugs used in the specific treatment of CMV

## **Results:**

Group I: retrospective study on CMV infection: 808 TH in 7 centers (data of one center excluded due to missing data). Average age:  $42.5 \pm 12.7$ . Male: 541/808 (66.96%) female 267/808 (33.04%). Transplanted kidney transplants from 1993 to 2015. CMV infection was 48/808 (5.9%). There were 3/808 patients (0.4%) who had CMV at the time of initial screening, which was included in the CMV for the study. Using cumulative over "no symptoms of CMV infection" showed that the longer the transplant time, the lower the risk of CMV infection.

Group II: All transplant centers in Vietnam apply CMV prophylaxis regularly for 100-200 days after kidney transplant with IgG (+) (581/847 pts, 68.60%).

There were 44/847 (5.19%) CMV outbreaks that were treated with gancyclovir and other measures under intensive care, but the mortality was high: 14/44 (31.81%). Of these, there were 8/44pts (18.18%) the CMV-DNA was detected from below the detection level to positive, even though the number of copies remained low under 500 copies, but to hesitate in decision, proceed with treatment when the disease is completely outbreak. The rate of death 6/8pts (75.00%).

There were 145/847 pts (17.11%) who were decided for early treatment (we call the preemptive treatment) when CMV-DNA was switched from undetectable to positive even if the number of copies was less than 500; or switched the IgM from negative to positive. The result of preemptive treatment is 28/145pts (19.31%): 25/28pts alive (89.29%) and 3/28pts deceased

(10.71%). The average time of CMV disease outbreak was  $3.87 \pm 1.36$  months, the reasons for the outbreak of these patients were: 1/3pt got out of my team, 1/3pt after acute rejection treatment, 1/3pt diabetes.

The group that did not use the prophylactic treatment was 224/847pts (26.44%), including 219/266pts (82.33%) due to unstable renal function or drug status. 47/266pts (17.67%) did not follow the study protocol. There are 16/42pts CMV clinical diseases, died 11/16pts (68.75%): late detection 8/11pts (6/8 not of research protocol), 4/11pts in the first year of kidney transplant; 5/11pts after acute rejection treatment; 2/11pts recurrence disease kidney after transplant treatment.

The mortality rates were different between prophylaxis and not prophylaxis groups with  $p < 0.005$ . Therefore, if we just have the plane for monitoring of CMV disease outbreak, it is not insufficient, In addition, it also depends on the condition of the individual patient and the Immunosuppressive drugs level.

**Conclusion:**

- o Frequency of CMV in the dialysis community is CMV infection of 99.63%. Under the effect of the drug, every time after the transplant, there are cases of CMV reactive and outbreak of CMV. The longer the transplant is, the less likely it is that the transplant will last, especially after 2 years of transplantation, should be monitored periodically.

- o Via routine CMV monitoring, it is possible to detect patients who have CMV reactivated; When detecting CMV-DNA from negative to positive, even if the number of copies is less than 500 copies / mL of blood, CMV prophylaxis should be performed, CMV is in the transcription phase but not yet strong.

When CMV outbreaks, which are manifestations of symptoms, when CMV is relatively strong, or very strong, the curettage is needed for advanced ICU equipment. Poor but high mortality rate (17.11%).