

Problems in Cancer Surveillance: Delineating In Situ and Invasive Bladder Cancer

Benjamin F. Hankey, Brenda K. Edwards,*
Lynn A. Ries, Constance L. Percy, Evelyn
Shambaugh

In this issue of the Journal, Lynch et al (1) describe the implications of combining in situ and invasive bladder cancers for reporting purposes by the Surveillance, Epidemiology, and End Results (SEER) Program based at the National Cancer Institute. They discuss the implications of this practice in regard to the importance ascribed to bladder cancer relative to other cancers in the general population, using data from the registry for Iowa, one of the nine SEER areas.

The SEER Program has combined in situ and invasive bladder cancers when reporting incidence and survival rates beginning with the 1985 annual report (2) (cases diagnosed 1973 through 1983). Reasons for making this decision included the following. Incidence rates for invasive bladder cancer had decreased rather dramatically in 1982 and 1983, while the rates for in situ bladder cancer had increased by nearly the same amount over the same period (Fig 1). Consultation with some pathologists in local SEER registry areas indicated that this trend was due in part to difficulties created by the absence of statements in the final diagnosis and microscopic description in pathology reports regarding the behavior (ie, in situ vs invasive) of bladder tumors. Such vagaries were resulting in variable and unpredictable results associated with the identification of in situ and invasive bladder cancers from the hospital medical record.

Table 1 indicates that the incidence rates of in situ bladder cancer and the percents of in situ bladder cancer incidence relative to the total incidence of in situ and invasive bladder cancer varied by SEER registry area. Moreover, analysis of survival rates by behavior, extent of disease, and histologic type (Table 2) indicate that rates for cases of invasive bladder tumors confined to the mucosa that were papillary or papillary transitional cell cancer were higher than rates for cases of in situ transitional cell cancer. In order not to show a false decrease in invasive bladder cancer, it was decided that in situ and invasive bladder cancers would be combined for reporting purposes until the source of the problem could be determined and addressed.

The study carried out by Lynch et al describes SEER data collection and reporting procedures for bladder cancer as well as a review of tissue slides from a limited subset of cases diagnosed in Iowa in 1983, to assess tumor behavior. The purpose of the study was to investigate problems in interpreting bladder cancer

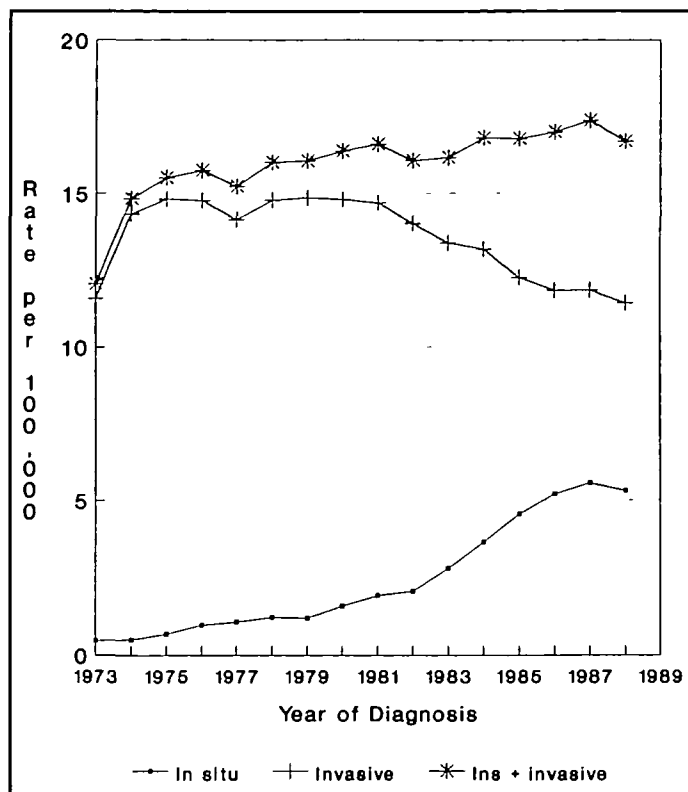


Fig 1. Incidence rates for invasive and in situ (Ins) bladder cancer diagnosed in 1973 through 1988 in all SEER registry areas.

pathology reports. More than two thirds (197; 68.2%) of the 289 tumors included in the review and classified from the original pathology report as invasive were classified by the reviewing pathologists as in situ. Only five (6.7%) of the 75 tumors originally classified as in situ were classified by the reviewing pathologists as invasive.

Evidence supporting the validity of the findings included survival rates for the in situ and invasive categories for bladder cancer cases included in the tissue slide review as well as for all other bladder cancer cases diagnosed in 1983. The designation of in situ and invasive for cancers not included in the slide review was made based on a review of the pathology reports by the reviewing pathologists. Survival rates for in situ cancers were similar for both the review and SEER classifications. However, the survival rate for cases classified as invasive cancer based on the slide review was significantly lower than the rate for cases originally classified as invasive cancer by SEER Program procedures, based on a literal interpretation of the pathology report. Identification of in situ behavior requires a statement in the pathology report using terms specified in the SEER code manual that are required for identification of in situ cancer. The results of this study also indicated that the incidence of invasive bladder cancer was substantially overestimated in 1983 for

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B. F. Hankey, L. A. Ries, C. L. Percy, E. Shambaugh (Cancer Statistics Branch), B. K. Edwards (Surveillance Program), National Cancer Institute, Bethesda, Md.

*Correspondence to: Brenda K. Edwards, PhD, Executive Plaza North, Rm 343J, National Institutes of Health, Bethesda, MD 20892.

Table 1. Incidence rates and percents of in situ bladder cancer by SEER registry area and year of diagnosis

	Age-adjusted rate* per 100 000			%†		
	1975	1983	1988	1975	1983	1988
All SEER areas	0.7	2.8	5.3	4.6	17.2	31.4
Metropolitan Atlanta	0.4	2.5	4.1	3.4	17.0	32.1
Connecticut	0.2	2.7	6.1	0.9	14.1	30.1
Metropolitan Detroit	0.5	3.4	4.6	2.9	19.1	24.2
Hawaii	0.6	2.8	2.0	6.0	22.8	22.3
Iowa	0.1	3.1	7.6	2.4	18.1	44.4
New Mexico	0.1	2.4	5.7	1.2	17.5	40.8
San Francisco-Oakland	0.7	2.0	2.9	4.4	12.6	17.2
Seattle-Puget Sound	2.8	3.8	7.9	17.0	23.4	43.8
Utah	0.0	1.2	3.8	0.0	10.4	27.7

*Age adjusted to 1970 US standard population.

†Percent of in situ bladder cancers relative to total of in situ and invasive bladder cancers registered in a SEER area for a given calendar year.

Table 2. Five-year relative survival for bladder cancer by extent of disease and histologic type for cases diagnosed during the period 1977-1982 in all SEER registry areas*

Stage and histologic type†	No.	Survival rate (%)
In situ	1647	96.6
Papillary carcinoma, NOS	75	100.0
Transitional cell carcinoma, NOS	322	91.3
Papillary transitional cell carcinoma	1158	99.2
Other	92	78.2
Invasive (confined to mucosa)	2528	91.8
Papillary carcinoma, NOS	95	94.3
Transitional cell carcinoma, NOS	521	85.9
Papillary transitional cell carcinoma	1884	93.4
Other	28	83.9
Invasive (invasion of submucosa)	2714	82.9
Papillary carcinoma, NOS	61	96.5
Transitional cell carcinoma, NOS	933	74.6
Papillary transitional cell carcinoma	1659	86.9
Other	61	86.7

*Patients with tumors extending beyond the submucosa are not included.

†NOS = not otherwise specified.

Iowa. The incidence of invasive bladder cancer based on the review was 9.1 per 100 000, whereas the incidence rate for bladder cancer reported by the SEER Program for Iowa, including both in situ and invasive cancers, was 20.3.

The results of this study have implications regarding SEER Program procedures and reporting for bladder cancer. In this study, the review pathologists found a substantial number of cases in which the pathology report did not include sufficient information on whether or not invasion was present. To facilitate this decision-making process, Dr. Charles Platz has made presentations at SEER Program training workshops for abstractors and coders dealing with the coding of behavior and extent of disease for bladder cancer. Dr. Platz has been involved in the SEER Program as both a principal investigator and medical advisor for many years. In addition, he has developed an extensive

list of terms that provides guidance to abstractors/coders in coding noninvasion for bladder cancer. However, this list is not universally accepted by all pathologists and, therefore, has had limited implementation within the SEER Program.

In regard to the coding of "papillary transitional cell carcinoma," Lynch et al argue that this diagnosis implies an absence of invasion if no statements regarding the presence of invasion are included in the pathology report. It is not reasonable to expect abstractors/coders to make such inferences when coding this entity, as they are taught to look for specific terms and not interpret what is in the pathology report. One way to deal with this issue would be to identify "papillary transitional cell carcinoma with no statement of invasion" and to report these cancers as in situ, if there is agreement among pathologists that this would produce valid results. It is unclear whether there is sufficient agreement within the community of urologists and pathologists (2) to expect such a consensus at this time.

Substantial disagreement was found between the classification of tumor behavior based on an evaluation of the original pathology reports by the review pathologists and the findings of the slide review. This disagreement suggests variability in pathology practices that may be unique for bladder cancer and indicates the need for pathologists to clearly distinguish in situ and invasive bladder cancers in their pathology reports.

Lynch et al have illustrated some of the difficulties inherent in maintaining comparable data over time for reporting incidence rates for bladder cancer based on population-based tumor registry systems. Carcinoma in situ is reportable and represents a sizable portion of cancer cases for breast, cervix uteri, and bladder sites. In situ cancers are of particular importance in evaluating cancer control efforts in screening and early detection. In addition to problems in reporting bladder cancer rates, recent changes in the classification of cervical cancer, such as the Bethesda system (3), portend reporting difficulties associated with cervical intraepithelial neoplasms (CIN III) as defined in the second edition of the International Classification of Diseases for Oncology (4).

In summary, the study by Lynch et al suggests that by combining in situ and invasive bladder cancers, the picture of what is happening individually to in situ and invasive bladder cancer is obscured. It may be true that the rates for invasive and in situ bladder cancer in recent years (Fig 1) are approaching their true values. A special study would be required to verify this hypothesis. If found to be true, it could provide the basis for reporting rates of in situ bladder cancer and invasive bladder cancer separately for a recent time period.

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