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The Value of Warning Signals of Cancer in General Practice

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Seven warning signals of cancer are poor diagnostic indicators of cancer, but for some patients awareness of warning signals may help reducing diagnostic delay. The usefulness of warning signals recorded by general practitioners at consultation is evaluated for a group of 80 patients who developed cancer 0-18 months after the consultation. Warning signals of cancer were recorded at the consultations in 20 cancer patients and in 13 matched control patients. For three cancer patients the warning signal was considered not related to the cancer. Recognition of warning signals related to the cancer disease was considered useful for nine out of 17 patients, somewhat useful for five and hardly useful at all for three patients.

Key words: cancer, diagnosis, diagnostic delay, family practice.

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Seven warning signals of cancer are published internationally by cancer associations to encourage consultation for certain symptoms, and so to reduce patient delay when a cancer is present (1). Doctor's awareness of warning signals may reduce doctor's delay as well. Previous studies have shown that warning signals have a very low sensitivity as tools of cancer diagnosis (2-4), and Ny-lenna (5) has shown that less than every tenth patient suspected by the general practitioner to have cancer really had the disease. For diagnostic purposes combinations of data more detailed than the warning signals have been suggested (6). Still it may be of interest to see whether the warning signals themselves may help some patients with an undiagnosed cancer, contributing to earlier diagnosis and better or less uncomfortable treatment. This is the purpose of the present study.

MATERIAL AND METHOD

In a previous study general practitioners in the municipality of Tromsø, Norway, recorded warning signals at consultation in 5.4% of 11 606 consultations (2). This study took place between October 1, 1981 and March 31, 1982. During this period and the next 12 months 331 cancer patients living in

Tromsø were registered by the Cancer Registry of Norway. Eighty-two of these 331 patients had been registered by the general practitioners during the six-month period. Two patients were not included in the study because their records had been lost.

In addition to the 80 cancer patients 80 matched control patients from the same consultation material were included in the study. For each cancer patient the person closest in age and of the same sex was selected. The primary care and hospital records of the 160 patients were studied independently by three general practitioners (Terese Fors, Leif Rolfsjord, Knut Arne Holtedahl) two to three and a half years after diagnosis. Warning signals presented by the patient before diagnosis were noted from the records. Details of this method is given in (7). Consultations took place 0-18 months prior to diagnosis and always within the period studied in the records. One might expect, then, that most warning signals recorded at consultation also were noted by the three observers of medical records. The record studies also permitted an estimation of whether the warning signals noted had any relationship with the disease for each cancer patient, and an estimation of usefulness for each consultation-recorded warning signal in cancer patients. The latter estimation was made by the au-

Table I. Recordings of warning signals at consultation before any diagnosis of cancer had been made, and recordings from medical records after diagnosis, covering the day(s) of consultation

Twenty cancer patients and thirteen control patients

| Warning signal | Future cancer patients | | | | | Control patients | | | | |
|------------------------|------------------------|-----------------|----------------------------------|-----|----|------------------------|----------------|----------------------------------|-----|---|
| | Consultation | | Records | | | Consultation | | Records | | |
| | No. of warning signals | | Recorded by: No. of observers | | | No. of warning signals | | Recorded by: No. of observers | | |
| | Female | Male | 0 | 1-2 | 3 | Female | Male | 0 | 1-2 | 3 |
| Sore (S) | 1 | — | | 1 | | — | — | | | |
| Lump (L) | 5 | 2 | | 1 | 6 | 4 | 1 | 4 | 1 | |
| Bleeding (Bl) | 3 | 4 | 1 | 1 | 5 | 1 | 2 | 1 | 1 | 1 |
| Mole (M) | — | 1 | 1 | | | 1 | — | 1 | | |
| Indigestion (Ind) | — | 4 | | 2 | 2 | 2 | 1 | | 1 | 2 |
| Cough/hoarseness (C/H) | 2 | — | | | 2 | 1 | — | 1 | | |
| Weight loss (WL) | — | 2 | | | 2 | 2 | — | | 1 | 1 |
| Total | 11 ^a | 13 ^a | 2 | 5 | 17 | 11 ^a | 4 ^b | 7 | 4 | 4 |

^a In 10 patients.^b In 3 patients.

thor as one of the three observers, after the initial study of records when warning signals were noted without any knowledge of the consultation-recordings. A three-point scale (2, 1, 0, defined as "useful", "somewhat useful" and "not useful, or palliation of short duration") was used. The estimation was made by relating the warning signal to the diagnosis and the evolution of the disease.

McNemar's test for matched pairs was used for statistics.

RESULTS

Table I presents which of the warning signals recorded by general practitioners at consultation were found in the medical records. Warning signals recorded in future cancer patients were mostly found in the records as well, often by all three observers. In control patients several of the warning signals recorded at consultations were not registered from medical records.

Twenty of 80 cancer patients and 13 of 80 control patients had one to three warning signals recorded at consultation. The difference between cancer and control patients is not significant ($0.10 < p < 0.20$), which confirms the low specificity of warning signals in the diagnosis of cancer (4).

The estimation of usefulness for each consultation-recorded warning signal is shown in Table II.

For three of the ten women, no observer found any connection between the warning signal and the cancer. For the remaining 17 cancer patients, warning signals were considered useful for nine (three women and six men), somewhat useful for five (four women and one man), and of little or no use for three (all men). This means that 14 out of 80 (17.5%) were helped by warning signals at consultation. Five of these 17 patients had low-grade malignancies with uncertain spontaneous evolution. Their warning signals were estimated as useful (one woman and three men) or somewhat useful (one man).

DISCUSSION

The study confirms that warning signals registered by general practitioners at consultations have a very low sensitivity and specificity as tools of cancer diagnosis. However, the study also indicates that warning signals occurring in cancer patients are recognizable, since most warning signals recorded at consultation also were noted from the medical records of cancer patients. The lower agreement in control patients is consistent with the finding in (7) that cancer related warning signals in cancer patients are well reproducible, while warning signals of cancer in non-cancer patients are less reproducible.

Table II. *Usefulness of warning signals*

Recordings at consultation before diagnosis and from medical records after diagnosis in 20 cancer patients. F=female, M=male, WS=warning signal, GP=general practitioner, Obs=observer. Other abbreviations, see Table I. (Warning signal in brackets="probably not cancer-related WS")

| Sex | Age at diagnosis | WS recorded by GP | WS recorded by | | | Diagnosis | Usefulness |
|-----|------------------|-------------------|----------------|---------------------|----------------|--|----------------|
| | | | Obs 1 | Obs 2 | Obs 3 | | |
| M | 78 | WL | WL | WL | WL Ind | Clear cell adenocarcinoma of kidney | 0 |
| F | 77 | S | (S) L | (S) L | L | Papillary adenocarcinoma of thyroid gland | 0 ^a |
| F | 76 | Bl | (Bl) | (Bl) | Bl (Ind) | Tubular adenoma of colon, dysplasia | 2 ^a |
| F | 74 | L | L | L | L | Ductal adenocarcinoma of breast | 2 |
| M | 73 | L | L | L | L | Adenocarcinoma of sublingual gland | 2 |
| M | 69 | Ind | (Ind) | (Ind) | (Ind) | Ventricular cancer | 0 |
| F | 68 | Bl | Bl | Bl | Bl (L) | Squamous cell carcinoma of cervix uteri | 2 |
| M | 68 | Bl | Bl | Bl | Bl | Adenoma/highly differentiated adenocarcinoma of prostate | 1 ^a |
| M | 67 | Bl | Bl | Bl (Ind) (WL) | Bl Ind | Tubular adenoma of colon, dysplasia | 2 ^a |
| M | 67 | Bl Ind WL | WL C/H | WL (C/H) | WL C/H | Adenocarcinoma of abdomen-unknown primary focus | |
| M | 64 | M | L | L | L | Squamous cell carcinoma of skin | 2 ^a |
| F | 63 | C/H | (C/H) | (C/H) | (C/H) | Clear cell adenocarcinoma of kidney | 1 |
| M | 62 | Bl | WL (M) | WL (M) | WL (M) | Adenocarcinoma of prostate, highly differentiated | 2 ^a |
| F | 57 | L | L | L Bl Ind | L Bl Ind | Adenocarcinoma of ovary | 1 |
| M | 57 | Ind | Ind | Ind | Ind | Adenocarcinoma of ventricle | 2 |
| F | 50 | Bl | Bl | Bl | Bl | Papillary cystadenoma of ovary | 1 |
| F | 48 | L C/H | L C/H | L C/H | L C/H | Bronchial carcinoma (oat cell) | 1 |
| F | 33 | L | (L) | | | Carcinoma in situ of cervix uteri | 0 |
| F | 33 | L | L | L | L | Adenocarcinoma of breast | 1 |
| M | 32 | L | L | L | L | Teratocarcinoma/seminoma of testicle | 2 |

^a Usefulness uncertain because of low-grade malignancy with uncertain spontaneous evolution.

Warning signals may speed up diagnosis and treatment in some cancer patients and help these patients considerably. The reduction of diagnostic delay may include doctor's delay as well as patient delay, since the doctors made the recordings of the

warning signals. Patients have broader definitions of warning signals than have physicians (3). The contribution of warning signals to reduce patient delay may therefore be greater than this study indicates. The price to pay for these broader popular

notions is of course that more patients without cancer see a doctor for symptoms perceived as warning signals.

To increase diagnostic benefit in general practice, warning signals recognized at consultation should be put into a broader context as suggested in (6), and this should initiate a search for the cause of the warning signal.

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