

High risk of anal cancer in individuals treated for anal condylomas in a population-based transversal study, Québec (Canada), 1990 to 1999

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Background

Most cases of anogenital warts or condylomas are caused by the human papillomavirus (HPV) types 6 and 11, while other types, mainly 16 and 18, are associated with cancers. It is estimated that more than 80% of anal cancers may be linked to HPV infection. The incidence of this cancer has been on the rise in several places worldwide, including in Quebec.

Figure 1. Québec, Canada



Objective

The objective of this study was twofold: (1) to estimate the burden of HPV infection in the anal area by calculating the number of treatments and the number of individuals treated for anal condylomas in a population-based cohort of Québécois (Canada) between 1990 and 1999 and (2) to calculate the risk of anal cancer in this population.

Methods

Medicare claims linked to records in the Quebec tumour registry were used to estimate the risk of having a diagnosis of anal cancer after having received treatment for anogenital warts. Standardize incidence ratio (SIR) of anal cancer was calculated by using the number of anal cancer found in this population and the expected number for anal cancer which was derived from incidence rate among Quebec general population. Confidence interval at 95% for the SIR was also calculated.

Results

From 1990 to 1999 there were 58,461 treatments for anal condylomas performed on 20,825 patients.

- The proportion of men was 59%, this percentage was higher in the Metropolitan Montreal area (66%); and almost half (46%) of all cases were treated in this area;
- Males were treated more frequently for condylomas than females (70%), in Montreal 78% of patients were male;
- Four out of five patients were between the ages of 15 and 44;
- 15 cases of anal cancer were reported to the provincial cancer registry during the study period, 14 of them in Montreal;
- The anal cancer incidence rate in the general population was estimated to be 0.67 per 100,000, resulting in an expected number of anal cancers of 0.14. The overall standardized incidence ratio was 108 and in the Montreal area it was 218

Results (continued)

Table 1. Number of individuals treated and number of treatments for anal condyloma, Québec (Canada), 1990-1999

Age group (years)	No. of individuals						No. of treatments					
	Overall		Females		Males		Overall		Females		Males	
	N	%	N	%	N	%	N	%	N	%	N	%
0	4	0.0	3	0.0	1	0.0	5	0.0	4	0.0	1	0.0
1-4	163	0.8	84	1.0	79	0.6	200	0.3	101	0.6	99	0.2
4-9	115	0.6	65	0.8	50	0.4	150	0.3	89	0.5	61	0.1
10-14	46	0.2	30	0.4	16	0.1	79	0.1	60	0.3	19	0.0
15-19	971	4.7	798	9.4	173	1.4	1974	3.4	1581	9.2	393	1.0
20-24	3489	16.8	2084	24.7	1405	11.4	9551	16.3	4898	28.5	4653	11.3
25-29	4207	20.2	1626	19.2	2581	20.9	12816	21.9	3533	20.6	9283	22.5
30-34	3759	18.1	1074	12.7	2685	21.7	11919	20.4	2220	12.9	9699	23.5
35-39	2965	14.2	848	10.0	2117	17.1	9410	16.1	1535	8.9	7875	19.1
40-44	1937	9.3	617	7.3	1320	10.7	5747	9.8	1114	6.5	4633	11.2
45-49	1307	6.3	495	5.9	812	6.6	2933	5.0	876	5.1	2057	5.0
50-54	781	3.8	286	3.4	495	4.0	1766	3.0	511	3.0	1255	3.0
59-60	461	2.2	182	2.2	279	2.3	897	1.5	294	1.7	603	1.5
60-64	246	1.2	99	1.2	147	1.2	389	0.7	148	0.9	241	0.6
65-69	183	0.9	69	0.8	114	0.9	314	0.5	115	0.7	199	0.5
70-74	117	0.6	49	0.6	68	0.5	215	0.4	57	0.3	158	0.4
75-79	37	0.2	16	0.2	21	0.2	49	0.1	21	0.1	28	0.1
80-84	28	0.1	16	0.2	12	0.1	32	0.1	16	0.1	16	0.0
85+	9	0.0	6	0.1	3	0.0	11	0.0	6	0.0	5	0.0

Area of residence

Area of residence	No. individuals	%	No. treatments	%
Metropolitan Montreal	9630	46.2	3263	38.6
Other region	9805	47.1	4580	54.2
Unknown region	1390	6.7	604	7.2
Overall	20825	100.0	8447	100.0

6367/9630=66% (Metropolitan Montreal)
 26476/34098=78% (Metropolitan Montreal)

Table 2. Risk of anal cancer among individuals treated for anal condyloma, Québec (Canada), 1990-1999

Gender	No. anal cancers	Expected no. cases	SIR	95% C.I.
Female	4	0.05	73.4	19.1-163.2
Male	11	0.08	130.7	64.9-219.4
Areas of residence				
Montreal	14	0.06	217.4	118.4-346.1
Other areas	1	0.07	15.3	0.01-59.8
Overall	15	0.14	107.7	60.1-169.1

Conclusion

- Anal condylomas were associated with significant clinical burden; on average over 2000 patients were treated every year and the average number of treatments per patient was 2.8 during the study period;
- Patients treated for anal condylomas presented a much higher risk of anal cancer than the general population. Prospective studies that include HPV detection and genotyping are needed to ascertain a possible causality link between HPV 6 and 11 and anal cancer, or simply document an association based on shared risk factors as sexual behaviour and having multiple sexual partners;
- An HPV vaccine that includes protection against HPV 6 and 11 has great potential for reducing the burden of anal disease.