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

Laurentina Schaler, Magda Ghanim, Jordi Guardiola, Julia Kaulsay, Aya Ibrahim, Gareth Brady, William McCormack, Niall Conlon, Vincent P. Kelly, Mary Wingfield, Louise Glover

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-γ, 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.

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.