

# HEAD AND NECK CANCER IN BLACKS

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**Our experience at University Hospitals of Cleveland (UHOC), Cuyahoga County, Ohio, led us to suspect an increased incidence of head and neck cancer in blacks. We reviewed our tumor registry records from 1975 to 1989 analyzing for age, sex, race, and head and neck site of disease. Head and neck cancers comprised 6.1% of all cancers at UHOC. This is in comparison with 3.7% of all cancers in Cuyahoga County and an estimated 5.5% nationally. This higher proportion of head and neck cancer was observed primarily in black men and women in whom these cancers made up 7.7% of all cancers compared with 5.7% in whites. Both black men and women had a higher percentage of these cancers out of all cancers for their respective sex and race than whites. For all head and neck cancer sites except the salivary glands, blacks were observed to be two to four times more likely than whites to be diagnosed before the age of 50 years ( $P < .01$ ). These findings thus substantiated an increased incidence and earlier age of onset of head and neck cancers in blacks compared with whites. (*J Natl Med Assoc.* 1994;86:530-534.)**

**Key words** • head and neck cancer • blacks

Cancers of the head and neck will account for only 5% of the estimated 1 040 000 new cases of cancer (excluding nonmelanoma skin cancer) in the United States in 1990 and roughly 2.3% of the estimated

510 000 cancer deaths. Cancers of the oral cavity and pharynx (including the salivary glands), which comprise nearly 70% of head and neck cancer, will account for about 30 500 new cases, with about 1400 new cases in the state of Ohio, and a 2:1 male to female ratio.<sup>1,2</sup> Cancers of the larynx, which make up 25% of head and neck cancers, will account for about 12 300 new cases nationwide, with a 4:1 male to female ratio.<sup>1</sup> These values correspond to annual incidence rates of 10.9/100 000 population for oral cavity and pharynx cancers, 4.2/100 000 for laryngeal cancer, and 16.7/100 000 for all head and neck cancer.<sup>3</sup>

In black Americans, the oral cavity is the sixth most common site of cancer occurrence, with an estimated 3900 new cases in 1991, 3500 of which were in black men. Overall mortality for cancers of the oral cavity and pharynx increased 70% in black men and 38% in black women from the period 1955 to 1957 to the period 1985 to 1987. These tumors were the fourth most common cause of cancer mortality in black males between the ages of 35 and 54 years in 1988.<sup>4</sup> An estimated 1500 cases of laryngeal cancer occurred in 1991 in black men with mortality from these tumors, increasing 110% in black men and 212% in black women from the period 1955 to 1957 to the period 1985 to 1987.<sup>4</sup>

Data on national incidences of cancer by race have been obtained primarily from two sources: Third National Cancer Survey (TNCS) of the National Cancer Institute from 1969 to 1971, and the Surveillance, Epidemiology, and End Results (SEER) program of the National Cancer Institute from 1973 to 1987. The results from these two studies regarding incidence of head and neck cancer by race and sex are shown in Tables 1 and 2.<sup>5,6</sup> The TNCS data were taken from six Standard Metropolitan Statistical areas in the United States: Atlanta, Georgia; Birmingham, Alabama; Dallas-Ft Worth, Texas; Detroit, Michigan; Pittsburgh, Pennsylvania; and San Francisco-Oakland, California, which had a combined black population of 2 114 848,

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or 9.4% of the US black population in 1970. Other sources also have made estimates of cancer incidence by race. These results are shown in Table 3.<sup>2,7,8</sup>

These studies show the overall higher incidence rates of head and neck cancers in black males compared to white males and all females. Studies have shown as well that the probability of developing oral cavity and pharyngeal cancers has risen rapidly in black males between 1975 and 1985, in contrast to the smaller increases seen in white males and both black and white females.<sup>9</sup> Unlike the racial differences seen in men, differences in incidence of head and neck cancer in black and white women are not as evident.<sup>2,6</sup>

Head and neck neoplasms have been found to affect primarily older patients, with a mean age at diagnosis of 57 to 59 years and with 80% of patients having diagnosis made between the ages of 50 and 80 years.<sup>10,11</sup> However, observations of age at diagnosis in different races have shown that blacks have a significantly higher proportion of patients in whom diagnosis is made at an earlier age.<sup>12,13</sup>

Our experience at University Hospitals of Cleveland (UHOC), Cuyahoga County, Ohio, has led us to suspect the possibility of an increased incidence of head and neck cancer in blacks, as well as its occurrence at earlier ages in black patients. This report provides a summary of head and neck cancer patients seen at UHOC between 1975 and 1989 and evaluates whether such impressions proved real.

## METHODS

Data were compiled from the tumor registry records at UHOC. The patients included in this study were diagnosed or treated for cancers of the oral cavity, pharynx, salivary glands, and larynx at UHOC between January 1975 and December 1989. The data were tabulated for each site of disease, considering age at diagnosis and date of diagnosis, by race and sex. Other data used to compare with our hospital figures included regional and national sources.<sup>2,3</sup>

Fisher's exact test was used to compare the incidence of head and neck cancer in younger patients ( $\leq 49$  years of age) and in older patients ( $\geq 50$  years of age) for blacks and whites. The same test also was conducted in female and male groups. The odds of having the diagnosis of head and neck cancer in younger blacks compared with younger whites were determined using the Mantel-Haenzel relative risk estimate. All tests were two-sided and conducted with a .05 level of significance. Data were analyzed using the Statistical Analysis System software package.<sup>14,15</sup>

**TABLE 1. AVERAGE ANNUAL AGE-ADJUSTED (1950 US STANDARD) INCIDENCE RATES PER 100 000 POPULATION BY RACE AND SEX, 1969 to 1971\***

	White		Black	
	Male	Female	Male	Female
Oral cavity and pharynx	17.2	5.8	12.7	5.0
Lip	3.2	0.3	0.2	0.1
Tongue	3.4	1.1	3.4	1.2
Gum and mouth	4.1	1.9	3.6	1.5
Tonsil	1.9	0.6	1.6	0.5
Salivary gland	1.2	1.0	1.2	1.0
Nasopharynx	0.8	0.3	0.6	0.3
Other pharynx	2.6	0.5	2.2	0.4
Larynx	8.2	1.0	7.9	1.0

\*Based on data from Young et al.<sup>5</sup>

## RESULTS

Head and neck cancers comprised 6.1% of all cancers at UHOC from 1975 to 1989. This is in comparison with 3.7% of all cancers in Cuyahoga County in 1987<sup>2</sup> and an estimated 5.5% nationally.<sup>3</sup> This higher proportion of head and neck cancer was observed primarily in black men and women, in whom these cancers made up 7.7% of all cancers, compared with 5.7% in whites. By sex, head and neck cancers comprised 9% of all cancers in men and 35% of all cancers in women (Table 4). More than two thirds of all head and neck cancers were in males, correlating roughly to a 2:1 predominance, which was observed for both races. For cancers of the larynx in whites, a greater than 3:1 male to female ratio was observed. In Cuyahoga County, the white male to female ratio was 2:1, but black male to female ratio was 3:1. An exception to this general male predominance was seen with salivary gland cancers. From 1985 to 1989, the number of salivary gland tumors in both white and black females outnumbered those in males.

While nearly 20% of all cancers were in blacks for both UHOC and Cuyahoga County, 25% and 28.6% of head and neck cancers were in blacks at UHOC and Cuyahoga County, respectively (Table 5). Both black men and women have a higher percentage than whites of these cancers out of all cancers for their respective sex and race. This increase is most noticeable in black men; 11.9% (or more than 1 out of 9) of black men with cancer will have a tumor of the head and neck (Table 6). In comparison, 8.3% (or 1 out of 12) of cancers in white men are of the head and neck. Increased percentages also are observed for black women compared with white women, although

**TABLE 2. AVERAGE ANNUAL AGE-ADJUSTED (1970 US STANDARD) INCIDENCE RATES PER 100 000 POPULATION BY RACE AND SEX, 1973 to 1987\***

	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Oral cavity and pharynx	16.8	6.5	11.1	24.5	7.0	14.7	17.3	6.5	11.3
Larynx	8.4	1.6	4.6	12.7	2.6	7.0	8.4	1.6	4.7
Nasal cavity, sinuses, ear	0.8	0.5	0.6	0.9	0.4	0.6	0.8	0.5	0.6

\*Based on data from Gloeckler et al.<sup>6</sup>

**TABLE 3. VARIOUS INCIDENCE RATES PER 100 000 POPULATION FOR HEAD AND NECK CANCERS, BY RACE**

	White			Black		
	Male	Female	Total	Male	Female	Total
Oral cavity, United States, 1977 to 1983*†	—	—	11.3	—	—	15.0
Oral cavity, Atlanta, Georgia, 1975 to 1985†	4.9	2.4	—	8.7	2.3	—
Oral cavity and pharynx, Cuyahoga County, Ohio, 1987 <sup>2</sup> †	12.2	4.6	—	19.1	7.9	—
Larynx, United States <sup>8</sup>	2.1	0.3	—	3.9	0.6	—
Larynx, Cuyahoga County, Ohio, 1987 <sup>2</sup> †	7.7	2.7	—	16.5	2.1	—

\*Age-adjusted (1970 US standard) cancer incidence rates per 100 000 population by race and cancer site, both sexes, 1977 to 1983, unpublished data, National Cancer Institute.

†Age-adjusted to 1970 US standard.

not as great as in males. A black woman with cancer seen at UHOC is approximately 1.2 times as likely to have a cancer of the head and neck than a white woman with cancer; this increased likelihood is 1.4 times for black men with cancer at UHOC versus white men with cancer. The data on Cuyahoga County show even larger differences than UHOC.<sup>2</sup>

The total number of head and neck cancers seen at UHOC in both black men and women increased more than 75% from the period 1975 to 1979 to the period 1980 to 1984, while head and neck cases in whites actually dropped 10%. In the most recent period from 1985 to 1989, the number of white and black head and neck cancers has remained relatively steady from the previous 5-year period (Table 4).

For all head and neck cancer sites, and for both sexes combined, blacks were found to have diagnosis at a significantly earlier age than whites ( $P < .01$ ) (Table 7). Using the Mantel-Haenzel method to calculate relative risk, blacks were found to be three times more likely to have disease before the age of 50 years. When observed by each individual cancer site, the same differences were observed ( $P < .01$ ) for cancers of the oral cavity, pharynx, and larynx, with relative risk of earlier diagnosis for these sites being three, two, and four times greater in blacks, respectively. These differences were not observed with statistical significance with salivary

gland cancers. The same findings were obtained when the data were divided by sex, with black women and men both three times more likely to have the diagnosis before the age of 50 years for all sites combined than their white counterparts.

**DISCUSSION**

Head and neck cancers comprise a greater percentage of all cancers at UHOC than is observed nationally, and locally within Cuyahoga County. This likely represents the presence of an active Department of Otolaryngology—Head and Neck Surgery, which is a major recipient of patient referrals with this type of disease from the surrounding community. The fact that UHOC is a major referral center may explain the higher percentage of head and neck cancers compared with percentages for all of Cuyahoga County, but it does not explain why head and neck cancers form a greater percentage of all cancers in blacks versus whites. This difference is more likely reflective of the increased incidence of these types of cancer in blacks.

The dramatic rise in head and neck cancer cases seen in blacks from the period 1975 to 1979 to the period 1980 to 1984 may be attributed to an actual increase in incidence in this group, a change in hospital patient demographics, or a change in the case recording practices in the interval periods. The number of these

**TABLE 4. SUMMARY OF ALL UNIVERSITY HOSPITALS OF CLEVELAND HEAD AND NECK CANCER CASES BY DATE OF DIAGNOSIS AND COMPARISON WITH CANCER CASES FROM ALL SITES**

Site	White			Black			Combined Total
	Male	Female	Total	Male	Female	Total	
<b>Diagnosis Date 1975 to 1979</b>							
Oral cavity	74	38	112	14	6	20	132
Salivary gland	8	6	14	1	0	1	15
Pharynx	47	29	76	11	6	17	93
Larynx	93	24	117	22	7	29	146
Total head and neck	222	97	319	48	19	67	386
All cancers	2139	2550	4689	497	606	1103	5792
<b>Diagnosis Date 1980 to 1984</b>							
Oral cavity	69	39	108	28	12	40	148
Salivary gland	11	6	17	3	1	4	21
Pharynx	48	22	70	26	10	36	106
Larynx	69	21	90	28	12	40	130
Total head and neck	197	88	285	85	35	120	405
All cancers	2571	2804	5375	648	703	1351	6726
<b>Diagnosis Date 1985 to 1989</b>							
Oral cavity	63	38	101	28	15	43	144
Salivary gland	9	12	21	0	2	2	23
Pharynx	42	24	66	22	11	33	99
Larynx	86	27	113	27	11	38	151
Total head and neck	200	101	301	77	39	116	417
All cancers	2764	3170	5934	616	883	1499	7433

Comparison of the above data for all years (1975 to 1989): Head and neck cancers 6.1% of all cancers; male head and neck cancers 68.3% of all head and neck cancers; female head and neck cancers 31.2% of all head and neck cancers; male head and neck cancers 9.0% of all male cancers; and female head and neck cancers 3.5% of all cancers.

**TABLE 5. PERCENTAGE OF WHITE AND BLACK, AND MALE AND FEMALE PATIENTS FOR ALL CANCERS, AND FOR HEAD AND NECK CANCERS AT UNIVERSITY HOSPITALS OF CLEVELAND (UHOC) AND IN CUYAHOGA COUNTY, OHIO\***

	White			Black		
	Male	Female	Total	Male	Female	Total
All cancers, UHOC, 1975 to 1989	37.3	42.6	79.9	8.8	10.9	19.7
All cancers, UHOC, 1985 to 1989	37.2	42.6	79.8	8.3	11.9	20.2
All cancers, Cuyahoga County, 1987	36.7	43.0	79.7	10.2	9.5	19.6
Head and neck cancers, UHOC, 1975 to 1989	51.0	23.6	74.6	17.3	7.7	25.0
Head and neck cancers, UHOC, 1985 to 1989	48.0	24.2	72.2	18.5	9.4	27.8
Head and neck cancers, Cuyahoga County, 1987	47.0	23.3	70.3	21.4	7.1	28.6

\*Based on data from Debanne et al.<sup>2</sup>

cases in blacks has remained relatively steady from the period 1980 to 1984 to the period 1985 to 1989.

Earlier occurrence of disease in blacks has been noted by Slotman et al<sup>12</sup> and Wasfie.<sup>13</sup> Possible reasons for this

observation include different etiologies of disease in the different populations; differences in susceptibility, pathogenesis, or coexisting illnesses that lead to a more rapid development of disease; or differences in environmental

**TABLE 6. PERCENTAGE OF HEAD AND NECK CANCER OUT OF ALL CANCERS FOR THE SAME SEX AND RACE, AND OUT OF ALL CANCERS, AT UHOC, 1975 to 1989, AND IN CUYAHOGA COUNTY, OHIO FOR THE SAME SEX AND RACE, 1987\***

	White Head and Neck Cancer			Black Head and Neck Cancer		
	Male	Female	Total	Male	Female	Total
All cancers, UHOC, same sex and race	8.3	3.4	5.7	11.9	4.2	7.7
All cancers, UHOC	3.1	1.4	4.5	1.0	0.5	1.5
All cancers, Cuyahoga County, Ohio, same sex and race	4.7	2.0	3.3	7.8	2.8	5.4

\*Based on data from Debanne et al.<sup>2</sup>

**TABLE 7. PERCENTAGE OF HEAD AND NECK CANCER PATIENTS WITH DIAGNOSIS MADE PRIOR TO AGE 50**

	White			Black			P Value
	Male	Female	Total	Male	Female	Total	
Oral cavity	17	7	13	37	24	33	<0.01
Salivary gland	14	17	16	50	33	43	>0.05
Pharynx	18	12	16	31	26	29	<0.01
Larynx	5	14	7	16	33	21	<0.01
Total	12	11	11.7	28	39	31	<0.01

factors such as nutrition or early age of exposure to substances such as tobacco and alcohol, which convey a known increased risk of developing disease.

The scope of this study does not include data on disease stages at diagnosis or on survival. Other studies have observed that younger patients, regardless of race, are diagnosed more frequently at a later stage of disease and have a poorer prognosis and lower survival rate.<sup>12</sup>

**SUMMARY**

This study reveals an increased percentage of head and neck cancer patients out of all cancer patients at our institution compared with local and US figures. This increased percentage of head and neck cancer is observed most markedly in black males versus white males, but also is greater in black females versus white females. We have observed a three times greater likelihood for head and neck cancers to develop in blacks before the age of 50 years compared with whites.

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