Follicular environment is vital for the oocyte and the follicular fluid (FF) endocrine milieu is predictive of implantation and pregnancy. It is possible to derive putative mesenchymal stem cells (MSC) from FF collected during IVF procedures. The aim of this study was to determine whether FF-MSC may release estradiol (E2) and progesterone (P) when cultured in D-MEM+10%FBS with or without gonadotropin stimulation (rFSH or rFSH+rLH) after IVF procedures. We analyzed the endocrine pattern of FF-MSC derived from 7 infertile women (3: history of anovulation; 4: male factor; age: 31.86±2.80yrs; BMI: 21.56±3.63kg/m2). E2 and P were measured by RIA at d2 and d7 (days of culture). Multilevel mixed models were fitted. We found that cell proliferation and vitality were not affected by gonadotropin stimulation. E2 levels were significantly lower (p=0.03) in women with a history of anovulation (462.83±328.80pg/ml) in comparison with women with male factor (679.41±1292.96pg/ml). A higher release of P was evident from d2 to d7 (332.25±73.49pg/ml, 584.25±308.65pg/ml, respectively) in women who achieved pregnancy. Addition of rFSH or rFSH+rLH (75mUI) further increased P release (pooling data at d2-d7) with a significant difference (p=0.0401, p=0.0435, respectively) between women who achieved pregnancy or not. Interestingly enough, E2 levels were positively related to plasma LH (z=2.48; p=0.013) but negatively to prolactin (z=-2.51; p=0.012) and FSH (z=-2.14; p=0.032) levels detected in women at baseline. A same non significant trend was evident for P. A positive association with BMI was present for both E2 (z=2.78; p=0.005) and P (z=2.23; p=0.025). In conclusion, we suggest that FF-MSC in vitro have an endocrine behavior similar to their follicular micro-environment. Whether FF-MSC may contribute to the competence and the fate of the oocyte or be predictive of implantation remain to be further investigated.