To determine whether short-term hypothermic storage of human spermatozoa in EFM is effective in routine practice for IVF/ICSI.

**SUMMARY ANSWER**

Short-term hypothermic storage of human spermatozoa in EFM for up to 2 weeks is safe and effective, and may be used in IVF programs.

**WHAT IS KNOWN ALREADY**

Storage of human sperm at +4°C in EFM composed of glucose and bovine serum albumin allows sperm preservation for at least 2 weeks (Saito et al., 1996; Kanno et al., 1998). This method was used to generate healthy murine offspring and was shown to be genetically safe (Riel et al., 2007, 2011). Short-term hypothermic storage of human spermatozoa in EFM has not been utilized in clinical practice for infertility treatment with IVF.

**STUDY DESIGN, DURATION, PARTICIPANTS**

This study included 96 couples who underwent IVF treatment between September 2010 and December 2013. Normozoospermia was the main requirement for participation. After 2 week hypothermic storage in EFM, the spermatozoa were used for fertilization by ICSI.

**MATERIALS AND METHODS**

Sperm was stored in EFM at +4°C and further processed according to standard protocol. Sperm motility and sperm DNA fragmentation were evaluated before and after hypothermic storage in EFM. Each newborn's physical status was evaluated by questionnaires sent to physicians and parents at conception and delivery.

**MAIN RESULTS**

After 2 week hypothermic storage in EFM, 56.2±5.0% of spermatozoa regained motility. The sperm DNA fragmentation rate was slightly higher after than before storage (11.2±3.1% vs. 8.5±2.5%, \( p=0.11 \)), but the difference was not statistically significant.

The fertilization rate was 78%, and the clinical pregnancy rate was 34.4% (33 of 96), with 26 pregnancies resulting in the successful delivery of 34 babies. Delivery date and birth length and weight complied on average with standards.

**LIMITATIONS, REASONS FOR CAUTION**

The method was effective for ejaculated sperm with normal parameters stored for a period of up to 2 weeks.

**WIDER IMPLICATION OF THE FINDINGS**

Hypothermic storage of human spermatozoa in EFM is a simple and cost-effective option, if ejaculated sperm cannot be retrieved on the day of ovarian puncture. The method guarantees that the spermatozoa are safely stored for at least 2 weeks, and then regain their motility and viability, with preservation of DNA integrity. Hypothermic storage of human spermatozoa in our IVF/ICSI programs resulted in a high pregnancy rate and high physical status scores in the resulting newborns.