ORIGINAL ARTICLE

Antigua/Barbuda Cancer Mortality Study

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ABSTRACT

Objective: *To determine the cancer mortality rates in Antigua and Barbuda in an effort to enhance the profile of the country's cancer burden.*
Method: *Available data for 2001 to 2005 were analysed to obtain cancer mortality rates. Analysis was also made of the mortality/incidence ratios.*
Results: *There were 354 cancer deaths – 208 males (age standardized rates [ASR] 111.9) and 146 females (ASR 66.3). The main causes were prostate (ASR 53) and breast (ASR 22). The mortality rates for cancers of the lung (ASR 5.09 males, 2.49 females) and brain/nervous system (ASR 0.45 males, 1.7 females) were significantly lower than those in the Caribbean.*
Conclusion: *Mortality rates were highest for sex-specific cancers, accounting for more than 50% of cancer deaths.*

Keywords: Antigua and Barbuda, cancer, mortality/incidence ratio, mortality rate

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INTRODUCTION

The results of the Antigua/Barbuda Cancer Incidence Study for the period 2001 to 2005 have been previously reported (1). The study presented the distribution of cancer incidence by age and gender. In an effort to complete the country's cancer profile, an assessment was made of the causes of cancer mortality for the same period.

SUBJECTS AND METHOD

Data were obtained from the records of the Health Information Division of the Ministry of Health (unpublished data), covering the five-year period January 1, 2001 to December 31, 2005. Certain cancers were grouped, *eg* upper respiratory and alimentary includes International Classification of Diseases-10th revision (ICD-10) codes 2 to 14; bowel includes ICD codes 17 to 19 (2). Crude and age standardized rates (ASR) were calculated and compared with data published by the International Agency for Research on Cancer (IARC) GLOBOCAN reports (3).

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The causes of morbidity and mortality were compared to obtain a profile of the cancer burden, and the mortality/incidence ratios were analysed.

RESULTS

A total of 354 cancer deaths were recorded between 2001 and 2005: 208 males (ASR 111.9) and 146 females (ASR 66.3). The population of Antigua and Barbuda in 2003, which is the mid-year between 2001 and 2005, stood at 79 781 (4). The breakdown by year and gender is presented in Table 1. The

Table 1: Number of cancer deaths in Antigua/Barbuda, 2001–2005

	Number of Cases		
Year of death	**Women**	**Men**	**Total**
2001	37	45	82
2002	28	33	61
2003	28	54	82
2004	28	39	67
2005	25	37	62
Total	**146**	**208**	**354**

data showed no significant pattern of variation in the annual number of deaths. ($\chi^2 = 6.198$, $p > 0.184$).

Figure 1 shows that cancer mortality in the age group under 55 years was higher in women than in men. This is reversed in the 55-year and older age group.

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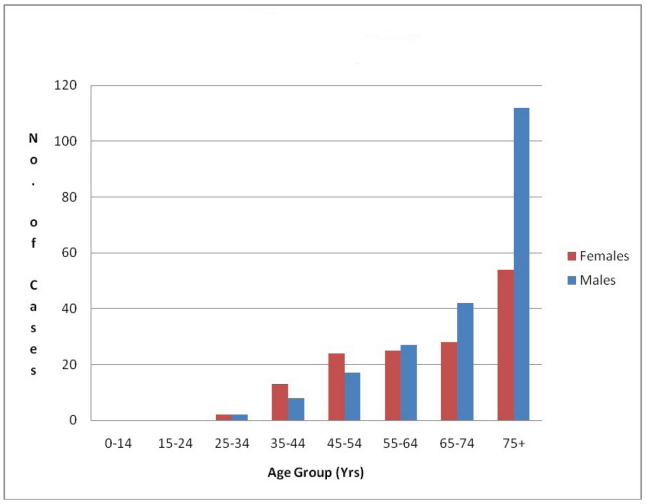

Fig. 1: Age distribution of cancer mortality in males and females.

The mean age at death was 66.6 years in women (Fig. 2; lowest for cervical cancer, 57.9 years and highest for oesophageal cancer, 84.5 years) and 72.0 years in men (Fig. 3; lowest for lymphomas, 54.6 years and highest for prostate cancer, 79.0 years).

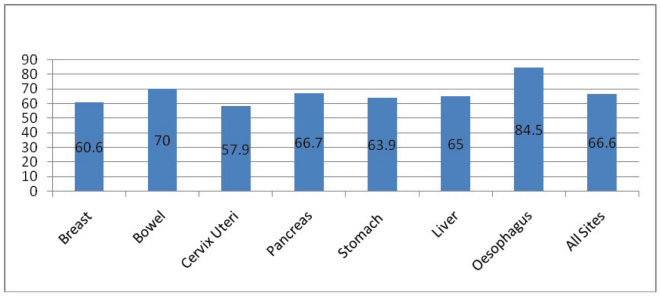

Fig. 2: Mean age (years) of cancer death in women, 2001–2005.

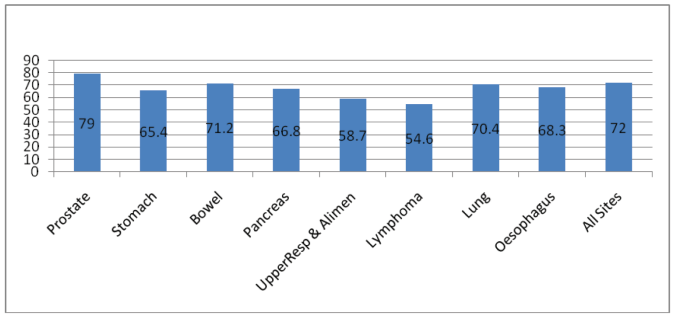

Fig. 3: Mean age (years) of cancer death in men, 2001–2005.

The distribution of cancer deaths by causes is given in Tables 2 and 3. Mortality rates were highest for sex-specific cancers, accounting for more than 50% of cancer deaths. The main causes of cancer deaths in men were: prostate (ASR 53), stomach (ASR 11) and bowel (ASR 9.7), and in women: breast (ASR 22), bowel (ASR 7.3) and cervix uteri (ASR 6.8). The following cancers showed much higher mortality rates in men than in women: upper respiratory and alimentary, oesophagus, lung and stomach, representing the respiratory and upper end of the alimentary tract. Mortality rates

Table 2: Cancer deaths in men, Antigua/Barbuda, 2001–2005

Site	Deaths		Deaths per 100 000 per year	
	N	%	Crude	ASR
Prostate	108	51.92	57.21	53.27
Stomach	20	9.62	10.59	11.09
Bowel	18	8.65	9.53	9.68
Pancreas	10	4.81	5.30	5.08
Upper respiratory and alimentary	9	4.33	4.77	6.22
Lymphoma	9	4.33	4.77	5.38
Lung	8	3.85	4.24	5.09
Oesophagus	6	2.88	3.18	3.78
Liver	6	2.88	3.18	3.40
Bone	3	1.44	1.59	2.54
Skin	3	1.44	1.59	1.45
Soft tissue	3	1.44	1.59	1.89
Not specified	2	0.96	1.06	1.45
Brain	1	0.48	0.53	0.45
Kidney and bladder	1	0.48	0.53	0.63
Metastatic carcinoma	1	0.48	0.53	0.52
Total (all sites)	**208**	**100.00**	**110.18**	**111.89**

Table 3: Cancer deaths in women, Antigua/Barbuda, 2001–2005

Site	Deaths		Deaths per 100 00 per year	
	N	%	Crude	ASR
Breast	45	30.82	21.79	21.79
Bowel	17	11.64	8.23	7.25
Cervix uteri	15	10.27	7.26	6.78
Corpus uterus	12	8.22	5.81	4.53
Pancreas	9	6.16	4.36	4.33
Stomach	7	4.79	3.39	2.67
Liver	6	4.11	2.91	2.86
Not specified	5	3.42	2.42	2.77
Oesophagus	5	3.42	2.42	1.28
Lung	5	3.42	2.42	2.49
Ovary	5	3.42	2.42	1.95
Gall bladder	4	2.74	1.94	2.24
Brain	3	2.05	1.45	1.71
Kidney and bladder	2	1.37	0.97	0.91
Lymphoma	2	1.37	0.97	0.53
Metastatic carcinoma	2	1.37	0.97	1.20
Bone	1	0.68	0.48	0.69
Skin	1	0.68	0.48	0.31
Total (all sites)	**146**	**100.00**	**70.69**	**66.29**

due to bowel and pancreatic cancers were similar in men and women. Mortality due to cancer of the gallbladder occurred only in women.

A comparison with the data from the 1984–1989 study by Simon (5) showed a greater increase in cancer mortality in men (ASR 112 *vs* 72) than in women (ASR 66 *vs* 62). There were significant increases in crude mortality rates due to cancers of the prostate (57 *vs* 13) and bowel (10 *vs* 1.4) in men, and declines in mortality from several other cancers notably: stomach (11 *vs* 16) and kidney/bladder (0.5 *vs* 4). In women, the data showed increased crude mortality rates due to cancers of the breast (22 *vs* 11), bowel (8 *vs* 4) and corpus uteri (6 *vs* 3) while there were decreases in mortality rates from cancers of the stomach (3 *vs* 9) and cervix uteri (7 *vs* 9). The mortality/incidence ratios are given in Tables 4 and 5. It

Table 4: Comparison of the incidence and mortality rates in men, 2001–2005

Cancer site	Age standardized rates		
	Incidence	Mortality	Ratio mortality/incidence
Prostate	69.4	53.3	0.76
Skin	34.3	1.45	0.04
Bowel	11.7	9.68	0.82
Upper respiratory and alimentary	7.12	6.22	0.87
Stomach	5.36	11.1	2.07
Kidney and bladder	4.45	5.09	0.14
Metastatic carcinoma	3.67	0.52	0.15
Lung	1.67	5.09	3.05
Soft tissue	0.85	1.89	2.22
Pancreas	1.26	5.08	4.03
Lymphoma	---	5.38	---
Bone	---	2.54	---
Brain	---	0. 45	---
Oesophagus	1.23	3.78	3.07
Liver	0.58	3.40	5.86

would be expected that these ratios would be less than one. There were more cancers with mortality/incidence ratios significantly greater than one in men than in women, and with the exception of lung cancer and metastatic carcinoma, the common ratios were higher in men than women.

The mortality/incidence ratios were smaller than those calculated from the 1984–1989 study, with the notable exception of liver cancer in men.

DISCUSSION

In Antigua and Barbuda, 15% of the 2314 deaths reported in the period 2001 to 2005 were due to cancers, a 4% increase over the 1984 to 1989 study. Whilst the number of cancer deaths may be fairly accurately reflected on the death certificates, this may not be so with the different types of cancers. Such discrepancies would include liver cancer which may be metastatic (6).

Table 5: Comparison of the incidence and mortality rates in women, 2001–2005

Cancer site	Age standardized rates		
	Incidence	Mortality	Ratio mortality/incidence
Breast	37.6	21.8	0.58
Cervix uteri	23.0	6.78	0.29
Skin	17.8	0.31	0.02
Bowel	10.8	7.25	0.67
Corpus uterus	9.25	4.53	0.49
Kidney and bladder	6.92	0.91	0.13
Ovary	6.09	1.95	0.32
Upper respiratory and alimentary	2.75	---	---
Metastatic carcinoma	2.43	1.20	0.49
Stomach	2.71	2.67	0.98
Oesophagus	2.23	1.28	0.57
Pancreas	---	4.33	---
Lymphoma	---	0.53	---
Bone	1.04	0.69	0.66
Brain	---	1.71	---
Liver	1.05	2.86	2.72
Lung	0.54	2.49	4.61

Increased mortality from prostate cancer represents the most significant change over this time period, and may be reflective of an ageing population, inadequate treatment, late clinical stage at diagnosis, or a combination of the three (7, 8). This cancer ranks highest among the causes of cancer mortality in Antigua and Barbuda, and in the region (9, 10).

Worldwide, the most common causes of cancer deaths are: lung (17.8%), stomach (10.4%) and liver (8.8%) cancers (10). However, lung cancer is uncommon in Antigua/Barbuda (Tables 2 and 3). Anecdotally, one would observe that tobacco consumption is very low in Antigua/Barbuda and there are no large manufacturing industries or other sources of industrial pollution.

Figure 1 demonstrates that cancer mortality occurs much earlier in women than in men. These cancers are primarily those of the cervix and breast (Fig. 2). The increased breast cancer incidence and mortality may indicate the need for earlier screening. Cancer of the cervix has a lower mortality and a much lower mortality/incidence ratio compared to regional and international data (9, 10). However, this cancer ranks third on the local list of cancer mortality causes in women, indicating that there is still room for improvement.

Mortality/incidence ratios represent an index for assessing differences in disease severity and health system attributes including diagnostic services and treatment (11). Ratios close to zero would be expected for non-fatal cancers *eg* most skin cancers (12). Mortality/incidence ratios close to one would be expected for highly malignant cancers *eg* pancreatic cancer (13, 14). Ratios which are significantly greater than one questions the completeness of the data, in

particular the capturing of the incidence. Of particular interest were cancers with several cases of mortality and no incidence cases. A possible factor is the inclusion criteria in the morbidity study, namely histological confirmation of the cancer. This may explain the absence of cancers of the brain which in most instances would have radiological confirmations. Of interest also is the absence of lymphomas in the incidence and leukaemias in both the incidence and mortality. It is noted that ratios significantly greater than one were for cancers with relatively low incidence and mortality rates. This may suggest incomplete capture of the incidence of liver and pancreatic cancers in men and lung and liver cancers in women. The high mortality/incidence ratios in both women and men suggest that the death certificate may be reflecting metastasis to the liver rather than a primary cancer.

Given the relatively small population of Antigua and Barbuda, and the relatively small number of morbidity and mortality events, one must be cautious in the interpretation of the results as a single event could cause a significant change in the calculated rates and ratios.

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