Is anti-müllerian hormone a determinant in unexplained recurrent miscarriage?

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Introduction

Maternal age and abnormalities of ovarian reserve (OR) is often considered among the etiologies of unexplained recurrent early miscarriage (UREM). Studies aiming at finding a relationship between UREM and abnormalities of OR show very discordant results due to major biases in most of them. Our case-control study aim to explore the role of OR in UREM by measuring the anti-müllerian hormone (AMH) serum levels.

Methods

1:2 case-control study with age matching, ancillary to the incident case-control study DÉFI, which was carried out from February, 2003 to October, 2008 in the Brest regional university hospital center:

- **188 cases** with a history of at least 3 UREM compared to
- **376 controls** from the general population with no history of miscarriage and having already given birth to a living child.

Evaluation of OR was carried out by simultaneous AMH measurement in cases and controls (Immunotech*, Beckman-Coulter France).

Results

The two studied populations are in all points comparable apart from parity. When patients have already given birth: there is no significant difference in delivery term and weight at birth.

It is now recognized that the secretion of AMH varies throughout the sexual life and the rate actually decreases from 25 years. This was showed by Kelsey in 2011 (curve attached). Thus, we analyzed our data according to these results.

Discussion

**Limitations:**

- Blood sampling was randomly made during menstrual cycle. However, the distribution was similar between cases and controls. In addition, the literature is in favor of a low impact of the AMH intra cyclical variation;
- Absence of ultrasound measurement of RO.

**Strengths:**

- Comparable descriptive characteristics of populations;
- Simultaneous measurement of AMH in cases and controls;
- Single assay kit.

AMH is a marker of follicular activity pool and becomes a more reliable marker of the OR from the age of 25 years according to the latest publications. This explains why a lower AMH level is found in cases than in controls only after 25 years. However, the average and median measurements of these patients remained in the range of near-normal values for the age. It is therefore difficult to associate the miscarriages of these women with a single OR decline.

Conclusion

This is the FIRST case-control study with large samples (564), suggesting an association between the OR decrease and UREM in females over 25 years, not from an infertility consultation. It is possible that this OR decline is an early marker of deterioration of oocyte quality regardless of age.