

# COMPLEX TREATMENT OF NON-OBSTRUCTIVE AZOOSPERMIA WITH PLATELET-RICH PLASMA, HUMAN CORD BLOOD PLASMA AND HUMAN PLACENTA

**Feskov, O.<sup>1</sup>; Zhylkova, Ye.<sup>1</sup>; Ivanova, A.<sup>1</sup>; Bezpechna, I.<sup>1</sup>; Lomakin, I.<sup>1</sup>,  
Kudokotseva, O.<sup>1</sup>, Feskova A.<sup>2</sup>**

<sup>1</sup>IVF Department, Center of Human Reproduction «Clinic of Professor Feskov O.M.», 61098 Kharkiv, Holodnogirska str. 15, Ukraine

<sup>2</sup> Kharkiv National Medical University, 4 Nauky avenue, Kharkiv, 61022, Ukraine

## BACKGROUND

Currently, azoospermia is one of the most common diseases of male infertility. Non-obstructive azoospermia (NOA) in most cases has no therapeutic options other than assisted reproductive techniques, which in most cases require sperm donors. Stem cell research is the new hope for novel therapy with a higher degree of safety and lower cost. The main features of the placenta and its derivatives such as structure, cellular composition, immunological and endocrine aspects, and the ability to invasion and deportation are discussed. These features are considered from a perspective that determines the placental material as a unique source for regenerative cell therapies and a lesson for immunological tolerance. Nowadays stem cells (SCs) and platelet-rich plasma (PRP) therapy offer a new spectrum of treatment of different conditions, including male infertility. The aim of this work was to study of the effect of complex therapy (combination of hormones, PRP and cryopreserves SCs) on spermatogenesis in NOA-patients.

## METHODS

Presenting results are the part of Clinical Trial "Investigation of the possibility and effectiveness of the use of cryopreserved cord blood stem cells and placenta preparations for the correction of reproductive function disorders of psychosomatic origin in women and men". The study's protocol was approved by the Center's IRB. The studies period was from October 2022 to September 2023. Totally 15 infertile NOA-patients with normal karyotype 46,XY, average age 34.3±6.8 years old underwent the complex treatment including hormonal stimulation of spermatogenesis, testicular autologous PRP injection, subcutaneous administration of fragments of human placenta and human cord blood plasma injection (Group 1). The period of complex treatment took 90 days. The control group was formed by 15 NOA-patients (Group 2). The only hormonal stimulation of spermatogenesis was applied in Group 2. Semen analysis was performed on all ejaculate samples according to WHO guidelines before and after the 90 days of the treatment in Groups 1, 2.

Ycellbio PRP-kits were used to get PRP-product (Fig. 1).

The of the fragments of human placenta was 10×10×3 mm. The procedure of placenta fragments preparation is mentioned on Figure 2.

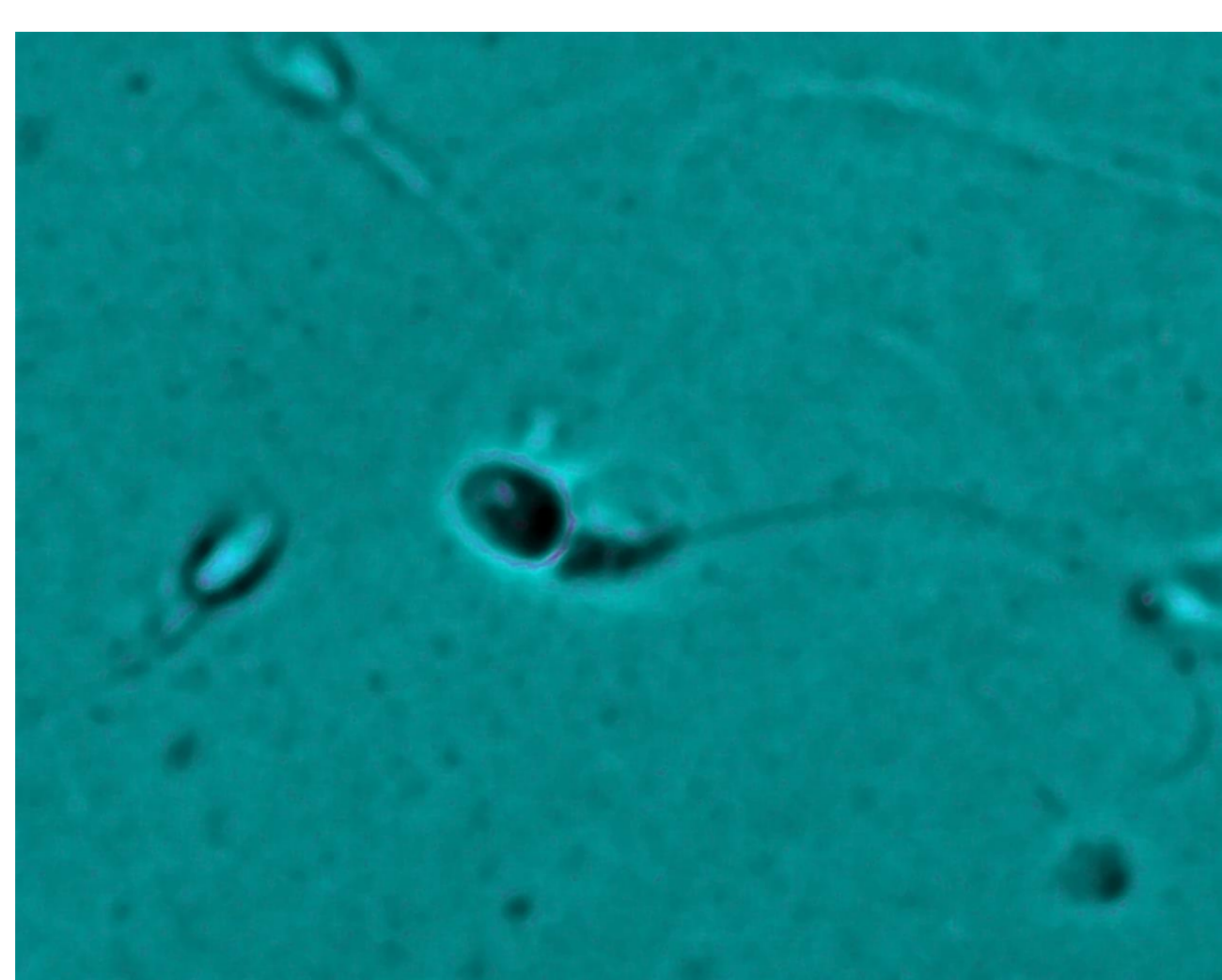


Fig. 3. Found sperm with abnormal morphology

## RESULTS

Few sperms was found in ejaculate of four patients after the complex 90-days-treatment in Group 1. Sperm counts: 0.1 million sperm per milliliter (mln./mL) – in two patients; 0.2 mln./mL – in one patient and 0.5 mln./mL – in one patient. Total motility (progressive and non-progressive) range was 0-5 %. Samples with sperm were frozen. There were no sperm with normal morphology. The photo of found sperm in sample is present on fig. 3. No sperm was found in ejaculates in Group 2-patients.



Fig. 2. Placenta fragments preparation

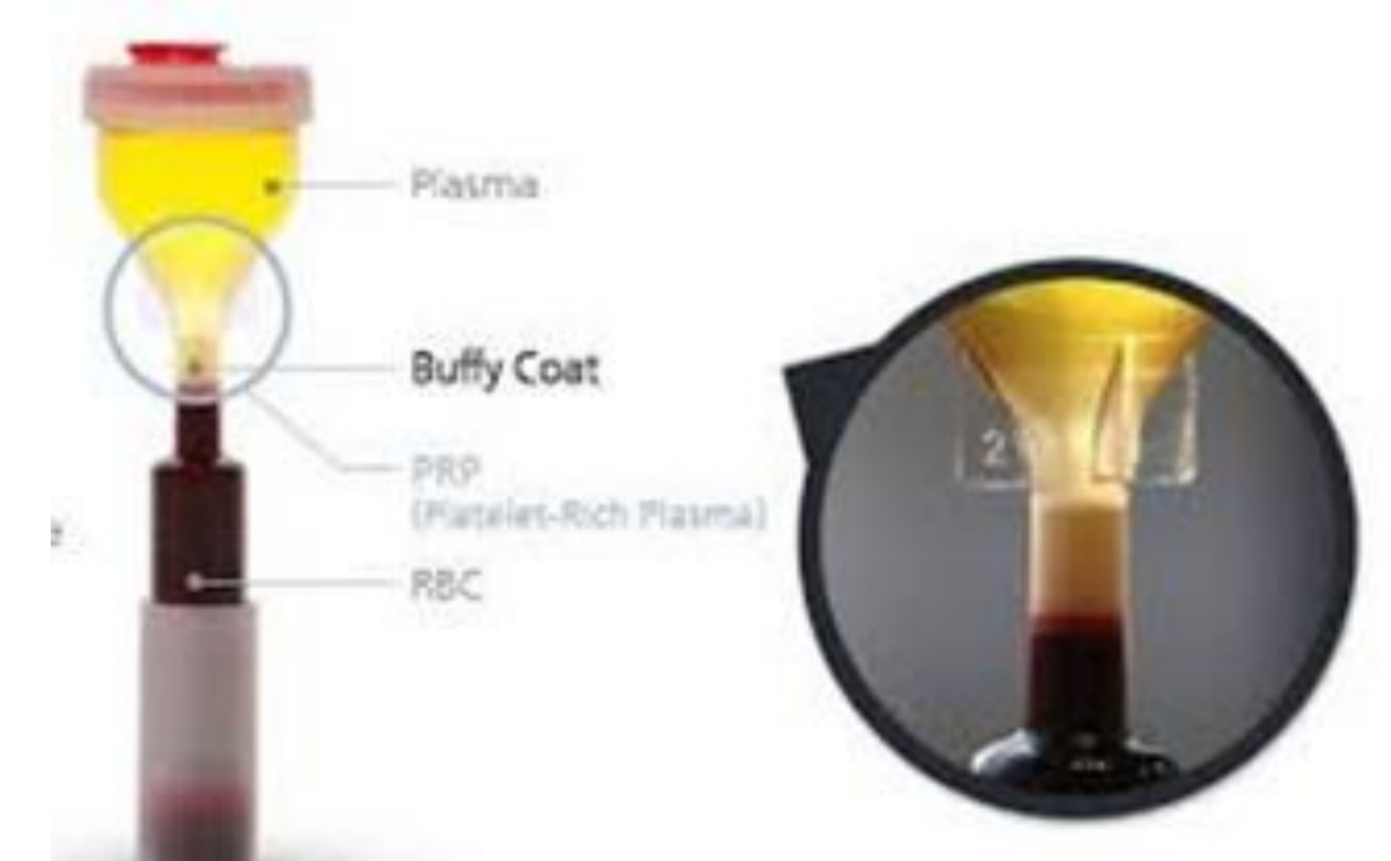


Fig. 1. Ycell bio kit (PRP-preparation)

## CONCLUSION

The obtained results proved that stem cells (SCs) and platelet-rich plasma (PRP) therapy could be proposed as a part of the effective treatment of male infertility for patients with non-obstructive azoospermia. The effect of complex therapy (combination of hormones, PRP and cryopreserves SCs) on spermatogenesis in NOA-patients can be applied in ART.

## REFERENCES

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