

The relationship between the preovulatory and postovulatory progesterone serum concentration and the outcome of the in vitro fertilization

E Ejubovic (BA) [1], M Kasum (HR) [2], J Juras (HR) [3]

Context The influence of elevated preovulatory and postovulatory progesterone (P4) on the outcome of in vitro fertilization (IVF) has been in the focus of many discussions in contemporary reproductive endocrinology. Numerous studies have found the adverse effect of elevated preovulatory P4 on the outcome of IVF. Other studies failed to find the adverse effect of elevated preovulatory P4 on the outcome of IVF. Hence, there are no clearly established strategies in the treatment of patients with elevated preovulatory P4. **Objective** The outcome of IVF procedures among normal and elevated preovulatory and postovulatory P4 has been analyzed in this study. **Methods** This was a prospective cohort study which lasted for 3 years (2015-2017). **Patient(s)** 400 patients have been included in the study (300 controls with $P4 < 4,77$ nmol/l and 100 in the study group $P4 > 4,77$ nmol/l-85 normal responders, 15 high responders). **Exclusion criteria** for the study were: age 37, patients with high P4 on 2nd, 3rd and 4th cycle day, poor responders. **Intervention(s)** Patients were stimulated with gonadotropins, GnRHa and GnRHaa, ICSI has been performed and subsequent BET of FET was carried out. **Main Outcome Measure(s)** Main outcome was to determine the influence of preovulatory and postovulatory P4 on IVF outcome.

Result(s) The mean number of retrieved oocytes in control group was 7 (5-11) and 14 (10-17) in the study group while the mean number of fertilized oocytes was 5 (3-8) and 9,5 (7-12) respectively, $p < 0,001$. No difference has been found between the control and study group regarding implantation rate (34,3% vs 36%, $\chi^2 = 0,092$; $p = 0,762$) and clinical pregnancy rate (26% vs 32%, $\chi^2 = 1,354$; $p = 0,245$). Implantation and clinical pregnancy rate among normal responders were 35,3% and 30,6%, among high responders both parameters were 40%. Higher implantation rate has been found with FET (47,6%) as compared to BET (27,6%) ($\chi^2 = 4,243$; $p = 0,032$) in the study group. High sensitivity (86,21%, 95%CI 81,7-90,0%) and low specificity (23,64%, 95%CI 16,1-32,7%) of P4 on 5th postovulatory day has been found at P4 value of $< 425,7$ nmol/l among all the patients regarding the IVF outcome. **Conclusions** This study found no relationship between the elevated preovulatory P4 and the adverse IVF outcome, while postovulatory $P4 < 425,7$ nmol/l seems to have a detrimental impact on IVF outcome. It is preferable to perform FET with elevated preovulatory P4 as the improved implantation and clinical pregnancy rate has been recorded.

[1] Department of Obstetrics and Gynaecology, Cantonal Hospital Zenica, Bosnia and Herzegovina, [2] Department of Obstetrics and Gynaecology, University Hospital Center, School of Medicine, Zagreb, Croatia, [3] Department of Obstetrics and Gynaecology, University Hospital Center, School of Medicine, Zagreb, Croatia