

# Immune checkpoint blockade plus interferon- $\gamma$ add-on antifungal therapy in the treatment of refractory Covid-associated pulmonary aspergillosis and cerebral mucormycosis

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- Mucormycosis and aspergillosis are life-threatening fungal infections (IFI).
- Rescue therapies are needed for patients not responding to conventional treatment. Recently published studies in animal models and human case reports suggest a potential benefit of checkpoint inhibitors.

Admission in ICU for COVID in the context of diabetic acido-cetosis

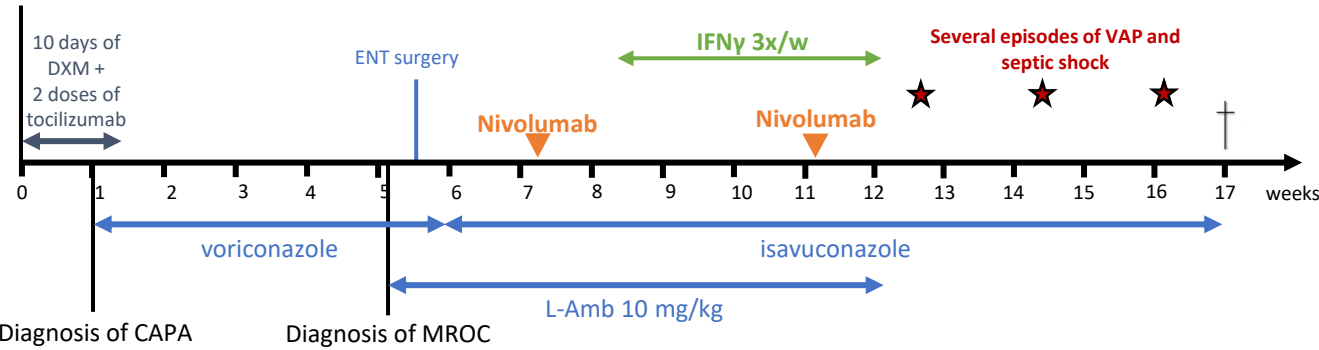


Figure 1. Timeline

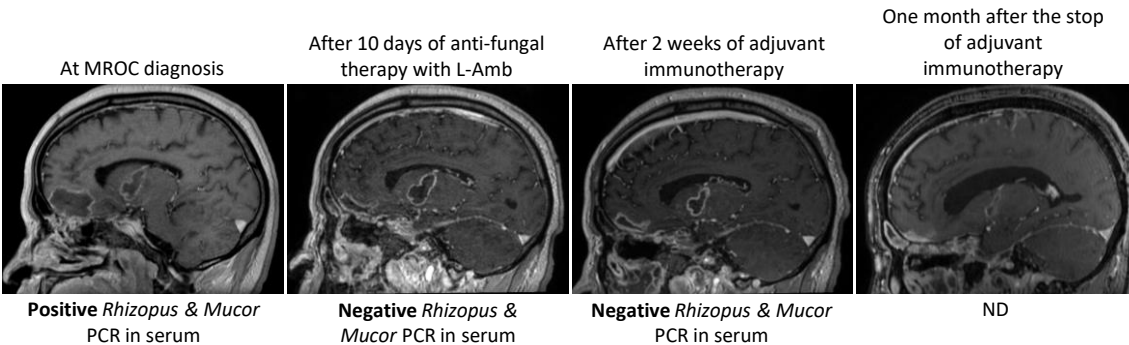


Figure 2. Evolution of MRI and serum *Mucorales* PCR under treatment

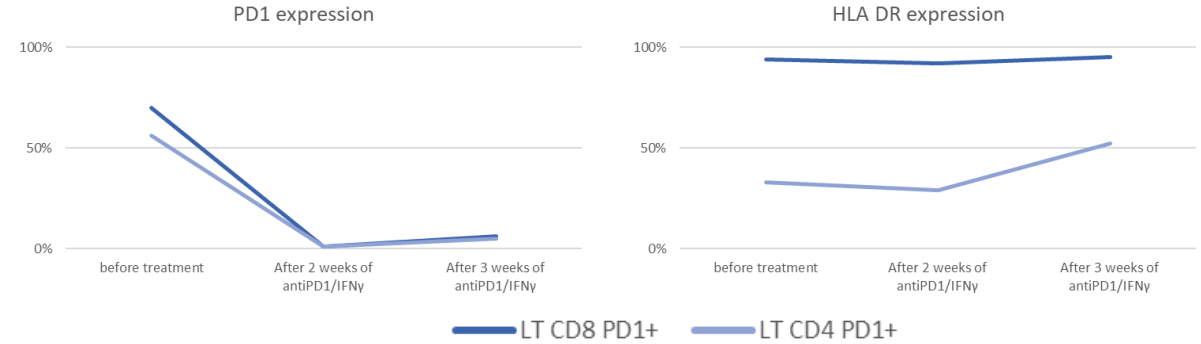


Figure 4. Evolution of the percentage of CD4 and CD8 T cells expressing PD-1 and HLA-DR under immunotherapy

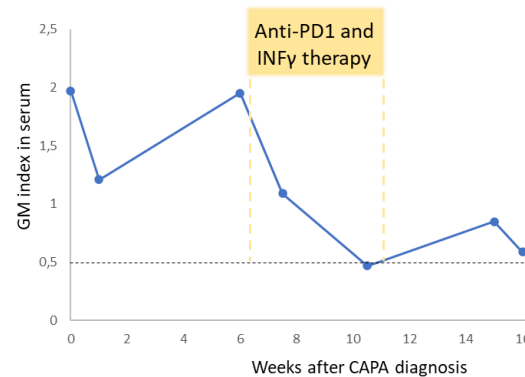


Figure 3. Evolution of serum galactomannan under treatment

- Although the patient did not survive, the initial clinical response obtained with anti-PD-1 plus IFN- $\gamma$  add-on dual antifungal therapy and surgical management is encouraging.
- Combination immunotherapy might be considered as salvage treatment of life-threatening IFI unresponsive to conventional therapy. Further studies will be needed to determine its optimal timing and role in the current therapeutic arsenal.
- As patients with IFI are usually particularly fragile and under a lot of concomitant medications, the use of immune checkpoint inhibitor must be carefully monitored (risk of severe, notably autoimmune, adverse effects).