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ORIGINAL PAPERS

Results of implementation of a fast track pathway for diagnosis of colorectal cancer

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ABSTRACT

Introduction: fast track pathways for diagnosis of cancer intend to decrease delays in diagnosis and treatment of cancer. It is recommended to initiate treatment in a period no longer than 30 days since admission in these circuits.

Aim: to know the characteristics and fluency of our Fast Track Diagnostic Pathway (FTDP) for Colorectal Cancer (CRC), with special attention to those patients selected for surgical treatment as a first choice.

Material and method: all patients who entered the FTDP for CRC during a period of 2 years (2008-2009) were analyzed as well as the rest of patients also diagnosed with CRC but never seen in the FTDP.

Results: of the 316 patients referred to the FTDP only 78 (24.7%) were diagnosed as having some kind of cancer derived from the digestive system. At the end 61 patients (19.3%) were diagnosed with CCR. The time interval from entry into the FTDP to the first hospital visit was 3 days (range 1-8), and the interval until colonoscopy was performed was 11.5 days (range 1-41).

14 (41.1%) of those patients chosen for surgery were operated on in a period lesser than 30 days while 28 patients (82.3%) underwent surgery before day 45 since admission into the circuit.

Conclusions: though the functioning of the FTDP is acceptable, any increase in number of patients can generate delays. For this reason it is advisable to have a team to assure a good functioning of the FTDP. A proper follow-up of the whole process will possibly avoid unnecessary delays and it will improve coordination of the different phases of the fast track pathway and treatment. As the diagnostic outcome is poor it is mandatory to implement alternatives programs like screening of asymptomatic population, allowing an early detection of this condition.

Key words: Fast track diagnostic pathway. Colorectal cancer. Surgical treatment.

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INTRODUCTION

Colonic and rectal cancers are usually analyzed together and represent the second most frequent location, if considering both sexes. They show a temporary rising trend. It is expected to be the most frequent cancer in the Spanish population by the year 2015, surpassing lung and breast cancer (1). Currently, in Spain the colorectal cancer (CRC) represents the third cause of mortality for neoplastic disease in males, only preceded by lung and prostate cancer. In females, breast cancer has the higher mortality rate, followed by CRC (2) Catalonia has one of the highest incidence of CRC in Europe.

The increase in number of newly diagnosed cancer is probably related to a better access to diagnostic tests. Anyway, the forecast of incidence of CRC is also increasing as a consequence of aging of the population (3).

The priority in the management of patients diagnosed with cancer is to improve survival and mortality. This is mainly relevant in those types of cancer with a high incidence in the population, basically for the expensive social and economical impact (4). Through the last decades most of the diagnostic tests, such endoscopic procedures, have become more readily accessible. Though complementary explorations and treatments have improved, the vast majority of patients will present with symptomatic disease at the time of diagnosis. There is a current program in Europe directed to make a faster diagnosis. Previous experiences reflected in the Anglo-Saxon literature recommend to establish a standard period of two weeks from diagnostic suspi-

cion to specialist consultation (5,6). It has been advocated that delay between diagnosis and first treatment should not exceed a period of 15 administrative days (7-9).

Delay in diagnosis can have deleterious consequences in patient's well-being, mainly at the psychological level because of the anxiety generated by diagnostic tests. A direct relation among diagnostic delay (10), stage of cancer disease and survival has not been proven (11). The quickness on the onset of first treatment will not influence survival but help diminishing the anxiety generated by the suspicion of having a cancer, thus improving quality of health assistance (4).

Appropriate real access to fast diagnosis and treatment of cancer patients allows a good quality oncologic assistance. To improve oncologic treatment, the period between diagnostic suspicion of malignancies and treatment should be shortened as much as possible. To accomplish this aim, different programs for rapid diagnosis of cancer have been designed. These programs are complex and require the implication and coordination of a multidisciplinary team. In Catalonia, in the year 2005 a program of referral and diagnostic coordination was implemented with the aim of reducing time of delay in diagnosis and treatment of patients with suspicion of CRC. It has been established as a goal, an interval lower than 30 days since entry into the fast track diagnostic pathway (FTDP) until first treatment is received. This might be somehow difficult to achieve in patients with associated diseases initially requiring a surgical operation.

The main goal of our study was to analyze the results of the FTDP for CRC in our hospital, specifically in the accomplishment of the diagnostic pathway for those patients whose first treatment will be surgery.

MATERIAL AND METHODS

We conducted a longitudinal and observational study of the results of those patients suspected of having a CRC who were admitted to the FTDP since January 2008 until December 2009 and were diagnosed and surgically treated in our hospital.

All patients diagnosed with CRC during the study period were registered. Data of those patients diagnosed with CRC out of the FTDP during the same period of time were also obtained. Patients data were collected in a protected database following the regulation of the LOPD (12). Patients were registered by clerks once the request of consultation at the FTDP was received. The rest of studied data was registered throughout patient's assistance process.

Area of study/ Reference's population

Sant Boi General Hospital is a first level hospital which offers health assistance to a population of 123.303 inhabitants distributed along nine Primary Health Centres (PHC).

Table I. Inclusion criteria to the CRDC

*Inclusion criteria**
1. Defecation rhythm change for a month without apparent cause
2. Iron deficiency anemia
3. Rectal Bleeding in patients over 40 without anal disease
4. Digital rectal examination: normal or tumor or presence of blood
5. Weight loss, asthenia, and anorexia associated with another of the above criteria
6. Others (professional criteria)

*Meet one or more criteria.

Variables of the study

Information regarding age, sex, year of admission, origin of patient's referral, date of entry in FTDP, date of first hospital visit, date of colonoscopy, date of colorectal surgeon consultation and date of surgical intervention was compiled.

Description of the FTDP

Criteria for admission of patients in FTDP were previously determined and agreed by PHCs and the hospital as criteria of suspicion of cancer from digestive system (Table I). The aim was to have patients receiving their first treatment in a period not longer than 30 days since entry in FTDP.

The fast track pathway is accessed by those patients with suspicion of cancer derived from the digestive system, presenting CRC-like symptoms, which meet the previously defined criteria and have been referred to the hospital for further investigation. Once a patient is included in the FTDP, a preferential clerical and health assistance pathway is activated.

When the FTDP is activated, the first hospital consultation is performed by doctors from the Department of Gastroenterology, who initiate the patient's workup and schedule the patients for colonoscopy. Patients were allowed to access the FTDP straight from our Emergency and Outpatients Departments to take full advantage of this rapid pathway.

A colorectal surgeon consultation is booked once the colonoscopy is performed as well as whenever a CRC is suspected from other tests results. An extension study will then be completed. All patients diagnosed with CRC are assessed by the Hospital Committee of Tumors and those patients who might require chemotherapy or radiotherapy are sent to a specialized Oncologic Hospital. As there is no oncologist at our hospital, the surgical intervention was defined as the first oncologic treatment received by patients. Extension studies, preoperative assessment, ferrous administration and nutritional supplementation were not considered as first oncologic treatment.

Table II. Características de los pacientes quirúrgicos según circuito asistencial

Diagnostic pathway		
	CRDC n = 34	*Others n = 64*
	n (%)	n (%)
Patients: n (%)	34 (34.7)	64 (65.3)
Sex: male	53 (54)	18 (53)
Age*	70.4 (9.5)	70.8 (11.4)
Year 2008/2009	17/17	39/25
Colonic cancer	25 (73.5)	43 (67.2)
Rectal cancer	9 (26.5)	21 (32.8)

*Age in years. Media (DE).

Analysis of the results of the FTDP

The source of patients (Hospital or PHCs) accessing the CRDC has been assessed, as well as the level of fulfillment of admission criteria.

The time intervals have been defined as follows:

- Interval from administrative registration (date of request for referral to FTDP) to first hospital consultation.
- Interval from admission to FTDP to first diagnostic colonoscopy.
- Interval from admission into FTDP to Colorectal Surgery visit.
- Interval from surgeon's consultation to surgery.
- Interval from admission into FDP to surgical intervention.

There are no records of how long those patients referred to the oncologic centre had to wait before they were seen.

Diagnostic criteria of colorectal cancer

We consider as diagnostic of CRC those abnormal findings during colonoscopy which are eventually confirmed by histological results. In those cases without histological confirmation, the colonoscopy is repeated or the diagnosis is confirmed by other complementary explorations. All patients are identified by the diagnostic codes 153 or 154 according to the ICD-9 (13). All these patients had a complete extension study performed, consisting of a proper preoperative workup, blood tests, CEA and computerized tomography (CT), adding pelvic MRI and rectal Ultrasound to those diagnosed of rectal cancer. An assessment of each patient was done by the Committee of Tumors deciding the most convenient multidisciplinary therapeutic approach.

After evaluation by the Committee of Tumors, patients can be chosen for surgery, for nonsurgical treatment (follow-up or palliative) or might need neoadjuvant preoperative treatment. We will focus on those patients whose first treatment will be the surgical intervention.

Data analysis

Data were analyzed by using only descriptive analysis. Continuous variables are presented with the mean and the range in parentheses. Categorical variables appear with absolute numbers or percentages. Time intervals appear as median and ranges.

RESULTS

From January 2008 to December 2009, 316 patients with suspected gastrointestinal cancer were included in the FTDP.

Seventy-eight patients from FTDP were diagnosed of cancer, which represents an overall diagnostic accuracy of 24.7%. Of these 78 patients, only 61 had a CRC, so the usefulness of the system for the detection of CRC was at 19.3%. The remaining patients were diagnosed as having other malignancies, being the gastric cancer the most frequent type among others such as ovarian cancer, bladder cancer and lymphoma.

Patients who entered the FTDP were referred mostly from the PCCs, being the route of access in 236 patients (74.7%). The remaining 80 patients (25.3%) were admitted from different areas of the hospital: Emergency Department and Medical Specialties. 100% of patients fulfilled one or more of the FTDP admission criteria presented in table I.

During the period of the study 141 cases of CRC were diagnosed in our hospital, 61 of them (43%) from the FTDP. The remaining 80 patients (57%) were diagnosed through other different diagnostic pathways.

Ninety-eight patients underwent surgery for CRC during this period, 34 (34.7%) from FTDP: 53 males (54%) and 45 (46%) females, of which 18 men and 16 women were from the FTDP. Colon and rectal cancer amounted to 68 and 30 patients respectively. The rest of surgical patients features are presented in table II.

As regarding the fluency of the program, the time interval since entry into the FTDP to first specialist consultation was a median of 3 days (range 1-8). The interval from entrance into the FTDP to first colonoscopy was 11.5 days (range 1-41). The interval from entrance into the FTDP to first consultation by a colorectal surgeon was 20 days (range 1-48). The interval between surgeon consultation and surgery was 13 days (range 3-46). The interval from entrance into the FTDP to surgery was 35 days (range 8-82) (Table III).

In this group of surgical patients, 14 (41.1%) were treated within 30 days after entry into the FTDP, 14 (41.1%) were operated on in a range between 31 and 40 days, therefore 28 (82.3%) patients were operated on before 40 days from entry into the FTDP. Only 6 patients (17.6%) underwent surgery after 45 days.

In the remaining 57% patients, not diagnosed via FTDP, the suspected diagnosis of cancer and the referral origin of these patients were very variable; it was not possible to define exactly which of the consultations triggered the diagnosis, precisely for the lack of symptoms specificity. In these cases no information was available regarding the actual delay in referral from the PHCs or from other hospital specialties. Finally, in this group of patients, the median time since first consultation by a colorectal surgeon until surgery was performed was14.5 days (range 1-56).

Table III. Time intervals of the patients included in the FTDP

Time intervals	*Median* (range)*
Interval entrance*-first hospital consultation	3 (1-8)
Interval entrance-colonoscopy	11.5 (1-41)
Interval entrance-surgeon	20 (1-48)
Interval surgeon-surgery	14.5 (1-56)
Interval entrance-surgery	35 (8-82)

*Entrance: admission to the pathway, administrative registration.

DISCUSSION

The global data of CatSalut (4), the leading organism of the Public Health System in the autonomous community of Catalonia, for the year 2007, related to patients who entered the program for rapid diagnosis of CRC indicate that 62.3% of these patients fulfilled the requirement of receiving first treatment within 30 days and 85.5% of them within 45 days. In our particular case we can inform only about patients who have been operated on. Even so, 28 (82.3%) of our surgical patients received their first treatment within 45 days, being our data very similar in surgical patients.

In our experience only 61 (19%) of patients included in the FTDP during the period we conducted the study, were finally diagnosed with CRC. In fact, the diagnostic profitability is very low, even though all cases met admission criteria to FTDP. When comparing our data to those from CatSalut we observe that 32% of patients who enter the FTDP are eventually diagnosed with CRC.

Though these results are higher than those reflected in our study, other studies show similar or even lower figures than ours (14-16). Thorne et al. (17) after checking the information from several papers, demonstrated that only 10.3% of those patients referred following the 2 weeks pathway for a rapid diagnosis of colorectal cancer ended up being diagnosed with cancer, assuming that all entries to the FTDP were correct. This and other studies (18,19) show the poor effectiveness of identifying cancer by using the admission criteria to the diagnostic pathway. This is possibly due to the wrong identification of patients at risk and the unspecific symptoms of CRC. We must not forget that early stages cancers show fewer symptoms than those in a more advanced stage, in which a combination of signs and symptoms triggers the clinical suspicion of cancer (20). Despite the fact that the main goal of FTDP is improving patients survival as well as their physical and psychological status, it might have actually increased the number of patients with benign diseases who accesses specialists doctors via this rapid pathway (21). The majority of the patients diagnosed with CRC continue coming from alternative routes to the FTDP, questioning the efficiency of the fast track pathway (22). With such a low diagnostic effectiveness, it is necessary to question the validity of this pathway and search for possibilities of improvement, not focusing on the diagnosis delay but on the missed occasions of diagnosis (23). Different studies show no improvement in the diagnosis of CRC nor at the detection of cancer at an earlier stage when compared to patients from other diagnostic pathways (20,24). There is no improvement in survival (25) even though differences between colon and rectal cancer has been described (26). There are no differences between the pathway of access to diagnosis and the TNM or Dukes Stage (10,22,27). Thus, the FTDP does not guarantee a diagnosis at an earlier stage when compared to patients referred via other routes.

Though efforts for achieving an early diagnosis have no proven its efficiency in the improvement of survival, we can not state that delaying diagnosis lacks relevance (28). Probably in the forthcoming years instead of worrying about delays in the diagnosis process, we will direct all our efforts in identifying through screening those asymptomatic patients at early stages who would no fulfill admission criteria to FTDP (29).

The delay in diagnosis is a concept of great complexity in which different factors play their own role: the biology of cancer, the patient, the patient's relatives, the socioeconomic environment (30), the doctor's attitude and the health system (31). Summarizing, there are 3 major causes of delay in the diagnosis of CRC. The first reason would be the patient's delay when consulting the doctor. The second reason could be a delay in consulting the specialist and eventually a delay at the hospital setting.

The situations of delay attributable to patients might improve by involving patients as accountable for his own health, the resources in the PHC's and the hospital assistance. Within this variability of scenarios leading us to the diagnostic delay, it would be necessary to emphasize the importance of the implementation and diffusion of large-scale information campaigns in this battle against cancer and to promote the Continuing Medical Education about suspicion and diagnosis of the CRC (32).

As for delays in consultation by a specialist, it's obvious the involvement of health professionals in offering a fast diagnosis and treatment though sometimes the available resources will not allow a prompt and reliable diagnosis. So, it might be important the optimization of these resources by the first health care provider consulting those patients.

Improving diagnostic and therapeutic guidelines, indications for colonoscopy or sigmoidoscopy or improving screening protocols the effectiveness of which has already been studied, and identification of risk populations (33,34).

As CRC symptoms are highly nonspecific and can be seen in other diseases, CRDC usefulness is poor. The importance of screening programmes (Faecal Occult Blood Test, sigmoidoscopy and others) relies on diagnosing asymptomatic patients and the possibility of achieving an early diagnosis of cancer aiming at improving survival among these patients (35). Results from a pilot program in Catalonia concerning CRC detection in patients with positive Fecal Occult Blood Test who underwent colonoscopy allows detection of CRC and premalignant lesions, and a decrease in the incidence of CRC (36). Further work on definition of groups at risk, patient participation (37) and cost- effectiveness parameters (38) in our setting should be carried out.

Our average time interval since surgeon's visit until surgical intervention is about 2 weeks for both groups of patients, being very difficult to diminish this interval. The fluency of the process in our hospital is acceptable, not having delays related to shortage of Operating Rooms or availability of complementary tests (CT, magnetic resonance imaging, rectal ultrasound) though it is a potential problem when checking other hospitals experience. That is why we strongly believe that in hospital settings there should be a team responsible for the management of the process of patients with cancer who seems to be indispensable in the follow-up, time optimization and the correct management of the economic resources. Unnecessary delays attributable to the process could be avoided. This team could also play a role in coordinating processes and act as a link between the patient and other centers of health assistance.

We conclude that the diagnostic performance of our study has been low though comparable to other studies (14-16) and we must improve the diagnosis of CRC by defining the criteria to select the patients, making all efforts to diagnose asymptomatic or high risk patients. Collaboration with PHCs and Emergency teams is essential to update and improve these pathways and also to coordinate efforts in the struggle for an early diagnosis of cancer, taking into special consideration the great amount of patients with cancer not reaching the FTDP.

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