



# Impact of COVID-19 Vaccination on Seminal and Systemic Inflammation in Men

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## BACKGROUND

- Expedited SARS-CoV-2 vaccine development led to public concerns regarding potential unknown impacts of vaccination on people of child-bearing age.
- We investigated possible impacts of the SARS-CoV-2 vaccine on sperm parameters and markers of inflammation in semen and sperm samples of vaccinated men.

## AIMS

- Does the SARS-CoV-2 (COVID-19) vaccine acutely impact sperm parameters, markers of inflammation and anti-SARS-CoV2 Spike antibody levels in semen and serum samples?

## METHODS

- This was a longitudinal cohort study of 17 normospermic male patients
- Semen and matched peripheral blood samples were collected prior to vaccination, within 46hrs of vaccine completion (acute) and at 3 months post vaccination.
- Serum and seminal plasma anti-SARS-CoV-2 spike isotypes (IgA, IgM and IgG1) and immune factors (IL-6, IL-8, IL-10, IFN- $\gamma$ , TNF- $\alpha$ , IP-10; CXCL10, MCP-1, CCL2) were analysed using ELISA-based approaches at three time points.

## RESULTS

- All semen samples were found to be negative for anti-SARS-CoV2 spike antibodies at all three time points indicating that systemic antibodies are likely precluded from transport to seminal plasma.
- No overall or consistent change from baseline was seen in reported symptoms, mean volume, pH, sperm concentration, motility, morphology or DNA damage in the acute or long phase.
- Two men showed a clinically relevant decrease in sperm motility in the acute post-vaccine phase, with a corresponding increase in DNA fragmentation which returned to normal at 3 months post vaccine.
- Seminal plasma MCP-1 levels showed an acute but transient elevation post-vaccine.

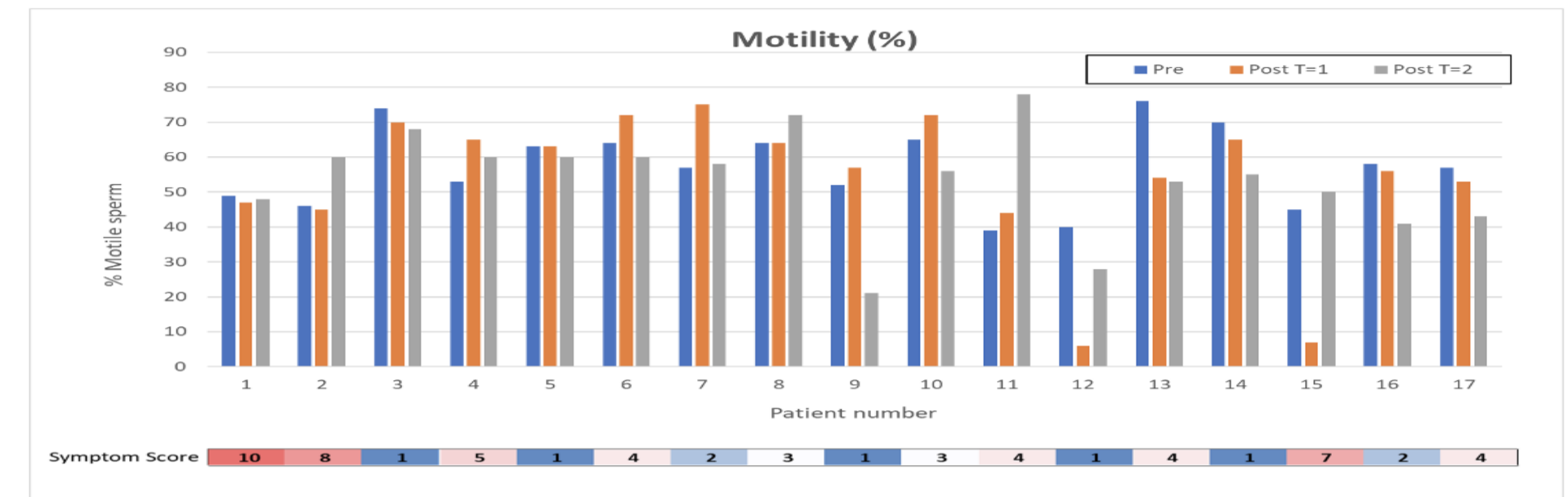


Figure 1: Sperm motility assessment in samples from individual patients (1 to 17) before and after SARS-Co-V2 vaccination

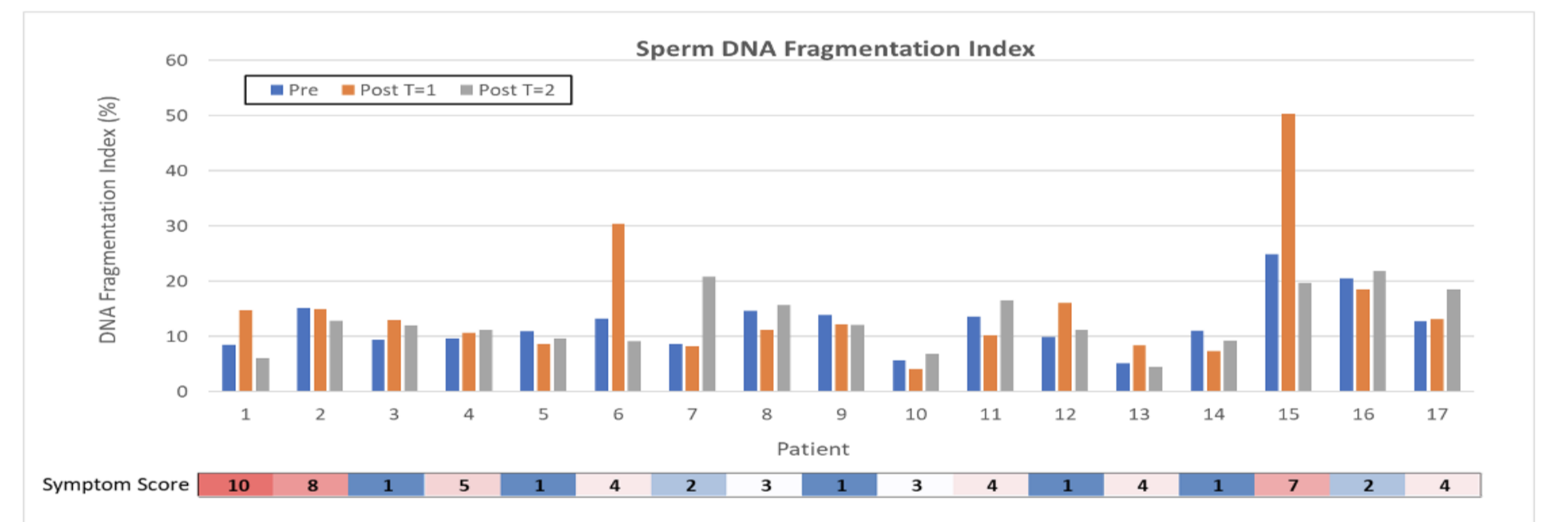


Figure 2: Sperm DNA fragmentation index (DFI, %) in samples from individual patients (1 to 17) before and after SARS-Co-V2 vaccination

## CONCLUSION

- Our results are reassuring in that no significant adverse effect of vaccination was noted.
- There may be temporary decline in sperm motility which could be more significant in men with poor baseline parameters.
- Further larger studies with inclusion of men with abnormal baseline parameters would be valuable to support timing of vaccination and treatment.