

Importance of psychiatric disorders as comorbidities and complications among the acute in-patient cases in Japan

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Abstract

Number of patients with mental disorders is increasing in Japan. According to the Patient survey of 2008, the patient of mental disorders has increased from 2,181 thousands of 1996 to 3,233 thousands of 2008. Reflecting this situation, it becomes an important issue how to properly treat the mental disorders among the in-patients of acute somatic care hospitals. In order to clarify the actual situation, we have investigated the prevalence of psychiatric problem as comorbidities and complications among 2,170,720 cases from 900 DPC hospitals from 1st July to 31st October 2010.

In total, 144,342 of 2,170,720 cases (6.6%) had some kinds of mental disorders. The highest percentage was observed for MDC01 (17,893 of 142,426 cases: 12.6%) followed by MDC16 (17,357 of 153,743 cases: 11.3%) and MDC10 (7,862 of 71,227 cases: 11.0%) except for MDC17 (Psychiatric DPC group: 100.0%). The highest disorder was dementia (P0+P9=32,788+13,539=46,327), followed by F3 (Mood disorders), F4 (Neurotic, stress-related and somatoform disorders) and F2 (Schizophrenia, schizotypal and delusional disorders).

The present study has indicated the needs of psychiatric care are large in the Japanese acute somatic care hospitals.

Key words: DPC, psychiatric care, dementia, acute in patient care, Japan

Introduction

Number of patients with mental disorders is increasing in Japan. According to the Patient survey of 2008, the patient of mental disorders has increased from 2,181 thousands of 1996 to 3,233 thousands of 2008.¹⁾ Most of the increase was due to that of out-patients (1,852 to 2,900). Especially the increase of pa-

tients with mood disorders (depression and/or mania) was remarkable. The change of social environment caused by a long lasting economic slump after the end of bubble economy will be one of the possible causes. Another important possible cause is the ageing. The number of aged people with dementia is increasing along with the ageing of the society. MHLW estimated that the number of dementia persons would increase from 2.1 million of 2008 to 3.5 million 2030²⁾.

This will cause a profound impact on the medical service delivery system of Japan. For example, the number of aged cases with dementia is increasing at the emergency room of acute care hospitals. A typical case is the dementia aged with aspiration pneumonitis who are transferred from the long term care facilities. In or-

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der to treat such cases properly, the acute somatic care hospital is better to have a psychiatric department. However, as Kobayashi has pointed out, the number of psychiatrist working in the acute care hospitals is decreasing in Japan³. As we have reported in the previous literature, a psychiatrist plays an important role for the mental support of cancer patient. In order to advance the liaison mental care for the cancer patients⁴, it seems a quite important issue to ameliorate the psychiatric care in the acute care hospitals.

For this purpose, we have investigated the prevalence of psychiatric problem as comorbidities and complications among the acute somatic patients based on the Japanese case mix data.

❖ Material and methods

Data for this study were extracted from the Japanese inpatient administrative claims database, the DPC database. 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 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.

The DPC data (1st July to 31st October 2010) of 2,170,720 cases from 900 hospitals was used for the analysis. At first, the prevalence of mental disorders including primary diagnosis, comorbidities and complication was calculated for each MDC (Major Diagnosis Categories). Table 1 shows the content of each MDC. Then the detailed analysis of mental disorder (ICD10 three digit level; F01, for example) was conducted. Although DPC based payment is bundled, the Doctor-fee type of procedure is paid by fee-for-service (FFS) basis. The treatment by psychiatrist is included into the table of FFS procedures. Using this information, we have calculated the percentage of mental disorder patients who received the treatment by psychiatrist.

Statistical analyses were conducted using IBM SPSS version 19.0 (IBM SPSS, Armonk, NY, USA)

❖ Results

Table 2 showed the percentage of patients with mental disorders stratified by MDC. In total, 144,342 of 2,170,720 cases (6.6%) had some kinds of mental disorders. The highest percentage was observed for MDC01 (17,893 of 142,426 cases: 12.6%) followed by

Table 1 Major Diagnosis Category (MDC)

MDC	Name of MDC
MDC01	Diseases and Disorders of the Nervous System
MDC02	Diseases and Disorders of the Eye
MDC03	Diseases and Disorders of the Ear, Nose, Mouth and Throat
MDC04	Diseases and Disorders of the Respiratory System
MDC05	Diseases and Disorders of the Circulatory System
MDC06	Diseases and Disorders of the Digestive and Hepatobiliary System and Pancreas
MDC07	Diseases and Disorders of the Musculoskeletal System and Connective tissues
MDC08	Diseases and Disorders of the Skin
MDC09	Diseases and Disorders of the Breast
MDC10	Endocrine, Nutritional and Metabolic Diseases and Disorders
MDC11	Diseases and Disorders of the Kidney and Urinary Tract
MDC12	Diseases and Disorders of the Female Reproductive System
MDC13	Diseases and Disorders of the Blood and Blood Forming Organs and Immunological Disorders
MDC14	Pediatric Diseases and Disorders
MDC15	Newborns and other Neonates with Conditions Originating in the Perinatal Periods
MDC16	Injuries, Poisonings and Burns
MDC17	Metal Diseases and Disorders
MDC18	Others

MDC16 (17,357 of 153,743 cases: 11.3%) and MDC10 (7,862 of 71,227 cases: 11.0%) except for MDC17 (Psychiatric group: 100.0%).

Table 3 showed the detail of mental disorders among the MDC01 patients. The highest number was observed for cerebral infarction (6,138 cases; 10.5%), followed by dementia (2,182; 100.0%), epilepsy (1,546; 13.6%), Parkinson's disease (1,362; 30.6%) and non-traumatic intracranial hematoma (1,340; 9.8%).

Table 4 showed the detail of mental disorders among the MDC10 patients. The highest number was observed for type II diabetes mellitus (1,928 cases; 8.3%), followed by volume depletion (1,622; 17.1%), other disorders of fluid, electrolyte and acid-base balance (776, 18.9%), Hypofunction and other disorders of pituitary gland (690; 98.7%) and other nutritional deficiencies (529; 28.9%).

Table 5 showed the detail of mental disorders among the MDC16 patients. The highest number was observed for hip fracture (4,576 cases; 19.5%), followed by poisoning (3,884; 44.1%), injury of head (1,869; 10.5%), Injury of thoracic (1,103; 11.6%) and Effects of heat and light and hypothermia (806; 13.2%).

Table 6 showed the detail of mental disorder (ICD10 three digit level). The highest disorder was dementia (P0+P9=32,788+13,539=46,327), followed by F3 (Mood disorders), F4 (Neurotic, stress-related and somatoform disorders) and F2 (Schizophrenia, schizotypal and delusional disorders).

❖ Discussion

As our results have showed, the fact that 6.6% of in-patients of the Japanese acute care hospital had some kinds of mental disorders is important. Especially the importance of dementia is increasing along with the ageing of society. In addition, mood disorder and stress related disorders are also important pathologies. Social mood related with economic slump is one possible explanation. Another important factor must be cancer. Today one of two Japanese will experience some kinds of cancer during one's total life. Although considerable percentage of cancers becomes chronic diseases, patients might have an impression of fatal diseases for cancer. This naturally causes a depressive feeling. Our previous study has clarified that about 2.5% of breast cancer cases hospitalized in the DPC based acute care facilities have depression related symptoms⁴.

These results apparently indicate the needs of psy-

chiatric care are large in the Japanese acute somatic care hospitals. However, it is reported that the number of psychiatrists has been decreasing in the acute care hospitals³. One of the reasons of this decrease is that the psychiatrists do not receive appropriate respect within the acute somatic care hospitals⁵. As a result, the psychiatric care in the acute somatic hospital is not enough in Japan. For example, our previous study has clarified that the percentages of breast cancer patients with depression received psychiatric liaison care, antidepressants, and palliative care were 9.9%, 18.7% and 2.0%, respectively⁴. The results have suggested that the Japanese breast cancer patient could not receive appropriate clinical services for mental problems.

The increase of dementia causes a profound effect on the emergency room of the Japanese acute care hospitals. Recently the transfer of aspiration pneumonia cases from the long term care facilities is increasing. Considerable percentage of such cases has dementia. This type of aged patient has higher possibility of delirium during the hospitalization. The delirium consumes considerable workload of nurses and nurse aids. In order to solve the problem, at least two programs are necessary. The first is to ameliorate the treating capacity of long term care facilities. Considering the shortage of physicians working for long term care facilities, the introduction of nurse practitioners will be necessary as in USA. The second is to formalize the psychiatrist services for all kinds of institutional care. Of course, it is not realistic that all facilities have psychiatrists. Part time service will do. This requires a change in mind among the doctors working for acute somatic care hospitals. Yamazaki has indicated that disrespect of somatic care doctors for the psychiatrist is one of the important reason why psychiatrists do not work for the acute somatic care hospitals⁵. All health professional must understand that the mental health services have become indispensable for all kinds of care scenes.

Table 2 Percentage of patients with mental disorders stratified by MDC (1st July to 31st October 2010)

MDC	Total cases	Cases with mental disorders	Percentage of cases with mental disorders (%)	Percentage of patients treated by psychiatrists
Total	2,170,720	144,342	6.6	19.9
Unknown	13,184	98	0.7	55.1
01	142,426	17,893	12.6	13.4
02	104,897	1,800	1.7	9.2
03	87,827	3,180	3.6	13.8
04	237,430	19,276	8.1	10.5
05	212,828	10,275	4.8	12.4
06	468,842	23,547	5.0	13.8
07	116,621	6,746	5.8	18.1
08	36,697	2,263	6.2	12.9
09	25,937	1,213	4.7	16.3
10	71,227	7,862	11.0	19.5
11	166,488	8,101	4.9	13.3
12	147,936	3,289	2.2	22.0
13	52,491	3,492	6.7	22.5
14	51,161	341	0.7	7.0
15	28,740	1,017	3.5	8.2
16	153,743	17,357	11.3	20.2
17	14,223	14,223	100.0	64.6
18	38,022	2,369	6.2	18.9

Table 3 Detail of mental disorders among the MDC01 patients (1st July to 31st October 2010)

Base DPC	Total cases	Cases with mental disorders	% of cases with mental disorders
Total	142,426	17,893	12.6
Cerebral infarction	58,662	6,138	10.5
Dementia	2,182	2,182	100.0
Epilepsy	11,344	1,546	13.6
Parkinson's disease	4,446	1,362	30.6
Non-traumatic intracranial hematoma	13,633	1,340	9.8
Brain tumor	11,822	855	7.2
Hydrocephalus	2,147	391	18.2
Non-traumatic epidural hematoma	3,476	369	10.6
Other brain disorders	2,528	348	13.8
Alcoholism	328	328	100.0
Unruptured cerebral aneurysm	7,270	321	4.4
Cerebrospinal meningitis	5,318	311	5.8
SAH	4,790	300	6.3
Cortico-Basal Degeneration	1,713	274	16.0
motor neuron disease	1,681	214	12.7

Table 4 Detail of mental disorders among the MDC10 patients (1st July to 31st October 2010)

Base DPC	Total cases	Cases with mental disorders	% of cases with mental disorders
Total	71,227	7,862	11.0
Type II Diabetes mellitus (without ketoacidosis)	23,344	1,928	8.3
Volume depletion	9,504	1,622	17.1
Other disorders of fluid, electrolyte and acid-base balance	4,115	776	18.9
Hypofunction and other disorders of pituitary gland	699	690	98.7
Other nutritional deficiencies	1,832	529	28.9
Diabetes mellitus with ketoacidosis	2,321	247	10.6
Hypokalaemia	1,030	243	23.6
Other metabolic disorders	2,155	231	10.7
Hypoglycemia	1,803	185	10.3
Hyperaldosteronism	2,961	171	5.8
Thyroid cancer	4,986	166	3.3
Type I Diabetes mellitus (without ketoacidosis)	1,937	165	8.5
Hyperthyroidism	1,511	104	6.9
Other diabetes mellitus	1,025	94	9.2
Hypoipituitarism	2,045	75	3.7

Table 5 Detail of mental disorders among the MDC16 patients (1st July to 31st October 2010)

Base DPC	Total cases	Cases with mental disorders	% of cases with mental disorders
Total	153,743	17,357	11.3
Hip fracture	23,414	4,576	19.5
Poisoning	8,802	3,884	44.1
Injury of head	17,730	1,869	10.5
Injury of thoracic	9,505	1,103	11.6
Effects of heat and light and hypothermia	6,089	806	13.2
Multiple injury	4,503	455	10.1
Injury of muscles and tendons	6,559	393	6.0
Injury of pelvis	3,090	369	11.9
Compartment syndrome	1,479	340	23.0
Fracture and dislocation of knee	4,628	328	7.1
Cervical cord injury	3,063	318	10.4
Fracture and dislocation of shoulder	3,917	299	7.6
Fracture and dislocation of ankle/foot	6,080	232	3.8
Injuries, unspecified	3,378	201	6.0
Fracture of forearm	6,615	175	2.6

Table 6 Percentage of psychiatric patients with treated by psychiatrist (1st July to 31st October 2010)

MDC	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	G30	Total
Total	32,788	6,366	24,787	39,209	32,840	7,645	702	1,169	1,739	732	13,539	144,342
Unknown	2	13	13	19	27	2	35	0	0	0	0	98
01	6,154	707	2,313	3,490	2,653	1,235	24	174	416	70	3,105	17,893
02	251	16	234	498	639	84	4	41	17	15	103	1,800
03	275	51	443	809	1,384	279	4	24	68	22	99	3,180
04	6,130	326	3,160	3,918	3,402	1,093	39	189	238	57	2,588	19,276
05	2,590	156	1,362	2,405	3,191	304	8	23	22	25	1,018	10,275
06	4,739	1,298	4,104	6,476	6,174	971	26	159	113	66	1,711	23,547
07	838	101	1,028	2,695	2,086	236	18	35	40	26	326	6,746
08	544	28	311	756	483	83	2	16	11	11	241	2,263
09	101	7	283	378	468	44	2	10	4	3	43	1,213
10	1,693	378	997	2,113	1,688	1,150	28	77	106	50	780	7,862
11	2,407	123	1,382	1,927	1,527	280	11	41	54	36	1,012	8,101
12	144	8	650	1,098	1,456	136	26	18	8	5	63	3,289
13	701	82	593	1,031	960	167	11	12	34	5	237	3,492
14	10	1	23	30	93	15	2	23	152	8	4	341
15	254	32	109	205	300	52	3	11	52	5	98	1,017
16	4,483	905	3,265	5,703	2,705	535	254	82	85	186	1,808	17,357
17	707	2,078	4,037	5,145	3,261	827	199	215	289	134	77	14,223
18	765	56	480	513	343	152	6	19	30	8	226	2,369

F0: Organic, including symptomatic, mental disorders, F1: Mental and behavioural disorders due to psychoactive substance use

F2: Schizophrenia, schizotypal and delusional disorders, F3: Mood [affective] disorders,

F4: Neurotic, stress-related and somatoform disorders, F5: Behavioural syndromes associated with physiological disturbances and physical factors

F6: Disorders of adult personality and behaviour, F7: Mental retardation, F8: Disorders of psychological development, F9: Behavioural and emotional disorders with onset usually occurring in childhood and adolescence

G30: Dementia

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