

# Prevalence of childhood growth hormone deficiency in survivors of pediatric intracranial germ cell tumors

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## Background:

As the prevalence of survivors of childhood cancer increases, we have a greater need for understanding late effects related to treatment. Growth hormone deficiency (GHD) is among the most common late effects experienced by survivors.

## Objectives:

The purpose of this study is to examine the prevalence of GHD in survivors of pediatric intracranial germ cell tumors (iGCT), a group that has multiple risk factors for developing GHD due to exposure to cranial radiation, chemotherapy, and surgery. To our knowledge, late effects in this group has not been examined.

## Methods:

- Participants were enrolled in the Germ Cell Tumor Epidemiology Study (GaMETES)
- Eligibility criteria included diagnosis with a germ cell tumor in any location at age 0-19 years during 2008-2015
- We are following the cohort to evaluate outcomes and late effects by abstracting data from the medical record

Figure 1: Selection of cases for analysis



## Conclusions:

- 65.9% (27 of 41) of iGCT survivors have GHD
- Younger age and female sex is correlated with higher rates of GHD
- Odds of having GHD is higher among those treated with 31-54 Gy than those treated with <30 Gy radiation, though this did not reach statistical significance
- There was no difference in rates of GHD amongst chemotherapy treatment groups
- Median time to GHD was between 0.71-1.57 years from cancer diagnosis

Table 1: Patient characteristics

	GHD (27)	No GHD (14)	p-value
Sex			0.08
Male	16	12	
Female	11	2	
Age at diagnosis			0.15
Age 0-9.9	7	1	
Age 10-20	20	13	
Race			0.63
Non-Hispanic White	20	1	
Black	1	0	
Asian/Pacific Islander	2	1	
Other/Mixed	1	2	
Hispanic	1	1	
Diagnosis			0.43
Germinoma (n=29)	18	11	
NGGCT (n=12)	9	3	

Figure 2: Growth Hormone Deficiency by Cumulative Radiation Doses

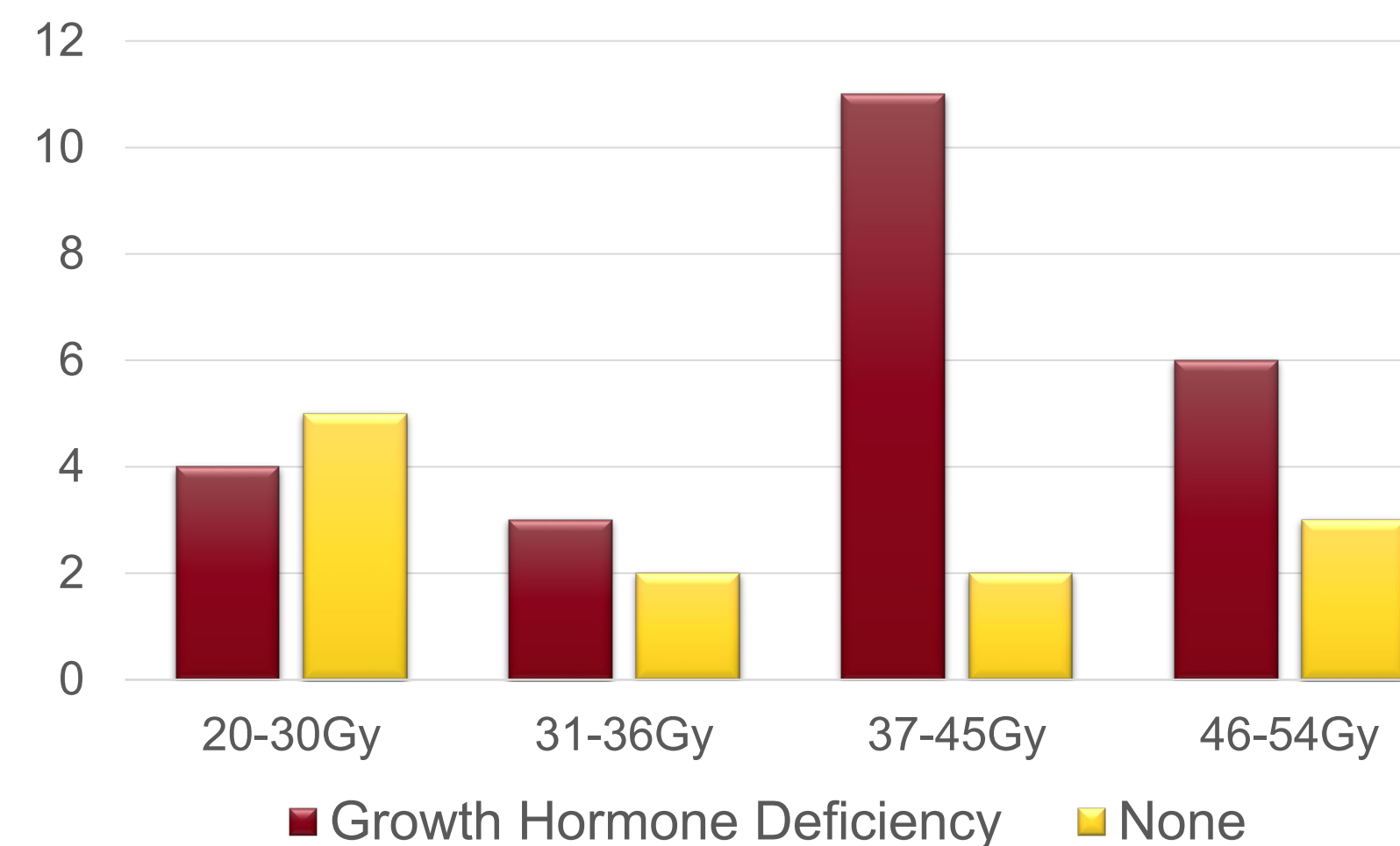


Figure 2: GHD by cumulative radiation doses

Table 2: Results from logistic regression model for GHD as the outcome

	Odds Ratio	95% CI	p-value
Diagnosis (ref germinoma)			
NGGCT	1.83	0.41-8.27	0.43
Age (continuous)			
	0.78	0.62-0.97	0.03
Sex (ref = male)			
Female	4.13	0.77-22.18	0.10
Treatment Group (ref = no chemo)			
CE	0.48	0.09-2.52	0.94
CE and IE	1.71	0.13-22.51	0.97
Transplant	1.71	0.13-22.51	0.97
XRT ranges (ref 20-30Gy)			
31-36 Gy	7.85	0.36-170.46	0.37
37-45 Gy	7.60	0.81-71.25	0.21
46-54 Gy	1.22	0.12-12.83	0.31

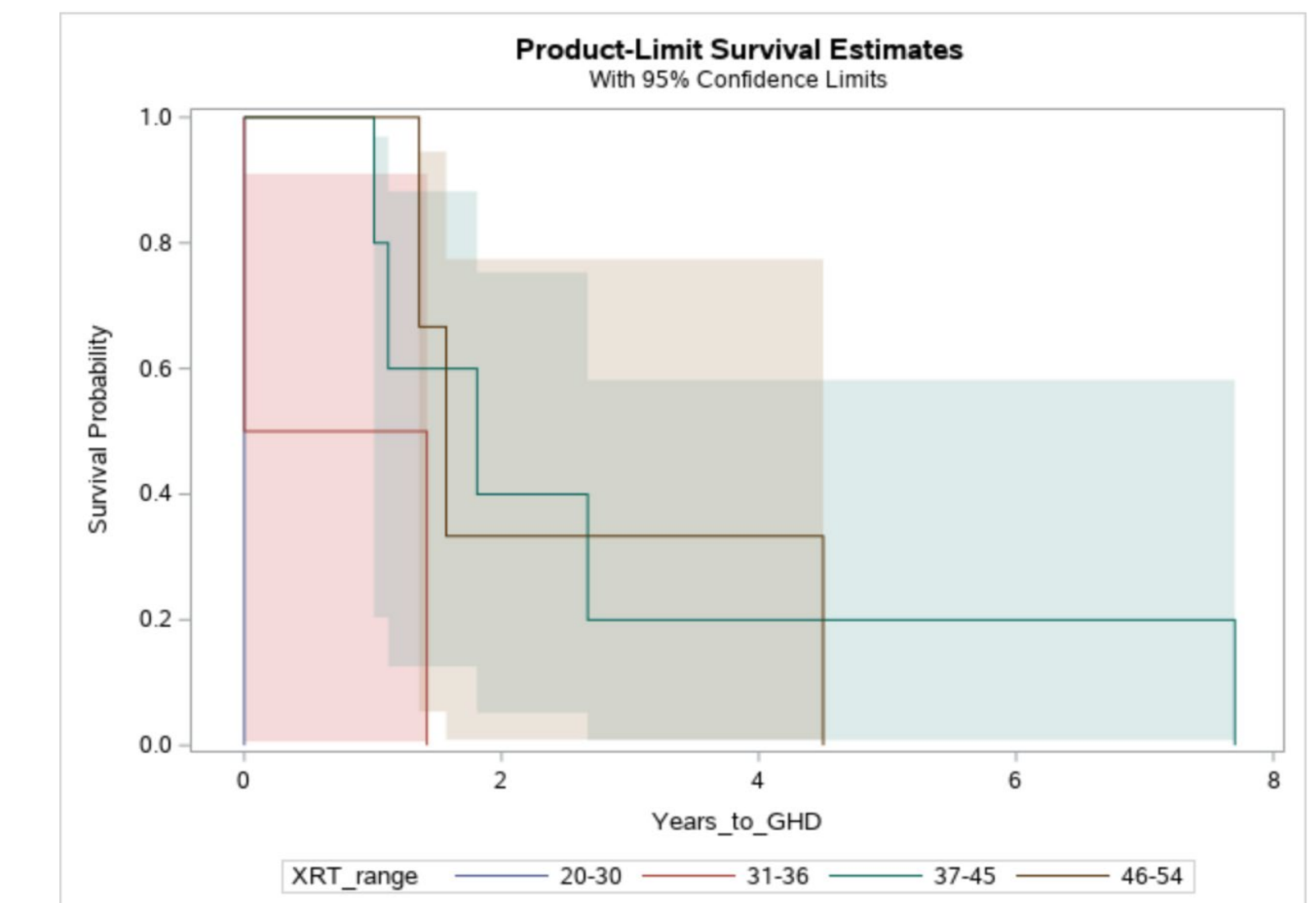


Figure 3: Kaplan Meier Curve for time to GHD by cumulative radiation doses

