P-569 6:30 AM Wednesday, October 20, 2021

UNLIKE TRADITIONAL SEMEN ANALYSIS, SPERM CAPACITATION SCORES ARE CONSTANT UNTIL AGE 50: A PROSPECTIVE LONGITUDINAL STUDY. Fady I. Sharara, M.D.,[1] G Charles Ostermeier, PhD[2] [1]Virginia Center for Reproductive Medicine, Reston, VA; [2]Androvia LifeSciences, Mountainside, NJ.

OBJECTIVE: Social and economic factors are causing couples to delay parenthood. This trend raises several concerns related to reproductive success. It is generally accepted that maternal age is inversely related with fertility and pregnancy outcome. However, the influence of paternal age is still contentious. While traditional Semen Analysis (SA) is the standard for evaluating male fertility, it often fails to predict reproductive outcome. Sperm must capacitate prior to fertilization. Localization patterns of the ganglioside G_{M1} (Cap-Score™) identify sperm capable of capacitation and prospectively predict pregnancy. The objective of this study was to determine how Cap-Score changes with paternal age and compare this to changes in traditional SA measures.

MATERIALS AND METHODS: Cap-Score and SA measures (Volume, Concentration, Motility) were collected from men seeking fertility assistance at reproductive endocrinology offices. The population was separated into the following paternal age groups 15-24, 25-29, 30-34, 35-39, 40-44, 45-49, & 50+, with the respective age groups having the corresponding number of observations for the SA assessment 28, 271, 918, 822, 354, 137, & 64 and Cap-Score analysis 29, 279, 943, 842, 367, 141, & 66. Kruskal-Wallis Tests with multiple comparisons were done to evaluate the associations between SA, Cap-Score and age.

RESULTS: No association was detected between age and sperm concentration ($p=0.930$). While motility ($p=0.007$) and volume ($p<0.0001$) declined significantly with age, their means were both within normal WHO ranges in the 50+ group ($44.0\pm2.5\%$ and 2.6 ± 0.22 mL). The overall Kruskal-Wallis Test did not detect Cap-Score differences among the age groups ($p=0.277$). However, multiple comparisons indicated that men 45-49 had larger Cap-Scores than men in the 25-29 group ($p=0.045$; $30.0\pm0.66\%$ vs $28.3\pm0.47\%$). Unfortunately, there were only 66 observations in men above 50 preventing us from making any meaningful analysis compared to the younger age groups.

CONCLUSIONS: The influence of paternal age on semen quality and male fertility is still under investigation. The literature supports a decrease in *in vivo* fertility as men age. However, *in vitro* this doesn't appear to be the case. This discrepancy could be a result of confounding factors, such as maternal age or environmental factors, that can be more easily removed *in vitro*. The data presented here suggest that confounding factors may indeed have a large impact. Traditional SA measures are poorly related to male fertility and declined with age. In contrast, capacitation ability has been shown by multiple groups to be the best predictor of male fertility and was maintained with age until 50+ years.

IMPACT STATEMENT: It appears that a man's ability to generate a pregnancy, as measured by capacitation ability, is maintained at least until age 50. However, confounding factors may influence pregnancy outcome.

SUPPORT: Androvia LifeSciences provided Cap-Scores.

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PRE-VASECTOMY REVERSAL HORMONAL ASSESSMENT: DOES IT MATTER? Mohamed E. Ahmed, M.B., B.Ch., Engy Habashy, M.D., Matthew Ziegelmann, MD, Tobias Kohler, MD, Sevann Helo, MD Mayo Clinic, Rochester, MN.

OBJECTIVE: We sought to study – for the first time – hypogonadism in men undergoing vasectomy reversal (VR) who could benefit from medical intervention.

MATERIALS AND METHODS: We reviewed our prospective database of all VRs performed for fertility at our institution between 10/1/2019 – 12/30/2020. Hormonal workup included total and free testosterone (T), follicular stimulating hormone (FSH), luteinizing hormone (LH), and estradiol (E2). We defined hypogonadism as a total T level <300 ng/dl. We screened the patients for symptoms of hypogonadism, including decreased libido, maintaining weight, fatigue, decreased motivation, erectile dysfunction, depression, difficulty concentrating, and somnolence.

RESULTS: 70 patients met our inclusion and exclusion criteria. All patients had a history of previous paternity. Median time since vasectomy in our cohort was 6.5 years and median patient's age at the time of vasectomy reversal was 40 years old. On pre-VR hormonal assessment, 85.7 % (n=60) of the patients showed normal testosterone levels (Group A) with a median T level of 457 ng/dl, and 14.3% (n=10) were hypogonadal (Group B) with median T level of 263 ng/dl. Table 1 shows patient demographics and pre-vasectomy reversal workup and screening. Libido was the most sensitive symptom in detecting hypogonadism in 100% of the patients, however, 77% of eugonadal patients also endorsed having decreased libido.

CONCLUSIONS: Approximately 15% of men undergoing VR showed biochemical hypogonadism, 80% of which had associated symptoms. Preoperative workup should include screening for hypogonadal symptoms, and if positive, prompt hormonal workup.

IMPACT STATEMENT: Assessment of hypogonadal symptoms and hormonal workup before vasectomy reversal could help to identify patients at risk of hypogonadism.

SUPPORT: None

Table 1- Comparison of patient demographics and pre-VR labs in groups A and B:

		Group A (n=60)	Group B (n= 10)	p-value
Patient demographics	Median (IQR) age, years	40 (35.3 – 44)	38.5 (35.8 – 44.3)	0.7239
	Median (IQR) BMI, kg/m2	28.1 (25.3 – 31.8)	28.5 (23.5 – 29.3)	0.4457
	% of patients with DM, n (%)	3 (5%)	1 (10%)	0.5592
	% of patient with Hypertension, n (%)	8 (13.3%)	1 (10%)	0.7641
	% of patients with Hypercholesterolemia, n (%)	8 (13.3%)	2 (20%)	0.5920
Pre-vasectomy reversal workup and screening	Median (IQR) total T, ng/dl	462.5 (368.3 – 530.3)	263 (198.8 – 284.8)	<0.0001*
	Median (IQR) free T, ng/dl	10.9 (9.4 – 11.8)	7.3 (5.3 – 9.6)	0.0003*
	Median (IQR) LH, IU/L	4.7 (3.7 – 6.1)	2.8 (2.2 – 4.4)	0.0017*
	Median (IQR) FSH, IU/L	3.8 (2.9 – 4.9)	3.1 (1.9 – 4.2)	0.1034
	Median (IQR) E2 pg/mL	22 (17.6 – 28)	19 (14.7 – 25.3)	0.2747
	Median (IQR) T/E2 ratio	21.8 (17.5 – 26.4)	12.3 (9.0 – 15.8)	0. 0001*
	% of patients with ≥ 1 Hypogonadism symptom, n (%)	43 (71.7%)	8 (80%)	0.5731