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BASELINE OVARIAN RESERVE MARKERS IN PATIENTS WITH SICKLE CELL TRAIT STATUS

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Title:

BASELINE OVARIAN RESERVE MARKERS IN PATIENTS WITH SICKLE CELL TRAIT STATUS

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Preferred Presentation Type:

Oral or Poster

Study Type:

Case Control Study

Category - Subcategory(ies):

Genetics: Genetic Counseling

Genetics: Genetics General

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Applying for an award

Trainee: Yes

Abstract Category:

All Other Categories

Applied for the Resident In-Training Award**Applied for the In-Training Award for Research****Abstract Text:****OBJECTIVE:**

Sickle cell disease (SCD) is associated with diminished ovarian reserve, likely due to chronic hypoxia and vaso-occlusive events that impair ovarian perfusion and follicular integrity. However, the implications of sickle cell trait (SCT) on reproductive potential remains unclear. With approximately 300 million individuals affected by SCT, an increasing number are pursuing fertility preservation and reproductive planning. This study evaluates baseline ovarian reserve parameters between patients with and without SCT.

MATERIALS AND METHODS:

This retrospective study was conducted at a private, academic fertility center and included all patients with documented SCT status who presented for an infertility consultation from August 2010 through January 2025. SCT status was determined through keyword searches and manual review of the electronic medical records. The control group comprised of patients without SCT and was matched 3:1 using propensity score matching based on age, body mass index (BMI), and year of treatment. The primary outcome was anti-Müllerian hormone (AMH) level. Secondary outcomes included basal antral follicle count (BAFC) and baseline follicle-stimulating hormone (FSH) level. Comparative analyses were conducted using chi-square, Mann-Whitney U and Student's t-tests as appropriate. A sample size of 122 SCT patients and 366 matched controls was calculated to achieve 80% power to detect a 15% relative difference in AMH levels, assuming a control mean AMH of 1.8 ± 2.0 ng/ml based on average age of the control population ($\alpha = 0.05$).

RESULTS:

A total of 136 patients with SCT were compared to 408 matched controls without the trait. Baseline demographics were comparable between patients with and without SCT, including patient age (36.3 ± 3.2 vs 36.4 ± 3.1 years, $p = 0.92$) and BMI (24.6 ± 3.5 vs 24 ± 3.4 kg/m², $p = 0.83$). AMH levels were also comparable between patients with and without SCT (3.4 ± 2.1 vs 2.9 ± 3.1 ng/ml, $p = 0.72$) as were secondary outcomes, including early follicular FSH levels (6.9 ± 3 vs 7.3 ± 2.8 IU/l, $p = 0.62$) or BAFC (12.1 ± 6.1 vs 11.3 ± 6 , $p = 0.48$).

CONCLUSIONS:

Patients with and without SCT demonstrated comparable AMH, FSH, and BAFC, suggesting that SCT status may not adversely affect ovarian reserve. These findings support the biological inference that, while SCT can influence microvascular function, its influence on ovarian physiology may be limited compared to sickle cell disease.

IMPACT STATEMENT:

SCT does not seem to compromise ovarian reserve, providing reassurance to women with SCT who are planning fertility treatments.

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Within the past 2 years, have you or your spouse/partner had any potential COI?

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Biographical Sketch Early success, marked by his first publication in CELL at Harvard Medical School, inspired Joseph to continue his research endeavors in reproductive endocrinology and infertility. Joseph has been with Reproductive Medicine Associates of New York since 2011. Joseph has authored over 400 peer-reviewed abstracts & manuscripts. Passionate about development, he cultivates relationship with investors & entrepreneurs to advance reproductive endocrinology & infertility care.

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Organization Name	Relationship Type	Who has this Relationship?
Progyny	Company Officer Relationship Began - Friday, August 25, 2017 Relationship Ended - Thursday, June 1, 2023 Paid Consultant Relationship Began - Relationship Ended - Direct Stockholder Relationship Began - Friday, August 25, 2017 Relationship Ended - Friday, November 1, 2024	Self

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CV Upload: Alan B. Copperman M.D. - CV (March 2024).docx**Tenth Author**

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