UPTAKE OF FERTILITY PRESERVATION IN ADOLESCENTS AND YOUNG ADULTS WITH A HISTORY OF OVARIAN GERM CELL AND SEX CORD STROMAL TUMORS

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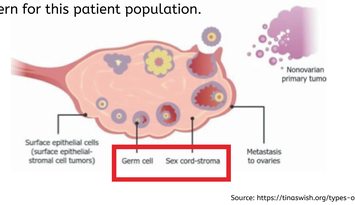
Introduction

- Germ cell tumors (GCTs) and sex cord stromal tumors (SCSTs) are rare malignancies that most commonly affect adolescents and young adults
  - National Cancer Institute (NCI) defines the adolescent and young adult (AYA) population as patients diagnosed with a first cancer between ages 15 and 39
- Treatment – surgery, chemotherapy, radiation – can significantly impair future fertility, making fertility preservation a critical concern for this patient population.



Source: https://tinoswish.org/types-of-ovarian-cancer/

Objectives

1. Determine the prevalence rate of fertility preservation uptake among adolescents and young adults with a history of germ cell tumors or sex cord stromal tumors.
2. Determine the demographic characteristics of adolescents and young adults with a history of germ cell tumors or sex cord stromal tumors associated with uptake of fertility preservation.
3. Establish the proportion of adolescents and young adults with a history of germ cell tumors or sex cord stromal tumors who received fertility counseling by primary oncology provider.

Methodology

- Retrospective cohort study
- Inclusion criteria: Patients aged 12 – 35 who were seen at University of Colorado Anschutz Pavilion and/or Children's Hospital Colorado from July 2013 to June 2023 with germ cell tumors and sex cord stromal tumors
- Given treatment overlap between the two hospitals, made sure to only include patients once if they were seen at both institutions
- **Statistical analysis:** Kruskal-Wallis rank-sum test, Fisher's exact test, Wilcoxon rank-sum test, and Pearson's Chi-squared test

Results

Table 1: Patient demographics

Characteristic	N = 73*1*
Age at first contact	
Mean (Min, Max)	22 (13, 35)
Race	
Black	4 (5.6%)
White	44 (61%)
Hispanic	17 (24%)
Asian	2 (2.8%)
Other	5 (6.9%)
Unknown	1
Insurance status	
Private	46 (63%)
Medicaid	26 (36%)
No insurance	1 (1.4%)
Cancer diagnosis	
Immature teratomas	10 (14%)
Dysgerminomas	11 (15%)
Endodermal sinus tumors (yolk sac tumor)	5 (6.8%)
Embryonal carcinoma	1 (1.4%)
Primary ovarian (nongestational)	2 (2.7%)
Mixed germ cell tumors	8 (11%)
Sex cord stromal tumors	33 (45%)
- Granulosa cell tumor	20 (27%)
- Sertoli-Leydig cell tumor	13 (18%)
Other	3 (4.1%)
Gravidity	
Nulligravid	42 (58%)
≥1	14 (19%)
Data not available	17 (23%)
Parity	
Nulliparous	43 (59%)
≥1	13 (18%)
Data not available	17 (23%)
Fertility preservation use	
Yes	65 (89%)
No	8 (11%)

Table 2: Fertility preservation modality utilized and proportion of patients who received fertility counseling by an oncology provider

Characteristic	N = 73*1*
Fertility preservation use	65 (89%)
Fertility sparing surgery*2*	52 (80%)
Fertility sparing surgery/Ovarian suppression*2*	7 (11%)
Fertility sparing surgery/Oocyte cryopreservation*2*	5 (7.7%)
Fertility sparing surgery/Ovarian suppression/Oocyte cryopreservation*2*	1 (1.5%)
Received fertility counseling by any oncology provider	34 (47%)

1 n (%)

2 Percentages are based only on participants who underwent fertility preservation (N = 65).

Table 3: Patient demographics based on fertility preservation modality utilized

Characteristic	Used 2 or more fertility preservation methods N = 13*1*	Only used fertility sparing surgery for fertility preservation N = 52*1*	No fertility preservation used N = 8*1*	p-value
Age				0.024
Mean (Min, Max)	19 (14, 32)	21 (13, 35)	29 (13, 35)	
Race				0.2
Black	0 (0%)	4 (7.8%)	0 (0%)	
White	7 (54%)	31 (61%)	6 (75%)	
Hispanic	4 (31%)	12 (24%)	1 (13%)	
Asian	2 (15%)	0 (0%)	0 (0%)	
Other	0 (0%)	4 (7.8%)	1 (13%)	
Unknown	0	1	0	
Insurance status				0.4
Private	8 (62%)	35 (67%)	3 (38%)	
Medicaid	5 (38%)	16 (31%)	5 (63%)	
No insurance	0 (0%)	1 (1.9%)	0 (0%)	
Gravidity				<0.001
Nulligravid	7 (100%)	34 (81%)	1 (14%)	
≥1	0 (0%)	8 (19%)	6 (86%)	
Unknown	6	10	1	
Parity				<0.001
Nulliparous	7 (100%)	35 (83%)	1 (14%)	
≥1	0 (0%)	7 (17%)	6 (86%)	
Unknown	6	10	1	
Stage of disease				0.094
Stage I	8 (62%)	35 (70%)	5 (63%)	
Stage II	1 (7.7%)	2 (4.0%)	0 (0%)	
Stage III	1 (7.7%)	8 (16%)	0 (0%)	
Stage IV	2 (15%)	0 (0%)	0 (0%)	
Recurrent	1 (7.7%)	5 (10%)	3 (38%)	
Unknown	0	2	0	

Table 4: Patient demographics based on fertility preservation counseling

Characteristic	Received fertility counseling by any oncology provider	No fertility counseling received N = 39*1*	p-value*2*
Age			>0.9
Mean (Min, Max)	22 (13, 33)	22 (14, 35)	
Race			0.2
Black	1 (2.9%)	3 (7.9%)	
White	21 (62%)	23 (61%)	
Hispanic	6 (18%)	11 (29%)	
Asian	2 (5.9%)	0 (0%)	
Other	4 (12%)	1 (2.6%)	
Unknown	0	1	
Insurance status			0.8
Private	21 (62%)	25 (64%)	
Medicaid	12 (35%)	14 (36%)	
No insurance	1 (2.9%)	0 (0%)	
Gravidity			0.088
Nulligravid	26 (84%)	16 (64%)	
≥1	5 (16%)	9 (36%)	
Unknown	3	14	
Parity			0.2
Nulliparous	26 (84%)	17 (68%)	
≥1	5 (16%)	8 (32%)	
Unknown	3	14	

Discussion

- Patients who are younger and have not yet had children are more motivated to pursue fertility preservation.
- Overall fertility preservation uptake is high, and the vast majority of patients are relying on surgery alone. Non-surgical options, like ovarian suppression and oocyte cryopreservation, were not utilized frequently.
- Access to provider counseling was relatively equitable across demographic groups

Limitations

- Fertility counseling was captured through retrospective chart review. If a provider discussed fertility verbally but did not formally document it, that encounter would not be captured in our analysis. This likely underestimates the true rate of counseling conversations.

Conclusion

- Adolescents and young adults diagnosed with ovarian germ cell or sex cord stromal tumors demonstrate a high rate of fertility preservation utilization
- Younger age and nulligravid status were the strongest predictors of fertility preservation use, which suggests that reproductive intent and life stage play a role in patients' decision-making and/or provider counseling.
- Demographic factors including race, insurance status, and cancer stage did not influence whether patients received fertility preservation counseling, indicating relatively equitable access to provider counseling

Next Steps

Minimal uptake of non-surgical fertility preservation methods in this cohort highlights a potential need for more counseling protocols that specifically address oocyte cryopreservation and ovarian suppression as viable options alongside surgery. Future studies should aim to better characterize barriers to non-surgical preservation.

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