

THE DIGESTIVE AND GENITAL CANCER MORTALITY

EXPERIENCE OF MONSANTO-INDIAN ORCHARD PLANT EMPLOYEES

SUMMARY

A proportional mortality analysis of the death certificates of 564 former Monsanto-Indian Orchard plant employees revealed a marginal excess, though not statistically significant, in the number of deaths from digestive and genital cancer.

A proportional cancer mortality analysis for digestive cancer was carried out to determine if there was an increased proportion of deaths from any specific digestive cancer site. No statistically significant excess was found in any of nine digestive cancer categories.

A work history analysis of the prostate cancer cases was carried out to determine if there was commonality in occupational exposures. The work histories of the twelve cases were characterized by nine departments. There was no apparent clustering of prostate cancer cases in any one department. There were too few cases over several departments to permit a valid case-control analysis.

Based on these findings and the fact that there were no a priori reasons for suspecting an excess of digestive or genital cancer deaths, with the exception of pancreatic cancer, the marginal excesses in both cause-of-death categories are most likely due to chance variation.

BACKGROUND

In a recently completed proportional mortality study based on the death certificates of 564 former Monsanto-Indian Orchard plant employees, no significant excess was seen in the overall number of deaths due to digestive or genital cancer. In the case of digestive cancer, there were 46 observed deaths with 39.20 expected. For genital cancer, there were 14 observed deaths with 8.78 expected. Neither difference is statistically significant at the 5% level, and there were no a priori reasons for suspecting an increased proportion of deaths from either cause. Because of the aforementioned considerations, there is no justification for further study of the digestive or genital cancer cases. However, in a similar proportional mortality analysis based on 441 deaths, NIOSH reported an increase in both digestive and genital cancer cause-of-death categories. Based on these findings, a work history analysis was made to determine if there was any commonality in occupational exposures that could be related to a particular cause of death.

METHODOLOGY

Selected for study were the 46 digestive cancer deaths and the 12 prostatic cancer deaths observed from 1950 through 1976 among workers and former workers of the Monsanto Indian-Orchard plant.

The data on digestive cancer were analyzed by the proportional mortality analysis, whereby the observed number of deaths is compared to an expected number of deaths based on a standard population. U.S. mortality rates

were adjusted for the Hampden County experience and used as the standard. Details of the data collection and the proportional mortality analysis are detailed in a previous report.

Work history data were obtained from microfilmed work history records. For each case, departments, job titles, and job start dates were recorded, whenever possible. Due to the poor quality of the microfilmed records, there may be some gaps in the recorded work history record. For the analysis presented here, each case is represented by each department he ever worked in, and by his most representative department where he spent the longest part of his working career.

RESULTS

No statistically significant excess was seen in the overall number of digestive cancer deaths with 46 observed and 38.36 expected. (Table I). No significant excess was seen in any of nine digestive cancer sites.

The work history analysis revealed that the 12 prostate cancer cases worked in a total of nine different departments. (Table II). The 12 cases were represented by 8 most representative departments. There was no apparent clustering of prostate cancer cases in any one department.

DISCUSSION

The proportional mortality analysis of the digestive cancers did not reveal a statistically significant excess in deaths from any specific digestive cancer site. The work history analysis of the prostate cancer cases did not reveal any apparent departmental clustering of cases. The small number of cases scattered over several departments would not permit a valid case-control analysis. Based on these findings and the fact that there were no a priori reasons for suspecting an increased proportion of deaths from either digestive or genital cancer, with the exception of pancreatic cancer, the marginal increase in the two cancer cause-of-death categories is most likely due to chance variation.


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TABLE I

OBSERVED AND EXPECTED DIGESTIVE CANCER DEATHS

<u>Malignant Neoplasms of</u> <u>Digestive Organs and Peritoneum</u>	Observed	Expected†	P.M.R.
	46	38.36	1.20
Esophagus	6	4.19	1.43
Stomach	10	7.66	1.31
Large Intestine	7	10.91	.64
Rectum	9	4.84	1.86
Biliary Passages and Liver	3	1.91	1.57
Pancreas	6	6.87	.87
Small Intestine	1	0.28**	
Liver (unspecified as to primary or secondary)	3	1.04**	
Peritoneum and Unspecified Digestive Organs	1	0.49**	

† Based on U. S. mortality rates for 1965, adjusted for Hampden County.

** Unadjusted for Hampden County rate.

* $p < .05$

TABLE II

WORK EXPERIENCE BY DEPARTMENT OF PROSTATE CANCER DEATHS

	<u>DEPARTMENT</u>											
	<u>Sheet</u>	<u>Resinox</u>	<u>Saflex</u>	<u>Vuepak</u>	<u>Lustrex</u>	<u>PVC</u>	<u>Yard</u>	<u>Shipping</u>	<u>Law</u>	<u>Maintenance</u>	<u>Storeroom</u>	<u>Guards</u>
Case 1							X					(X)
Case 2	X				(X)							
Case 3	X				(X)							
Case 4		(X)										
Case 5			X	(X)		X						
Case 6	X				(X)							
Case 7			X							(X)	X	
Case 8	(X)		X									
Case 9									(X)			
Case 10	(X)											
Case 11							(X)	X				
Case 12	(X)											

Legend: Sheet - cellulose nitrate, cellulose acetate.
 Resinox - phenol - formaldehyde resins.
 Saflex - polyvinyl butyral.
 Vuepak - cellulose acetate.
 Lustrex - polystyrene .
 PVC - polyvinyl chloride.

(X) = MOST REPRESENTATIVE DEPARTMENT

X = EVER WORKED DEPARTMENT