

Long-term Diabetes Risk among Cervical Cancer Survivors in a Population-Based Cohort Study

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INTRODUCTION

- In the United States, there are approximately 283,000 cervical cancer survivors alive in 2019.
- In 2018, more than 30 million individuals had diabetes in the United States.
- Diabetes history is associated with poorer prognosis among cervical cancer survivors, but diabetes risk after cancer diagnosis has not been studied, to our knowledge.

OBJECTIVE

- To investigate long-term diabetes risk among cervical cancer survivors compared to the general population.
- To assess risk factors for type II diabetes among cervical cancer survivors.

METHODS

- Data source:** The Utah Population Database, the SEER program Utah Cancer Registry, electronic medical records, driver's License data, and birth and death certificates.
- Study Population:** Cervical cancer patients diagnosed from 1996 to 2016 in Utah. Each cervical cancer patient (n=1,115) was matched with up to 5 women from the general population (n=4,949) by birth year, and birth state (Utah/non-Utah).
- Exposure:** Diagnosis of cervical cancer.
- Outcome:** Risk of developing diabetes after cervical cancer diagnosis among cervical cancer survivors compared to the general population.
- Outcome assessment:** New diabetes after ovarian cancer diagnosis were considered as a diagnosis of diabetes. ICD-9 and ICD-10 codes were used to identify diagnosis of diabetes.
- Statistical analysis:** Cox proportional hazards models were used to estimate adjusted hazard ratios (HR) and 95% confidence intervals (CI) for diabetes at 0–1 year, >1–5 years, and >5 years after cancer diagnosis.

RESULTS

Figure 1. Risk of diabetes mellitus (DM) among cervical cancer survivors compared to the general population

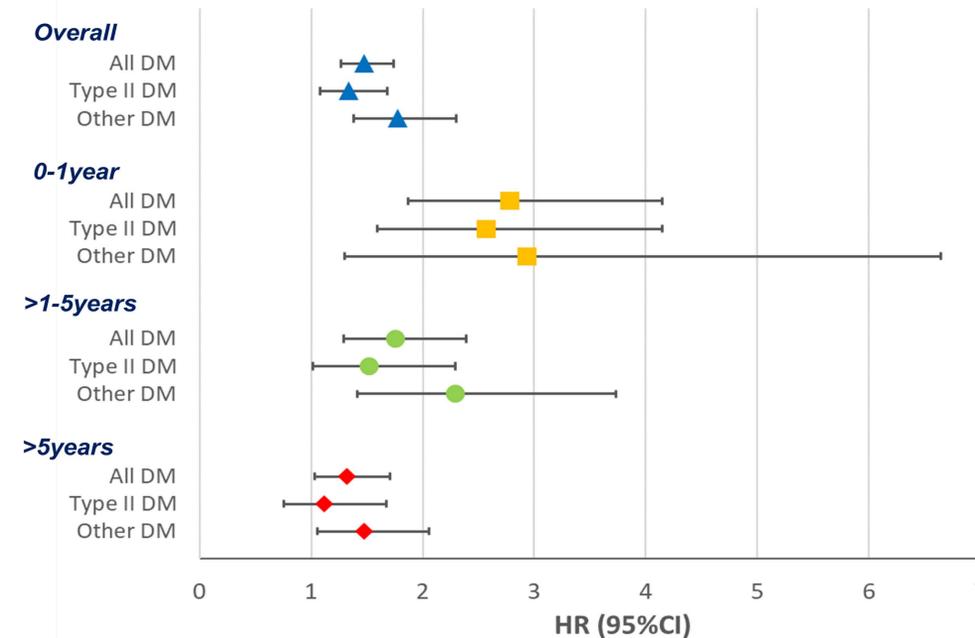


Table 1. Risk factors for type II diabetes among cervical cancer survivors in a population-based cohort in Utah, by years since cancer diagnosis

	Overall	0-1 year	>1-5 years	>5 years
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
Baseline BMI (kg/m²)				
<18.5	0.96 (0.23, 3.98)	-	2.71 (0.61, 12.14)	-
18.5-24.9	Reference	Reference	Reference	Reference
25-29.9	1.47 (0.88, 2.46)	2.46 (0.92, 6.62)	1.62 (0.69, 3.81)	0.95 (0.38, 2.39)
30+	3.50 (2.19, 5.59)	7.05 (2.94, 16.91)	2.77 (1.19, 6.49)	2.66 (1.19, 5.95)
P-trend	< 0.001	< 0.001	0.06	0.02
Age at diagnosis				
<40	Reference	Reference	Reference	Reference
40-49	2.27 (1.32, 3.90)	3.15 (0.85, 11.67)	0.97 (0.36, 2.63)	3.78 (1.71, 8.38)
50-59	3.07 (1.70, 5.55)	4.96 (1.36, 18.13)	3.41 (1.42, 8.21)	1.32 (0.34, 5.05)
60-69	1.11 (0.41, 3.01)	0.92 (0.09, 9.00)	1.43 (0.37, 5.51)	0.92 (0.11, 7.45)
70-79	2.87 (1.03, 8.06)	8.50 (1.78, 40.48)	-	5.58 (0.63, 49.31)
>80	3.05 (0.69, 13.54)	9.75 (1.51, 62.86)	-	-
Race				
White	Reference	Reference	Reference	Reference
Other	1.97 (1.12, 3.46)	3.12 (1.35, 7.25)	1.57 (0.55, 4.44)	1.31 (0.40, 4.28)

RESULTS

- Cervical cancer survivors had an increased risk of any type of diabetes compared to the general population in the first year after cancer diagnosis.
- Elevated risks for all diabetes and other diabetes were observed across all the follow up periods (>1-5 years, >5 years) among cervical cancer survivors compared to the general population, while the higher risk for type II diabetes did not persist >5 years after cancer diagnosis.
- Higher BMI and older age at cancer diagnosis were significant risk factors for type II diabetes among cervical cancer survivors.

DISCUSSION

- This study is the first study that examined risk of subsequent diabetes after cervical cancer diagnosis in comparison with a general population.
- Strengths** of our study include the large population-based sample and the use of electronic medical records collected from two of the biggest medical care providers in Utah.
- Limitations** of our study include limited information about cancer treatments drugs and potential confounders (e.g. physical activity).

CONCLUSION

- Cervical cancer survivors had an increased risk for diabetes compared with women in the general population.
- Obesity and older age at cancer diagnosis were strong risk factors for type II diabetes among cervical cancer survivors.
- Our findings suggest long term monitoring for diabetes as well as obesity prevention among cervical cancer survivors is needed.

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