

## Treatment delay in patients with bladder tumours

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**SUMMARY** Previous work has shown that the hospitals are the most important source of delay in treatment of bladder cancer rather than the patient or the general practitioner. We have studied referral of patients for investigation and treatment in the North West Region using data from the cancer registry. Delay in treatment for this disease is appreciably longer than for the other common cancers we have studied. Various factors associated with speed of treatment are discussed.

Cancer of the bladder accounts for rather more than 3% of all cancer deaths in this country.<sup>1</sup> It is generally regarded as a cancer in which early treatment has a favourable effect on prognosis. Wallace and Harris<sup>2</sup> reporting in 1965 found that treatment within one month of the reported onset of bleeding was associated with a crude three-year survival of 60% compared with 25% where treatment was delayed for up to six months in patients with bladder wall infiltration at the time of treatment. They found that patients generally sought advice at an early stage and that general practitioners referred them with little delay; the most important source of delay was the hospital service. Since delay attributable to the hospital service does not seem to be a serious problem with other cancers in the North West Region<sup>3–6</sup> we decided to investigate hospital delay for bladder cancer and to seek to identify its causes.

### Methods

In four districts in the North West Region, the Regional Cancer Registry collects especially detailed information about all malignancies. This includes the dates on which the various consultations and procedures were carried out. From these recorded dates it is possible to calculate the interval between referral by the GP and definitive hospital treatment. This can be further subdivided into the interval from referral to being seen as an outpatient (phase I delay) and that from outpatient consultation to admission for treatment (phase II delay).

In addition, information was available on certain personal characteristics, tumour type, hospital attended, and the types and duration of symptoms before referral. Investigative procedures were also

recorded. Duration of symptoms is recorded as an estimated time period rather than by dates, and our experience of work with delay at other tumour sites persuades us that such information is too unreliable to justify analysis.

We identified all patients registered as having a bladder tumour for the years 1977–79 inclusive. Recorded information was coded and transferred to a computer for analysis. Unfortunately, not all the relevant dates were available in every case. Twenty-eight per cent of the sample (n=91) had one date missing from the registration form and a further 6% (n=20) had two or more dates missing. For these patients, therefore, certain delay phases could not be calculated. Reasons given for the omission of over two-thirds of the dates were coded onto the registry forms. The most common reasons were that the patient had had domiciliary visits so no referral letter was available or that the patient did not receive treatment. In general, these patients were probably admitted and treated more quickly than the other patients since a domiciliary visit and ultimately being given no treatment tend to be associated with more urgent referrals and admissions.

### Results

#### CHARACTERISTICS OF SAMPLE

Three hundred and thirty patients were registered as having bladder tumours of whom 70% were male. Most patients were elderly or middle-aged: 43% were aged 71 or more, 33% were between 61 and 70 years, and only 24% were aged 60 or less.

Papillomas of the bladder are registered in the cancer registry because of the difficulty of distinguishing between a benign papilloma and a

differentiated papillary transitional cell carcinoma. Twenty-two per cent of the tumours in this sample had a benign diagnosis, 1.5% were given an uncertain diagnosis, and the remainder were diagnosed as malignant. A benign diagnosis was more common among younger patients; 43% of those aged 60 or less had a benign tumour compared with 24% in the 61–70 year group and 9% in patients aged 71 and over ( $p < 0.001$ ).

Haematuria was the most frequent symptom and was reported by 80% of the patients. Frequency of micturition was the next most common symptom recorded (23%). Other symptoms included dysuria (13%), abdominal pain (7%), back pain (5%), difficulty in micturition (4%), retention of urine (7%), and urgency of micturition (3%). Twelve per cent were recorded as having had symptoms for a week or less before referral and a further 24% for between a week and a month. Patients with painless haematuria were found to have had their symptom for a shorter time than those with other symptoms ( $p < 0.01$ ). Various types of treatment were given and the most frequent was surgical excision (68%). The most common other form of treatment was laser or diathermy (grouped together on the registration form as 'other') given to 17% of those treated. Nineteen patients had a combination of treatments and 54 patients were given no definitive treatment. This was associated with type of tumour ( $p < 0.001$ ). Surgical excision was the type of treatment given for 60% of patients with benign, and for 63% of patients with malignant growths. Of those with benign growths, however, 35% had "other" forms of treatment, 1% had a combination of treatments, and 4% were not treated, the corresponding figures for diagnosed malignancies being 9%, 7%, and 21% respectively.

In the four districts there are nine hospitals at which these patients were treated, although four of these treated only three or four patients each throughout all three years. Where the subsequent analysis relates to hospitals, these four hospitals have been omitted.

#### HOSPITAL DELAY AND ASSOCIATED FACTORS

Only just over half the patients were treated within two months of referral. Although 91% of patients were seen as outpatients within one month of referral by the GP, only 43% were treated within one month after outpatient consultation. The duration of these phases of delay are shown in table 1. In order to offer an explanation of this delay we have examined personal characteristics, tumour characteristics, symptom presentation, hospital attended, and the type of investigations carried out.

Table 1 Duration of hospital delay

	Overall		Phase I		Phase II	
	n	Cum %	n	Cum %	n	Cum %
Treated within						
1 week	27	(12)	111	(41)	46	(18)
2 weeks	16	(19.5)	70	(67)	27	(28)
1 month	16	(27)	66	(91)	38	(43)
2 months	58	(54)	16	(97)	85	(74)
3 months	48	(76)	2	(98)	32	(88)
6 months	41	(94)	1	(98)	22	(96)
More	13	(100)	5	(100)	10	(100)

Bladder cancer is more common in men than in women. Urinary tract infections producing symptoms similar to those of bladder cancer are more common in women. However, no sex difference was found either in duration of symptoms before referral or in the speed with which patients were seen as hospital outpatients and then admitted and treated. On the other hand, the patient's age was found to be an important factor associated with hospital delay (table 2). Patients aged 60 years or less were treated more slowly after referral than the older patients. They were less likely to be seen quickly as outpatients and after this less likely to be admitted quickly. Once admitted, however, younger patients were not delayed more; in fact the trend was in the opposite direction, although the difference is not statistically significant.

Table 2 Association between hospital delay and patient's age

Patient's age (yr)	Treated within one month of referral		Seen within one week of referral		Admitted within one month of outpatient appointment	
	n	Cum %	n	Cum %	n	Cum %
60 or less	9	(16)	16	(25)	32	(43)
61–70	50	(31)	37	(40)	53	(49)
71 or more			58	(51)	87	(63)
Kruskal-Wallis test	p < 0.04		p < 0.001		p < 0.001	

Age was associated with type of tumour: if patients with benign tumours experienced more delay this might account for the association between age and hospital delay. However, there were no associations between tumour type and either overall hospital delay or any of its phases (table 3).

None of the individual symptoms was associated with hospital delay. Since the classic symptom presentation of bladder cancer is painless haematuria, it was decided to compare patients who had haematuria as their only symptom with those who had haematuria in addition to other symptoms,

Table 3 Association between hospital delay and type of growth

Type of growth	Treated within one month of referral		Seen within one week of referral		Treated within one month of outpatient appointment	
	n	Cum %	n	Cum %	n	Cum %
Benign	11	(18)	20	(31)	24	(35)
Malignant	45	(31)	89	(44)	85	(45)
Mann-Whitney test	p < 0.7		p < 0.3		p < 0.4	

Table 5 Association between hospital delay and particular hospital

Hospital	Treated within one month of referral		Seen within one week of referral		Treated within one month of outpatient appointment	
	n	Cum %	n	Cum %	n	Cum %
A	9	(25)	21	(42)	14	(35)
B	14	(34)	24	(51)	27	(55)
C	7	(21)	22	(47)	16	(38)
D	27	(28)	38	(36)	42	(39)
E	2	(15)	3	(19)	7	(47)
Kruskal-Wallis test	p < 0.15		p < 0.06		p < 0.06	

and with those who had other symptoms but not haematuria (table 4). Patients with painless haematuria alone experienced more hospital delay than those with other symptoms. They waited longer than the other groups to be seen as outpatients, and longer to be admitted after this. Once admitted, however, they were more likely to be treated within a couple of days than patients with other symptoms. There was no relation between type of symptoms and age that might have accounted for this association.

Method of treatment was not found to be associated with how quickly treatment was given. There were, however, differences among the various hospitals. Table 5 shows that overall hospital B was the quickest; it both saw patients as outpatients more quickly and treated them after this more quickly. These differences between hospitals are not accounted for by differences in the type of patients treated by them.

Waiting lists for investigative procedures can add considerably to overall hospital delay, as Wallace and Harris have pointed out. Most of our patients (83%) had a cystoscopy (those who did not were mostly elderly patients who were generally in an unfit state) but only 48% had an intravenous pyelogram (IVP). Patients who had an IVP were found to be delayed significantly longer in being seen as outpatients and in being admitted after this (table 6). Some hospitals carried out a significantly higher proportion of IVP tests than others (table 7). It is, however, unlikely that this accounts for more than a small part of the

variation in delay between hospitals. For example, in hospital C only 34% of patients had an IVP compared with 62% in hospital D, yet overall hospital delay in hospital D was shorter than in hospital C.

Unfortunately, no information is available as to when and how IVPs are requested. It might be that in some hospitals patients are sent for IVP before outpatient consultation, in which case the IVP waiting list time would be included in the delay between referral and outpatient consultation. If IVP tends to be requested after outpatient consultation then it would contribute to delay in admission. More information is required to examine in detail the effect that the investigative procedures have on duration of hospital delay.

**Discussion**

We have found only one previous study that has investigated the nature and extent of delay in bladder cancer, showing that considerable hospital delay exists and that treatment within one month of the onset of symptoms was significantly associated with improved outcome. Previous studies of our own in patients with cancer of the breast and large bowel treated in three of the same hospitals as those included in this study showed much less hospital delay: 58% of bowel cancer and 94.5% of breast cancer patients were treated within one month of

Table 4 Association between hospital delay and symptom presentation

Symptom presentation	Treated within one month of referral		Seen within one week of referral		Admitted within one month of outpatient appointment		Treated within two days of admission	
	n	Cum %	n	Cum %	n	Cum %	n	Cum %
Haematuria only	19	(16)	32	(25)	60	(40)	98	(73)
Haematuria and other	25	(36)	42	(47)	63	(58)	31	(37)
Other only	15	(43)	35	(66)	47	(77)	13	(33)
Kruskal-Wallis test	p < 0.004		p < 0.001		p < 0.001		p < 0.001	

Table 6 Association between hospital delay and IVP investigation

IVP	Treated within one month of referral		Seen within one week of referral		Admitted within one month of outpatient appointment	
	n	Cum %	n	Cum %	n	Cum %
Yes	24	(21)	45	(35)	72	(46)
No	36	(33)	66	(47)	102	(61)
Mann-Whitney test	p < 0.13		p < 0.001		p < 0.01	

referral.<sup>3-6</sup> This study has found hospital delay to be a significant problem in the treatment of bladder cancer.

Four main groups of factors were examined in an attempt to gain some insight into this delay in treating bladder tumours. Age was the only personal characteristic associated with delay, older patients generally being treated more quickly. This may simply be because more of these patients are frail and their illness might precipitate a more urgent referral.

The association between painless haematuria and an increased delay calls for explanation. One possibility is that painless haematuria is not always seen as an urgent symptom and it may produce little discomfort for the patient. Thus the pressure for early appointment and admission may not be great. Another possibility is that since patients with other bladder symptoms have had these for longer periods before referral, by the time they are referred they are more likely to have become urgent and be given priority on waiting lists. It is also possible that painless haematuria may lead to a differential diagnosis in which cancer is accorded a relatively low probability, and referral for investigation may thus be given a lower priority.

Type of tumour, benign or malignant, did not seem to affect delay. In many cases, definitive diagnosis is not made until the time of treatment so that the necessity for urgency is not realised except with hindsight. Delay varied with the hospital in which the tumour was treated, as well as with the investigations

carried out. Hospital B treated 78% of patients within two months of referral compared with only 36% in hospital A. Having an IVP investigation led to more delay in being seen as an out-patient and in being admitted after this, and some hospitals carried out more IVPs than others. The slower hospitals, however, were not those least likely to carry out IVPs.

If hospitals are to investigate and treat bladder cancer as speedily as they do other tumours we shall need to identify more clearly the sources of the more substantial delay we have observed for these tumours. There are obviously considerable differences between hospitals—greater than for other tumours. There also seems to be good evidence that delay is different for different symptom presentations and is greater for patients referred for IVP. Such referral suggests that bladder cancer may not be prominent in the differential diagnosis of these patients, and the presentation of symptoms—such as the age of the patient—may influence this.

Given the observed hospital delays as well as the association of delay with prognosis, it is suggested that this is an important problem calling for further study.

## References

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Table 7 Association between hospital and IVP investigation

IVP	Hospital										Total	
	A		B		C		D		E			
	n	Cum %	n	Cum %	n	Cum %	n	Cum %	n	Cum %	n	Cum %
Yes	22	(40)	26	(46)	22	(34)	74	(62)	8	(44)	152	(48)
No	33	(60)	31	(54)	43	(66)	46	(38)	10	(56)	163	(52)
Total	55	(100)	57	(100)	65	(100)	120	(100)	18	(100)	315	(100)

$$\chi^2 = 15.8144 \quad df = 4 \quad p < 0.01$$