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## Original Article

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### Establishment of Regional Alliance Clinical Pathways for Gastrointestinal Cancer in Tokushima

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**Abstract** Purpose : The maintenance of regional alliance clinical pathways for five cancers (lung, stomach, liver, large intestine, and breast) has been requested along with a readjustment of specific requirements for a plan to promote cancer control measures based on the Cancer Control Act. The aim of this study was to clarify the usefulness of regional alliance clinical pathways for cancer of the gastrointestinal tract in Tokushima Prefecture.

Methods : Subjects comprised patients with digestive organ cancer who had undergone surgery at Tokushima University Hospital between April 2009 and March 2010. Written informed consent was obtained from all participants, and it adjusted to the clinical pathways for cases that did not need postoperative adjuvant chemotherapy.

Results : This study was initiated in April 2009, and clinical pathways were used to 38 patients (gastric cancer, n = 17 ; colorectal cancer, n = 14 ; hepatocellular carcinoma, n = 7). Surgery was able to be performed. An especially severe problem like post operative complication was not appeared.

Conclusion : Making feasible pathways for standardization of procedures throughout the prefecture is important for cancer treatment of the gastrointestinal tract in Tokushima Prefecture.

**Key words** : Clinical pathways, Digestive cancer, Regional alliance, Liaison center, the Cancer Control Act

#### Introduction

Clinical pathways are used all over the world<sup>1)~3)</sup>. First developed in the United States in the 1980s, these pathways facilitate standardized treatment by doctors, nurses, and other medical professions and the optimize interventions during diagnosis and treatment, minimizing time and resources to achieve best effects, and providing a tool to improve the quality of treatment. The start of medical treatment represents an opportunity, and the introduction of clinical pathways provides two points by which the quality of time in hospital days and medical

treatment can be maximized<sup>4)~7)</sup>.

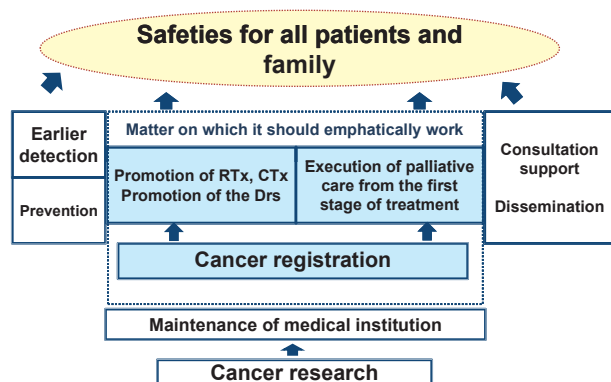
The maintenance of clinical pathways for regional alliances for five cancers (lung, stomach, liver, large intestine, and breast) has been requested by primary care doctors, along with a review of specific requirements for the Cancer Control Act (Fig. 1).

It is necessary to improve the roles of the medical institution in cancer diagnosis and treatment, and to attempt to secure the guarantee of safe, quality medical treatment for cancer. We tried a regional alliance critical path models with five cancers (lung, stomach, liver, large intestine, and breast).

The aim of this study was to clarify the usefulness of clinical pathways in regional alliances for digestive cancer in Tokushima Prefecture.

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**Fig. 1** Basic plans to promote anti-cancer measures. The regional alliance clinical pathways for five cancers should be prepared systematically for 5 years from 2008 year to 2012 in JAPAN.

## Materials and methods

### Patients

Patients with digestive organ cancer who underwent surgery in Tokushima University Hospital between April 2009 and March 2010 were included in this study. Written informed consent was obtained from all patients prior to participation, and it was adjusted to the clinical pathways of the case that did not need postoperative adjuvant chemotherapy.

### Creating indications for regional alliance clinical pathways

The policy for creating indications was provided as follows :

- According to diagnosis and treatment guidelines.
- Clear description of the roles of the medical institution.
- Cooperation plan is included in sentence.
- Commonness treatment plan of each disease.
- Protocols for obtaining consent.
- Clear description of criteria for emergency situations.

### Examination points

- Proportion of clinical stages for each digestive cancer.
- Situation for coordinated adjustment

### 3. Coordinating hospitals

## Results

### Proportion of clinical stages for each digestive cancer

Clinical stages for each cancer at Tokushima University Hospital in the last decade are shown in Figure 2. About 50% cases, clinical pathways were used because clinical pathways were made for stage I and II.

### Number of used cases

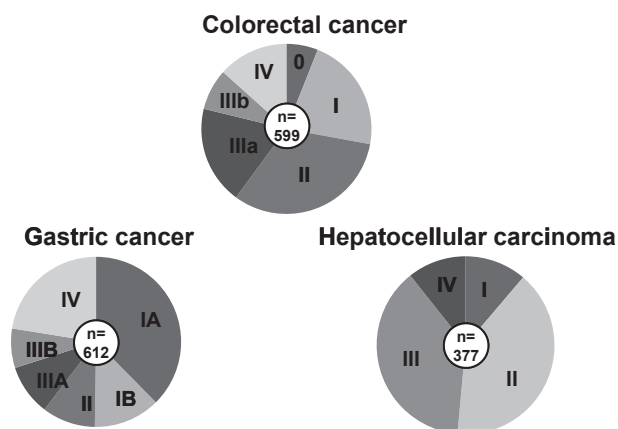
The system for alliances was taken with the coordinating hospital using clinical pathways for 73 cases in 1 year.

A breakdown of cases showed gastric cancer in 39 cases, colorectal cancer in 24 cases, and hepatocellular carcinoma in 10 cases. Gastric cancer accounted for over 50% of cases (Fig. 3).

### Gastric cancer

For gastric cancer, surgery was performed for 100 cases in 1 year, including 50 cases with early-stage cancer.

In 39 cases, clinical pathways were used, and the adjustment rate was 78% for the 50 cases of early-stage cancer. No change in treatment strategy was seen according to relapse or death



**Fig. 2** Proportion of clinical stages for each digestive cancer

Clinical stages for each cancer at Tokushima University over the last decade are shown in Figure 4. About 50% cases, clinical pathways were used.

within 1 year, and variance like recurrence is not generated. The reason for the lack of adjustment in the remaining 22% of cases included a lack of primary care doctors (Fig. 4A).

### Colorectal cancer

In colorectal cancer, surgery was performed for 105 cases in 1 year, and 40 cases represented early-stage cancer.

Adjustment was performed for 24 cases, representing an adjustment rate of 60% among the 40 early-stage cancer cases for clinical pathways. Recurrence has not been similarly generated. The reason for the lack of adjustment in the remaining 40% of cases included a lack of primary care doctors (Fig. 4B).

### Hepatocellular carcinoma

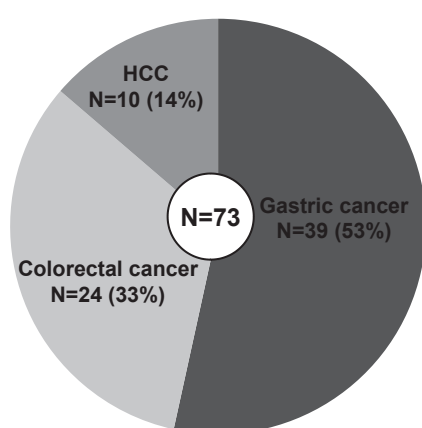
In hepatocellular carcinoma, surgery was performed for 27 cases in 1 year, including 15 early-stage carcinomas.

Adjustment was performed for 10 cases, representing an adjustment rate of 67% among the 15 early-stage cases for clinical pathways. Recurrence has not been similarly generated. The reason for the lack of adjustment in the

remaining 33% of cases included a lack of primary care doctors (Fig. 4C).

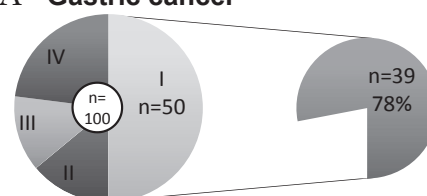
### Distribution of coordinated hospitals in Tokushima

The colored area represents Tokushima City. The Tokushima university hospital, as the base hospital, is in the central part of the city. Dots demonstrate the distribution of coordinating hospitals (Fig. 5).

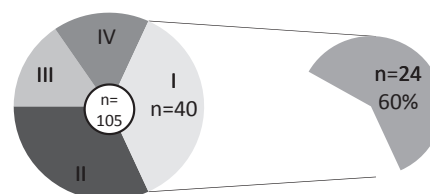


**Fig. 3** Number of adjustment cases  
The system for alliances was taken with the coordinating hospital using clinical pathways for 73 examples in the course of 1 year. A breakdown of cancers showed 39 gastric cancers, 24 colorectal cancers, and 10 hepatocellular carcinomas. Gastric cancer accounted for more than 50% of cases.

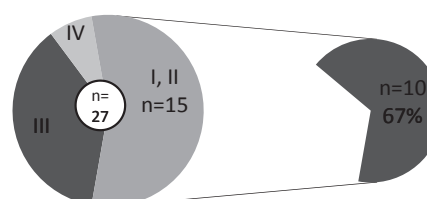
### A Gastric cancer



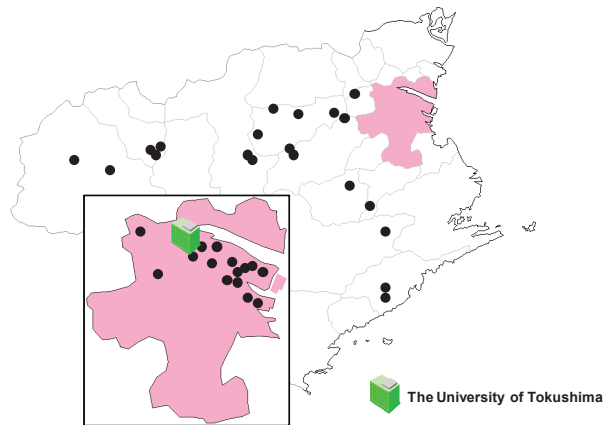
### B Colorectal cancer



### C Hepatocellular carcinoma



**Fig. 4** Indication of clinical pathways at each cancer  
A) In gastric cancer, surgery was performed for 100 cases in 1 year, including 50 early-stage cases. Clinical pathways were used in 39 cases, and the adjustment rate was 78% in the 50 early-stage cases for clinical pathways.  
B) In colorectal cancer, surgery was performed for 105 cases in 1 year, including 40 early-stage cases. Actually having adjusted was 24 cases, and the adjustment rate was 60% in the 40 early-stage cases for clinical pathways.  
C) In hepatocellular carcinoma, surgery was performed for 27 cases in 1 year, including 15 early-stage cases. Actually having adjusted was 10 cases, and the adjustment rate was 67% in the 15 early-stage cases for clinical pathways.



**Fig. 5** Prefecture distribution of coordinating hospitals  
The colored area represents Tokushima city. The University of Tokushima in the central part of the city represents the base hospital. Dots demonstrate the distribution of coordinating hospitals.

## Discussion

In Japanese Law (The Basic Plans to Promote Anti-Cancer Measures), the maintenance of regional alliance clinical pathways for five cancers (lung, stomach, liver, large intestine, and breast) has been requested along with a readjustment of specific requirements for a plan to promote cancer control measures based on the Cancer Control Act<sup>8)</sup>. However, many problems are thought to exist in the construction of a system for community-based cancer treatment and the approval of regional alliance clinical pathways for cancer.

Regional alliance clinical pathways created with the aim of achieving construction of a high-quality community health network in non-cancer areas. Clinical pathways are aimed at clarifying and structuring the whole process of disease management based on standardized systems of diagnosis and treatment.

The base hospital for cancer diagnosis and treatment represents the cornerstone of the system for restructuring medical treatment of cancer.

Regional alliance clinical pathways allow specification of roles according to the function of medical treatment. The primary purpose is to

guarantee the quality of medical care.

The function of the medical institution and roles of the medical treatment shown in the standard treatment guideline etc.

The definition of clinical pathway was a “Tool for community health cooperation to guarantee quality and safety of cancer medical treatment. The regional alliance clinical pathway was generated from the necessity on the medical treatment site. We want to expect to lead to promotion of medical treatment for cancer in which the regional alliance critical paths for cancer secure enhancement of quality and safety.

## Conclusions

Making pathways for standardization of care between prefectures is important for cancer of the digestive organs in Tokushima prefecture.

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## Conflict of interest statement

The authors have no conflicts of interest to declare.

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(和文抄録)

## 胃，大腸，肝癌における地域医療連携クリニカルパス運用について

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〔背景・目的〕がん対策推進基本計画に従い，がん診療連携拠点病院において5大がんの地域連携パス作成が必須とされ，早急な対応が求められている．当院も徳島県がん診療連携拠点病院として，胃がん，大腸がん，肝臓がんの地域連携パスを作成し，運用を開始したので現状と課題を検討する．

〔対象と方法〕2009年4月から2010年3月の1年間に当院で手術加療を受けた胃がん，大腸がん，肝臓がんが対象．現在は病診連携に重点をおき，「かかりつけ医の負担を増やさない．」というコンセプトで主にStage II以下の症例に限って連携パスを適用している．

〔結果〕平成21年4月から本格的に運用を開始し，胃がん17例，大腸がん14例，肝臓がん7例の計38例に適応させた．早期症例では特に大きな問題はなく，運用可能であった．

〔考察〕かかりつけ医は現在行っている診療行為の範囲内で連携は可能であり，原則的には全ての紹介医がかかりつけ医として連携可能であると思われる．現段階では早期症例に限定しているが，今後の課題としては紹介先医院の調剤薬局に抗癌剤についての啓蒙を行い，術後補助化学療法を含めた連携パス導入を目指したい．また，大都市では拠点病院が複数個所あり，統一モデルの作成は困難と思われるが，徳島県のような地方ではすでに肺がん術後連携パスが県下統一パスとして運用され，数種類のパスを使用することにより早期発見，早期治療に役立っている．

〔まとめ〕消化器がんにおいても徳島県のがん診療に貢献するため，地方だからこそ実現可能な県下統一連携パスの作成が重要である．