REGIONAL DISTRIBUTION OF CANCER IN THE OXFORD AREA

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In the course of an analysis of cancer patients who had attended the Ratcliffe Infirmary, Oxford, during the past six years it became obvious that certain streets in the city and some villages in the country around were sending more cases than others. With the view of checking these findings tables of the total deaths were compiled from the registrar's returns covering the whole area, and we are indebted to the medical officers of health for the city and the adjoining districts for permission to use the returns.

General Features

In order to get a true picture of the distribution of deaths it was necessary to place cases in adjoining streets and villages in their relative geographical order, since the division of cases into registration districts breaks the continuity of the grouping. Villages have been classed as adjacent to one of the towns if within three miles. Points brought out by this rearrangement are:

1. That streets in Oxford adjoining one another get exacerbations in the number of their cancer cases at the same period, and if the cases are marked on a map of the city they show definite grouping.
2. That villages in certain parts of the country around show a similar tendency.
3. That during these exacerbations one or two younger cases often occur.

OXFORD CITY

	1932	Age	1933	Age	1934	Age	1935	Age	1936	Age
DISTRICT I										
Street 1.. ..	C. lung	58	C. stomach	57	C. cervix	47	C. prostate	84	C. prostate	64
" 2.. ..	C. colon	71			C. rectum	73	C. colon	78	C. stomach	64
" 3.. ..	C. uterus	58					" "	53	C. pancreas	78
" 4.. ..									C. breast	60
" 5.. ..	Sarc. uterus	48					C. cervix	74	" "	54
" 6.. ..	C. liver	75					C. colon	53	" "	77
" 7.. ..	Sarc. arm	62	C. colon	67	C. lung	68	C. rectum	34	" "	52
DISTRICT II										
Street 1.. ..	C. bronchus	69	C. stomach	61	C. colon	37	Melanotic sarc.	87	C. colon	78
" 2.. ..	Cerebral tumour	21			C. larynx	61	C. stomach	75	Rodent ulcer	76
" 3.. ..					C. colon	75	C. glands	70		
" 4.. ..					C. testis	53	C. breast	46		
					C. colon	65				
					C. breast	74				
DISTRICT III										
Street 1.. ..			C. colon	34						
" 2.. ..			C. jaw	58	C. stomach	66			C. stomach	60
" 3.. ..			C. larynx	58						
" 4.. ..			C. uterus	60	C. breast	53			C. breast	50
" 5.. ..			C. liver	73	C. bladder	77			C. larynx	56
" 6.. ..			C. jaw	71						
" 7.. ..			C. oesoph.	72						
" 8.. ..			C. bladder	72						
" 9.. ..	C. breast	45	C. colon	78	C. stomach	54				
" 10.. ..	" "	59			C. bladder	58				
" 11.. ..	C. palate	53			C. oesoph.	87			C. colon	65
" 12.. ..					" "	64				
" 13.. ..					C. stomach	54				
					C. colon	64				
" 14.. ..					C. oesoph.	65				
DISTRICT IV										
Street 1.. ..	C. rectum	82	C. uterus	63	Sarcoma	7			C. breast	78
			C. rectum	65	C. stomach	59			C. colon	81
" 2.. ..			C. stomach	65						
			C. colon	87			C. rectum	59	C. oesoph.	86
			C. breast	58						
DISTRICT V										
Street 1.. ..	C. liver	74	C. breast	54			Hypernephroma	64	C. stomach	63
" 2.. ..	C. breast	45			C. stomach	64	C. pancreas	61	C. pelvis	72
" 3.. ..					" "	73			Cerebral tumour	42
" 4.. ..	Carcinomatosis	63					C. rectum	61	C. prostate	67
" 5.. ..	Epith. fauces	65	C. colon	77	C. oesoph.	77			Hypernephroma	43
" 6.. ..					C. uterus	65			C. rectum	82
" 7.. ..	C. colon	69			Cerebral tumour	9	C. ovary	67	C. colon	83
" 8.. ..			C. stomach	66	" "	57	C. colon	64	" "	77
" 9.. ..			" "	65						
DISTRICT VI										
Street 1.. ..			C. colon	67	C. oesoph.	67	C. uterus	48		
" 2.. ..			C. breast	54	" "	65	C. colon	83	C. stomach	57
" 3.. ..							C. duodenum	60		
" 4.. ..			C. tongue	53						
" 5.. ..			C. colon	80	C. bladder	76				
" 6.. ..			C. liver	64						
" 7.. ..			C. stomach	67	C. stomach	65				
" 8.. ..			C. bronchus	54	C. rectum	54				
" 9.. ..			C. stomach	73						
" 10.. ..			C. lung	44						

4. That two or more cases of cancer of the same organ tend to occur at the same time. For instance, in one village there were two cases of cancer of the stomach, two of cancer of the tongue, and two of cancer of the prostate at the same time; and in the market towns this feature is even more pronounced than in the village groups. Cancer of the stomach appears to be very prevalent in these smaller towns, and the cases entered in the death certificates as cancer of the liver may probably be added to these, as primary disease of that organ in cancer is not common.

It is realized of course that in any of the periodic groups shown cases occur which have no relation to any exacerbation ; but, judging from the hospital notes, cases of cancer

of the alimentary tract in this area most often appear in the death returns within three years, so that the incidence in these cases can be roughly estimated to have taken place three years previously.

While the occurrence of an excessive number of deaths from cancer in any one area is within the realms of chance, it seems necessary to find some other explanation for the widespread nature of this phenomenon over a large district. There are villages not included in these tables where there have not been any cases of cancer, and this is more noticeable in one particular part of a county area. It would be interesting to know whether the above grouping takes place in other parts of the country.

MARKET TOWN I (Population 3,246)[illegible]**Villages adjacent (within 3 miles)**[illegible]

Villages in same Registration Area over 3 miles from the Town but adjacent in order

[illegible]**MARKET TOWN II (Population 7,995)**[illegible]

MARKET TOWN II—continued

Villages (in same area but not within 3 miles of the Town)

	1931	Age	1932	Age	1933	Age	1934	Age	1935	Age	1936	Age
WEST												
1. (Pop. 685)	C. breast	84	C. breast	42	C. pylorus	74	C. kidney	41	C. colon	54		
2. (Pop. 113)	C. colon				C. cervix	46	C. rectum	62				
3. (Pop. 114)					C. pylorus	51	C. breast	49	Lymphosarcoma	50		
4. (Pop. 506)			C. breast	83	C. colon	68						
			" Sarc. lung	49	C. stomach	70						
			C. stomach	40								
				70								
SOUTH												
5. (Pop. 856)	C. tongue	67	Hyperne- phroma	59	C. rectum	61	C. lung	62	C. stomach	64	C. sigmoid	61
	C. colon	66			Epith. lip	62	C. breast	80	C. sigmoid	59		
					C. ovary	48	C. stomach	73	Chorion epi- thelioma	47		
					C. breast	60	C. prostate	75				
6. (Pop. 846)					C. uterus	72	C. rectum	66	C. uterus	82	C. colon	67
					C. oesoph.	73	C. stomach	72				
7. (Pop. 727)			C. oesoph.	52	C. stomach	62	C. cervix	60	C. liver	77	" "	79
							C. max.	73				
							antrum	44	C. stomach	61		
8. A new village (pop. unknown)							C. bronchus	72	C. glands of neck	51	" "	71
							C. rectum					
							Rodent ulcer	77	C. rectum	66		

MARKET TOWN III (Population 2,164)

	1931	Age	1932	Age	1933	Age	1934	Age	1935	Age	1936	Age
	C. gall-bladder	66			C. stomach	53	C. stomach	28	C. stomach	63	C. oesoph.	76
	C. uterus	55					" "	32	C. oesoph.	77	C. colon	75
							" "	42	C. antrum	57	C. cervix	70
							" "	63			C. lung	53
							C. pancreas	52				
							C. colon	69				
							C. rectum	68				
							" "	65				
							" "	76				
							Sarc. lung	27				
							Lymphosarcoma	14				

Villages (in same area but more than 3 miles distant, ex. S.1)

NORTH												
1. (Pop. 833) ..			C. ovary	55			C. rectum	72				
2. (Pop. 522) ..	C. oesoph.	62	" "	48	C. stomach	68	C. liver	69			C. ovary	43
					C. colon	67					C. breast	79
					C. vulva	70						
					Sarc. femur	72						
WEST												
1. (Pop. 824) ..	C. gall-bladder	78	C. glands of neck	55	C. rectum	84					C. stomach	67
	C. colon	54			C. stomach	82						
SOUTH												
1. (Pop. 209) ..	C. larynx	62	C. rectum	60	C. oesoph.	67						
2. (Pop. 2070) ..	C. stomach	70	C. liver	58	C. liver	58	" "	52	Cerebral tumour	56	Sarc. rib	21
			C. uvula	71	C. tonsil	66	C. cervix	31	Cerebral tumour	14		
			C. breast	71			C. breast	48				
EAST												
1. (Pop. 275) ..	C. breast	80	C. pancreas	80	C. colon	63			C. medias- tinum	70	C. rectum	71
	C. pancreas	75	C. larynx	76							C. colon	81

MARKET TOWN IV (Population 2,840)

	1931	Age	1932	Age	1933	Age	1934	Age	1935	Age	1936	Age
	C. rectum	56	C. lung	52	C. rectum	59	C. rectum	59	C. oesoph.	78	C. prostate	66
	Sarc. testis	67	C. liver	55	Epith. lip	69	" "	73	C. stomach	52	C. colon	87
			Epith. mouth	61	Myelocytic leu- kaemia	31	C. colon	55	" "	70		
							C. stomach	69	" "	65		
							C. tongue	62	C. pancreas	67		
							C. uterus	69	Hypernephroma	46		
									C. larynx	65		
									C. prostate	56		
									C. pituitary	72		