

# VITAMIN D DEFICIENCY IN KIDNEY TRANSPLANT RECIPIENTS

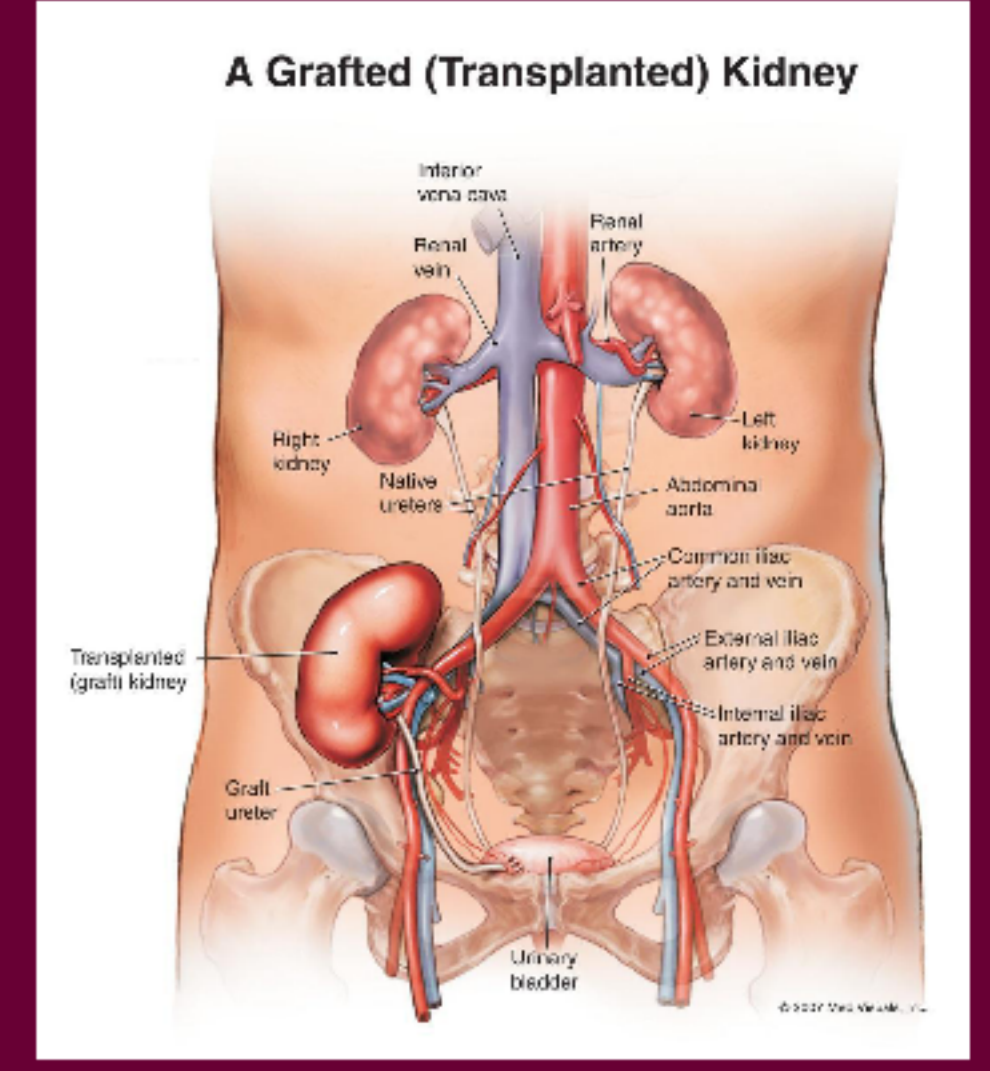


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## Introduction

Vitamin D plays an important role in human health, and low vitamin D levels are very frequent among kidney transplant recipients (KTRs), especially in the early posttransplantation period. This may be due to insufficient vitamin D supplementation in dialysis and after transplantation, reduced sun exposure and steroid therapy. Vitamin D status is usually assessed by measuring the serum concentration of 25-hydroxyvitamin D (25-OHD).

## Aims

The aim of this study was to determine incidence and risk factors for 25-OHD deficiency in KTRs.

## Methods

The study included 84 KTRs treated at the Clinic of Nephrology, Clinical Centre Niš, Serbia from October to December 2013. They were classified as vitamin D normal (25-OHD >30 ng/mL; n=8), insufficient (25-OHD <30 ng/mL; n=8) and deficient (25-OHD <20 ng/mL; n=68). Vitamin D status to the different immunosuppressive regimens (tacrolimus-Tac, cyclosporine-CsA and sirolimus-Sir) was compared.

Assessment of serum 25-OHD was performed by high performance liquid chromatography (HPLC) method. HPLC determination of 25-OHD was achieved using Purospher STAR RP-18e column with mobile phase consisted of 10.0% methanol and 90.0% acetonitrile and UV detection at 265 nm. Pearson's correlation analysis was used to evaluate 25-OHD correlations.

Table 1. Variables associated with 25-OHD concentrations (ng/mL), p<0.05

Explanatory variables	r
Age (years)	0.21
Time since transplant (years)	0.71
eGFR (mL/min)	0.68
CsA dose (mg)	0.89
Tac dose (mg)	0.29
Sir dose (mg)	0.02
Alkaline phosphatase (U/L)	-0.27
Ionized calcium (mmol/L)	-0.05
Cholesterol (mmol/L)	0.04
Albumin (g/L)	-0.02
Phosphorus (mmol/L)	-0.09

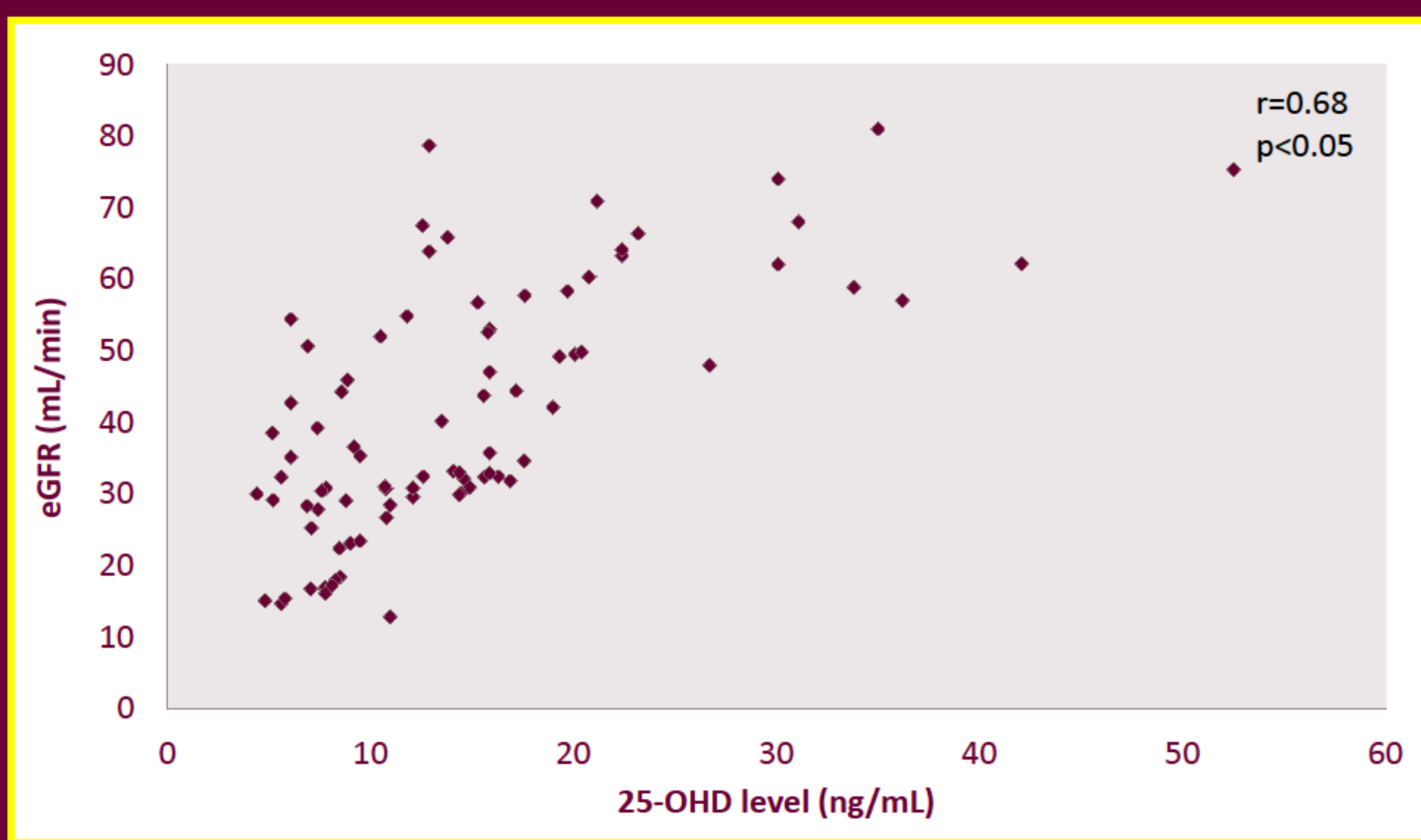
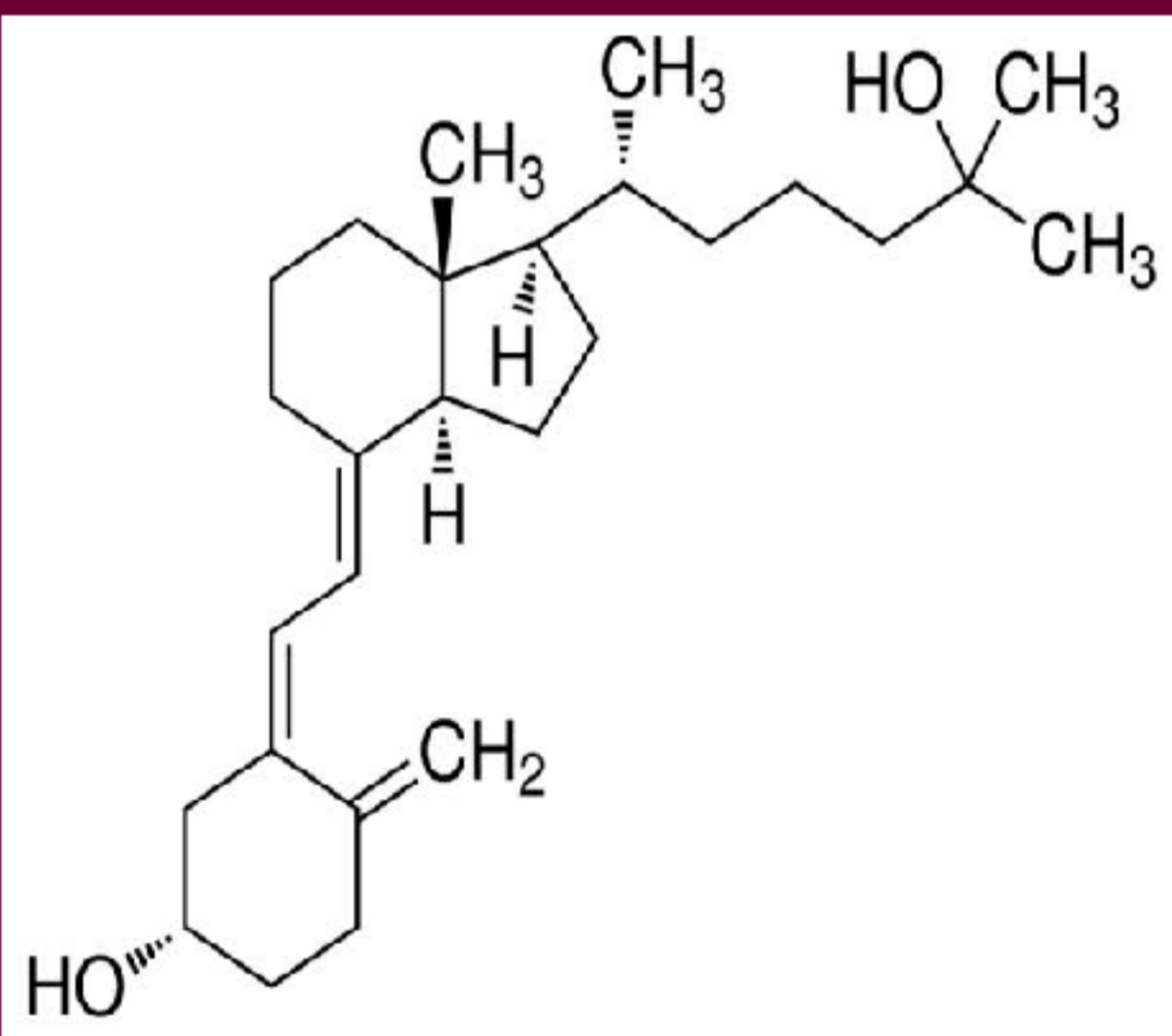


Fig. 4. The correlation between eGFR and serum 25-OHD levels in study group of KTRs

## References

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## Results

Eighty-one percent (n=68, 38 males-M and 30 females-F) of the KTRs had moderate-to-severe vitamin D deficiency and an additional 9.5% (n=8, M7, F1) had vitamin D insufficiency. A positive correlation was observed between 25-OHD levels and dose of CsA (r=0.89, p<0.05). Low 25-OHD concentrations were also associated with short time since transplant (r=0.71, p<0.05) and the lower estimated glomerular filtration rate (eGFR) (r=0.68, p<0.05). Vitamin D levels had a weak positive correlation with Tac dose (r=0.29, p<0.05) and age (r=0.21, p<0.05) and weak negative correlation with serum alkaline phosphatase level (r= -0.27, p<0.05). In contrast, levels of serum ionized calcium, cholesterol, albumin or phosphorus were not associated with vitamin D status.

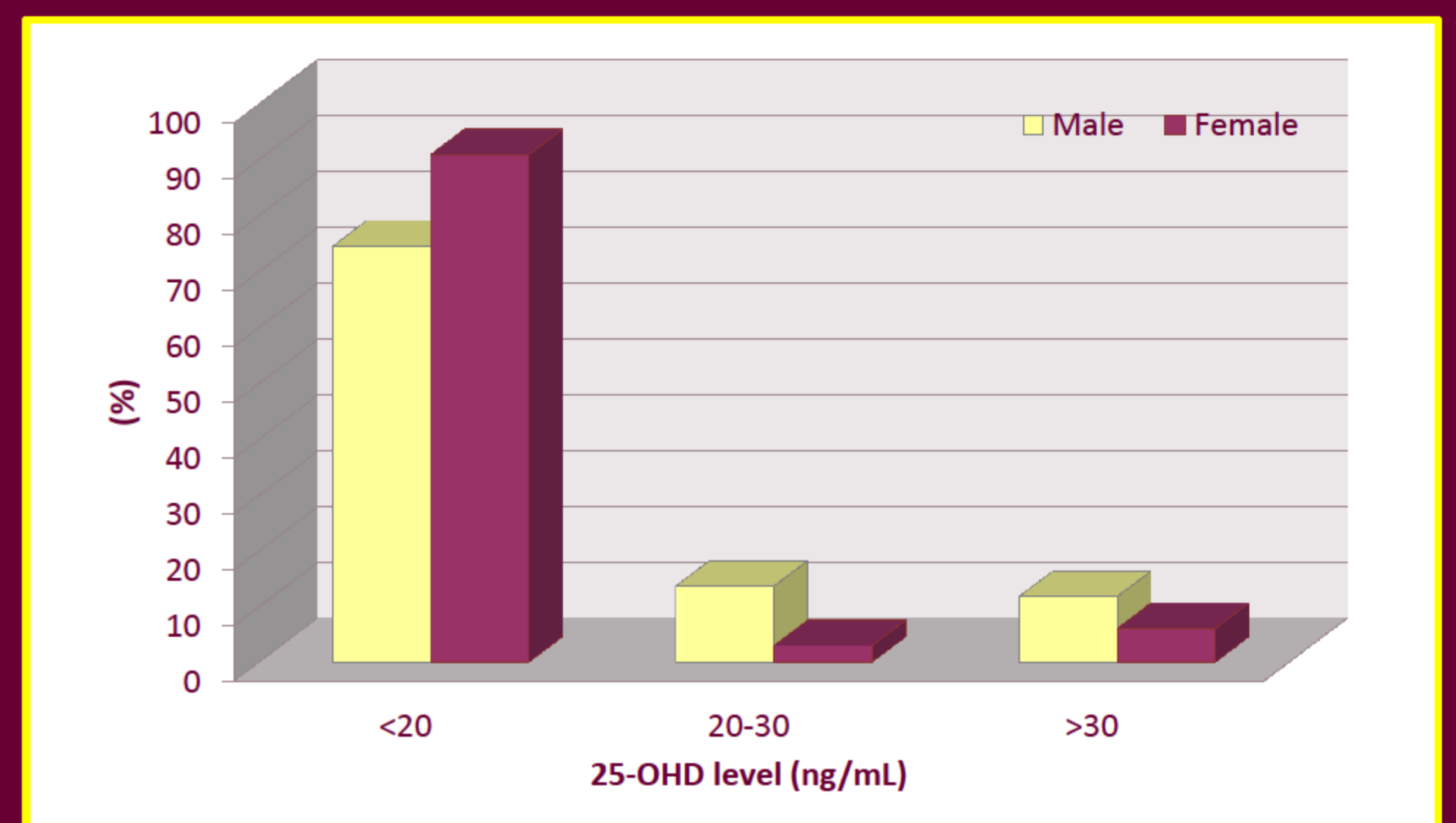


Fig. 1. Distribution of serum 25-hydroxyvitamin D concentrations in the present study population of KTRs

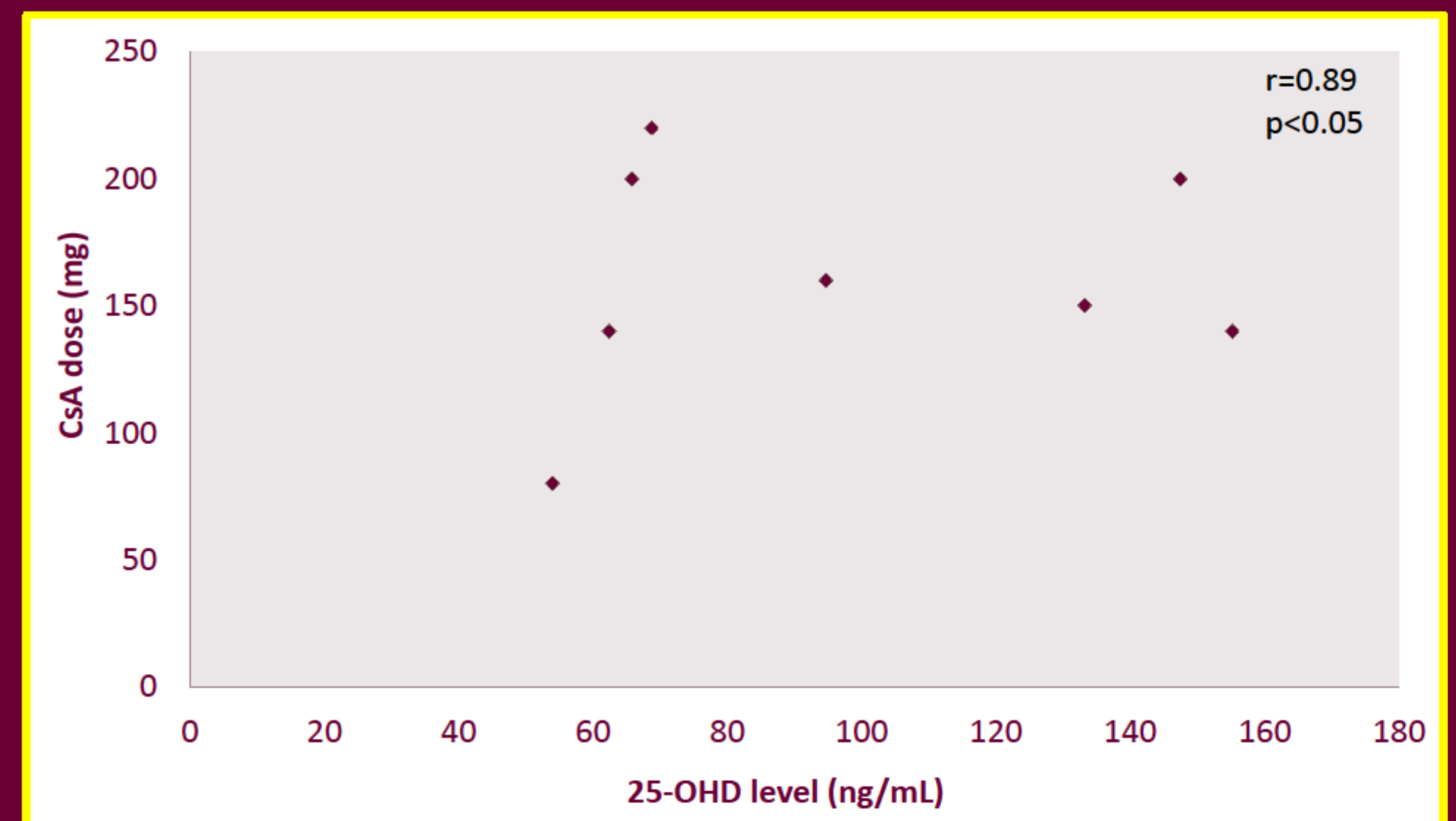


Fig. 2. The correlation between CsA dose and serum 25-OHD levels in study group of KTRs

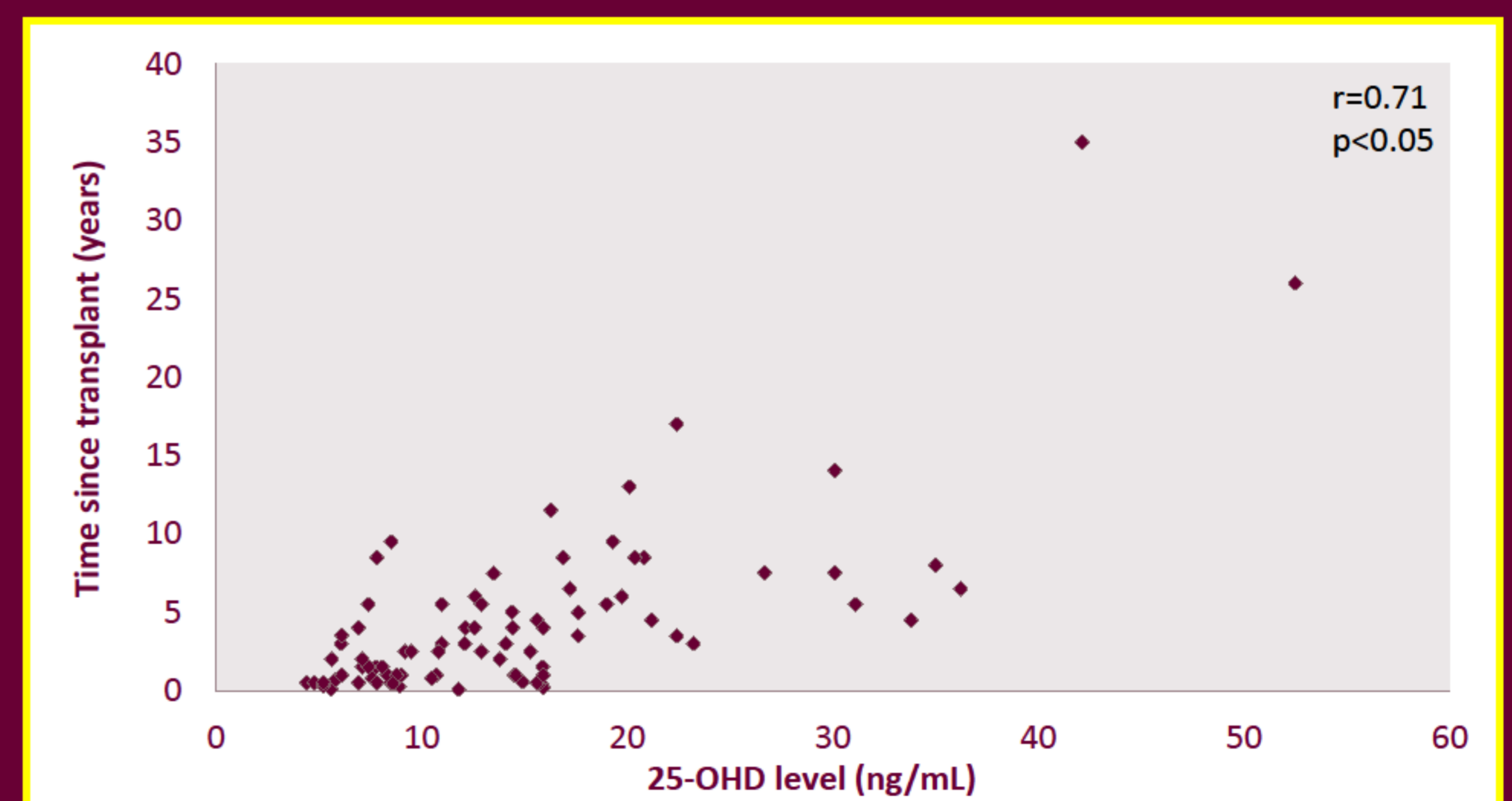


Fig. 3. The correlation between time since transplant and serum 25-OHD levels in study group of KTRs

## Conclusion

In this study, vitamin D deficiency is common in KTRs and 25-OHD levels of <30 ng/mL were associated with lower dose of CsA, short time since transplant and a low eGFR. In accordance with these results, vitamin D levels should be routinely monitored post-transplant and low levels need to be treated with oral supplementation. Further explorations are needed to determine the optimal dose and duration of vitamin D treatment.