Description of Treatment of Uterus Cancer Based on the Japanese DPC Database

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Abstract

BACKGROUND: Cancer has been the leading cause of death in Japan since 1981 and the number of cancer deaths in 2010 in Japan was about 354,000. In 2002, The Japanese government has introduced the casemix based evaluation system. This made it possible to use the casemix database for the evaluation of clinical process of cancer treatment. We tried to describe the treatment process of uterus cancer among the Japanese acute care hospitals. MATERIAL AND METHOD: We have extracted 36,490 uterus cancer cases from the DPC database (1st July 1 2010 to 31st October 2010). Using this dataset, we have described the cases according to age category, cancer stage and contents of treatment. RESULTS: Among all cases, cervical cancer cases were 14,498, corpus cancer cases were 15,322 and other types (including unknown) were 6,670. Both corpus and cervical cancer, stage 1 is the most frequent for primary cases. For recurrent cases of corpus cancer, stage 3 was the most frequent (34%) and for cervical cancer, stage 2 was the most frequent (29%). In both case of corpus and cervical cancer, the most frequent regimen was "carboplatin + paclitaxel". CONCLUSION: By using DPC data, it is possible to describe the treatment process of uterus cancer among the Japanese acute care hospitals. If it become to be possible to combine DPC database with other large scale clinical data, it will be an important information resource to complement such clinical database.

Key words: DPC, casemix, uterus cancer, EBM, Japan

❖ Introduction

Cancer has been the leading cause of death in Japan since 1981. The number of cancer deaths in 2010 in Japan was about 354,000. In terms of cancer sites, lung was the leading site (23.8%) for males, followed by stomach (15.6%), liver (10.2%), colon (7.1% ; same rank when colon and rectum are combined : 11.4%), and pancreas (6.9%). The leading site for females was lung (13.7%), followed by stomach (12.1%), colon (10.6% ; same rank when colon and rectum are combined : 14.4%), pancreas (9.5%), and breast (8.8%)[1].

Considering the importance of dealing with cancer for the population's health, the Japanese government has been implemented the 3rd-term Comprehensive 10-year Strategy for Cancer Control since 2004. The main purpose is to largely reduce the morbidity and mortality of cancer by promoting comprehensive health care, prevention and research.

In June 2006, the Cancer Control Act was

approved and the law has been implemented since April 2007. The basic concepts of the law are 1) promotion of cancer research and utilization of research outcomes, 2) equalization of cancer medical services, and 3) development of cancer medical services to satisfy patients. Furthermore, according to this law, the Japanese government constructed the Basic Plan in order to promote Cancer Control Programs in June 2007, covering five fiscal years from 2007 to 2011. The plan defines the basic concept of cancer control and aims to promote comprehensive and well-planned cancer control in Japan.

As cancer is the leading cause of death in Japan and the most important issue of medical research, patients and their family, as well as the general population demand more objective and practical information about cancer treatment. The Japanese government has introduced the casemix based evaluation system in 2002. In 2011, 1650 acute care hospitals submit their casemix related data to the Ministry of Health, Labour and Welfare (MHLW). As this dataset contains very detailed process data for each inpatient case, it is possible to use the casemix database for the evaluation of clinical process of cancer treatment.

For this purpose, the authors tried to describe the treatment process of uterus cancer among the Japanese acute care hospitals.

❖ Materials and Method

Data for this study were extracted from the Japanese inpatient administrative claims database, the DPC database [2]. The database was originally instituted as part of a national project to develop a Japanese case-mix classification system, which has been ongoing since 2002. The annual number of cases in the database is approximately three million. The database contains: i) main diagnoses, pre-existing comorbidities at admission and complications after admission which are coded with ICD-10 codes; ii) surgical procedures coded with Japanese original codes (K-codes), operation time and the performed date; iii) discharge status (dead or alive); and iv) a list of drugs and blood products used and the dates of use. Study approval was obtained from the Institutional Review Boards and the Ethics Committee of The Tokyo Medical and Dental University. Given the anonymous nature of the data collection process, informed consent was not required.

For this study, we have extracted 36,490 uterus cancer cases from the DPC database (1st July 1 2010 to 31st October 2010). Using this dataset, we have described the cases according to age category, cancer stage and contents of treatment. Statistical analyses were conducted using IBM SPSS version 19.0 (IBM SPSS, Armonk, NY, USA).

❖ Results

Among the 36,490 cases, cervical cancer cases were 14,498, corpus cancer cases were 15,322 and other types (including unknown) were 6,670. Average ages were 51.2 (SD: 14.9), 60.3 (SD: 11.5) and 39.7 (SD: 11.2), respectively.

Table 1 shows the number of cases according to primary/recurrent, stage, and type of cancers. For primary cases of corpus cancer, stage 1 is the most frequent (40%) followed by stage 3 (24%), unknown (16%), and stage 4 (12%). For primary case of cervical cancer, stage 1 is the most frequent followed by stage 0 (20%), stage 2 (16%), unknown (16%) and stage 3 (13%). For recurrent cases of corpus cancer, stage 3 was the most frequent (34%) followed by stage 4 (25%) and stage 1 (21%). For cervical cancer, stage 2 was the most frequent (29%) followed by stage 3 (21%) and stage 1 (21%) and stage 4 (19%). Corpus cancer cases tend to be in more advanced stages.

Among the cases, the most frequent DPC was 120020xx99x40x "Uterus cancer, no surgical procedure, with chemotherapy, without radiotherapy, without CC" (7,496 cases, 30.4%), followed by 120020xx02x0xx "Uterus cancer, partial resection, without additional procedure, without chemotherapy, without radiotherapy" (6,095 cases, 24.7%) and 120020xx02x0xx "Uterus cancer, cancer surgery, without additional procedure, without chemotherapy, without radiotherapy" (3,605 cases, 14.6%).

Concerning to choice of surgical procedures both for corpus and cervical cancers, for primary corpus cancer cases, 55.5% (6302 of 11,360 cases) were non-surgical and 31.7% (3,603 cases) received total hysterectomy. In the case of cervical cancer, 43.1% (4,646 of 10,775 cases) were non-surgical, 26.1% (2,515 cases) received partial hysterectomy and 22.7% (2,441 cases) received total hysterectomy. For recurrent corpus cancer cases, 82.8% (3,241 of 3,914 cases) were non-surgical and 12.0% (471 cases)

Table 1   Number of cases according to primary/recurrent, stage, and type of cancers (1st July 1 2010 to 31st October 2010)

		Stage0	Stage1	Stage2	Stage3	Stage4	Unknown	Total
Primary	Others	45	10	2	12	8	62	139
		32%	7%	1%	9%	6%	45%	100%
	Corpus	81	1,824	294	1,085	550	750	4,584
		2%	40%	6%	24%	12%	16%	100%
	Cervical	807	965	670	518	487	658	4,105
		20%	24%	16%	13%	12%	16%	100%
	Total	933	2,799	966	1,615	1,045	1,470	8,828
		11%	32%	11%	18%	12%	17%	100%
Recurrent	Others	1	1	3	2	7	6	20
		5%	5%	15%	10%	35%	30%	100%
	Corpus	3	124	43	206	152	75	603
		0%	21%	7%	34%	25%	12%	100%
	Cervical	7	151	208	154	141	65	726
		1%	21%	29%	21%	19%	9%	100%
	Total	11	276	254	362	300	146	1,349
		1%	20%	19%	27%	22%	11%	100%

received other surgical procedures. For cervical cancer, 75.5% (2,909 of 3,692 cases) were non-surgical and 16.6% (614 cases) received other surgical procedures. According to the detailed process analysis, the most frequent "other" procedure was "placement of central venous access port" both for corpus and cervical cancer.

Table 2 showed the regimen of chemotherapy stratified by corpus and cervical cancer. In the case of corpus cancer, the most frequent regimen was "carboplatin + paclitaxel" (4,481 of 9,717 cases; 46%) followed by "doxorubicine+ cisplatine" (690 cases, 7%), "carboplatin + paclitaxel + dexamethasone" (642 cases, 7%), "carboplatin + docetaxel" (642 cases, 7%) and "carboplatin + docetaxel + dexamethasone" (642 cases, 7%). For cervical cancer, the most used regimen was "carboplatin + paclitaxel" (1,536 of 7,142 cases, 22%), followed by "cisplatine" (809, 11%), "irinotecan + nedaplatin" (538, 8%), "paclitaxel+ cisplatine" (423, 6%) and irinotecan hydrochloride (413, 6%).

❖Discussion

Cancer has been the leading cause of deaths in Japan, with one person out of three dying of the disease. More people are dying of cancer as the population gets older. The countermeasure for cancer control is an increasingly serious issue for the health policy maker in Japan. However, it is criticized that there are wide variation of cancer care in accessibility and quality among the different regions and institutions.

As Table 2 shows, the most frequent regimen for corpus cancer was "carboplatin + paclitaxel" in Japan. Compared with cisplatine, carboplatin is considered less possibility of causing side effects such as nausea and vomiting. This may explain the current result. That is, clinicians prefer to use carboplatin in order to avoid side effects. Although we cannot clarify which regimen is clinically most effective by the DPC database only, it is very important to recognize that the process of cancer treatment at the DPC hospital can be clarified by using the DPC data.

In order to further ameliorate cancer control policy, MHLW has established "The third term Comprehensive 10-Year Strategy for Cancer Control" in 2006. One of the most important objectives of the Strategy is to assure the equal access to quality cancer treatment for all population. This requires the objective information for citizens about the actual situation of cancer treatment. The DPC framework is can be used for this purpose. Using the summarized results such as Table 2, both clinicians and patients can know what are the main streams of today's cancer treatment, for example. This kind of information will facilitate EBM and Quality Assurance movement in

Table 2   Number of cases stratified by chemotherapy regimen and cancer type (1st July 1 2010 to 31st October 2010)

Cervical cancer: Individual drug

Total	paclitaxel	cisplatine	carboplatin	irinotecan hydrochloride	dexamethasone
7,142	2,729	2,683	2,190	1,601	1,350
	38%	38%	31%	22%	19%

Corpus cancer: Individual drug

Total	carboplatin	paclitaxel	cisplatine	dexamethasone	docetaxel hydrate
9,717	6,380	5,892	1,848	1,626	1,485
	66%	61%	19%	17%	15%

Cervical cancer: regimen

Total	carboplatin +paclitaxel	cisplatine	irinotecan +nedaplatin	paclitaxel +cisplatine	irinotecan hydrochloride
7,142	1,536	809	538	423	413
%	22%	11%	8%	6%	6%
Cumulative %	22%	33%	40%	46%	52%

Corpus cancer: regimen

Total	carboplatin +paclitaxel	doxorubicine +cisplatine	carboplatin +paclitaxel +dexamethasone	carboplatin +docetaxel	carboplatin +docetaxel +dexamethasone
9,717	4,481	690	642	575	283
%	46%	7%	7%	6%	3%
Cumulative %	46%	53%	60%	66%	69%

cancer care.

     Several limitations must be considered when interpreting our results. First, we lacked precise information about cancer staging. As the DPC database is an administrative data, clinicians are not enough motivated to register all required data that are not necessary for reimbursement. Furthermore, the DPC data does not have information that becomes available after discharge. This sometimes happens for time-lag for making pathological diagnosis. Second, as the DPC database covers only in-patient, information of chemotherapies at out-patient services is not covered. This might cause a bias. In order to ameliorate the usability of DPC database, MHLW decided to gather the administrative data of out-patient services of DPC hospitals from 2012. This will improve the comprehensiveness of DPC database for clinical researches. Despite these limitations, we believe that DPC data-

base has an important potential to advance a large scale clinical studies in Japan. Of course, as DPC data is under the administrative scheme, it is not appropriate to include clinical data that are not directly associated with financial evaluation. However, if we can combine DPC database with other large scale clinical data, it will be an important information resource to complement such clinical database and to reduce the workload of registry. For this purpose, we have tried to combine the DPC database and Stroke registry [3]. This trial has successfully showed the possibility to use the DPC database as a complement resource of Stroke registry system. It is expected that this trial would be adapted to other clinical database.

❖**References**

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