Management of kidney transplant immunosuppression in positive coronavirus infection requiring hospital admission

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1.- Kidney transplant recipient < 60 years:
- Without pulmonary infiltrates: Maintain immunosuppressive treatment unchanged.
If you start treatment with hydroxychloroquine, decrease tacrolimus and iMTOR dose by 20% of input (due to the interactions between tacrolimus and iMTOR and chloroquine) and then always monitor levels every 48 hours and maintain tacrolimus levels: 4-6 ng/ml
- With pulmonary infiltrates:
  - Without hipoxemia or fever:
    1.- Stop only MMF and maintain tacrolimus (levels 4-6 ng/ml) and prednisone 20 mg daily.
  - With hipoxemia (with need of oxigen) or fever:
    1.- Stop tacrolimus and MMF (or iMTOR) and keep only with prednisone 20 mg daily for the first 4 days.
    2.- From the 5th day of admission, if the clinical situation improves (no fever and does not need oxygen): Restart tacrolimus (levels 4-6 ng/ml) associated with 20 mg prednisone.
    3.- From the 5th day of admission, if the clinical situation does not improve (persists with fever or need for oxygen), maintain only with prednisone 20 mg daily. Tacrolimus will be started again as in point 2 when it improves.

2.- Kidney transplant recipient > 60 years:
- Without pulmonary infiltrates: Stop MMF and maintain tacrolimus (levels 4-6 ng/ml) and prednisone (usual dose, do not increase to 20 mg)
- With pulmonary infiltrates:
  - Without hipoxemia or fever:
    1.- Stop MMF, decrease tacrolimus for levels 3-5 ng/ml and maintain prednisone (usual dose, do not increase to 20 mg)
  - With hipoxemia (need for oxygen) or fever:
    1.- Stop tacrolimus and MMF (or iMTOR) and keep only with prednisone 20 mg daily for the first 4 days
2.- From the 5th day, if the clinical situation improves (no fever and does not need oxygen): Restart tacrolimus\(^1\) to maintain levels of 3-5 ng/ml associated with prednisone 20 mg daily

3.- From the 5th day, if the clinical situation does not improve (persists with fever or need for oxygen), maintain only with prednisone 20 mg daily. Tacrolimus\(^1\) will be started again as in point 2 when it improves.

\(^1\)If you start or are already on hydroxychloroquine, decrease tacrolimus and iMTOR dose by 20% of entry (due to the interactions between tacrolimus and iMOTR and chloroquine).

3.- **Kidney transplant patient who has been contact with a positive coronavirus patient and has no symptoms:**

Start with hydroxychloroquine 200 mg/12 hours during 5 days.

Decrease tacrolimus or iMTOR dose by 20% during the 5 days and then return to tacrolimus and iMTOR usual dose

Rest of immunosuppression unchanged

**Antivirals:**

- Hydroxychloroquine: 200 mg/12 hours 5-7 days: It interacts with CNI and iMTOR. Close monitoring of levels is recommended. When starting, decrease the dose of CNI and iMTOR by 20%
- Avoid the use of ritonavir/lopinavir: with iMTOR ins not recommended and with CNI it can be used but levels increase. Avoid its use for important side effects too.
- Remdesevir: can be used without interactions, but is subject to clinical trial.
- Tocilizumab: can be used without interactions
- Iv Ig: its use is not recommended due to multiple patient contact.