

(1997)

_____ : 1997

_____ : 1998 가 42

1997 1 12 1 Excel

_____ : 1997 가 42 71 , 100 , 26

, 205 가 19,773 , 42 89% , 6 MeV

가 95% 5% 가

가 1 36% 91% , 83% 가 가

348 , 263 , 171 ,

81 , 3

_____ :

가 (loading) part

time

(standardization) ^{3 9)}

1974 PCS

5

(medical physicist), ^{10 14)} (,

가 (Quality Assurance, QA)) ^{3 8,15,16)} (seminoma),

(QA protocol) 가 (national average) 가 (guideline)⁹⁾

Patterns of Care Study (PCS) ^{17,18)} 1991 Japanese Society for Therapeutic

PCS Radiology & Oncology (JASTRO) 가

1990 (structure)

¹⁾ ¹⁹⁾ 1995 ²⁰⁾ 1998

^{1,2)} PCS

PCS가 1997 1 1 12 31
 가²¹⁾
 1991 EC committee 'Quality Assurance(QA) Excel
 network²¹⁾
²²⁾ 1993
 1998 가
 가 가 가
 PCS (structure) 가 1994 , 1998
²³⁾ PCS 1997 가³⁴⁾ 32,33)
 가 가
 가 가
 1990
^{24 31)}
 1997 PCS
 PCS (structure) 42 , 552 , 1,542 (Table 1).
 가
 가 1,095,000 , 229,000 , 176,000
 가 가 19,773 , 79,086
 , 560,262 가 (linac), betatron,
 microtron X-ray
 가 42 , 61 , 636 , 2466 Co-60

Table 1. Equipment Pattern and Number of Patients in the Korea, Japan and USA

	Korea (1997)	Japan (1998) [†]	USA (1994)
Population	45,991,000 [*]	126,420,000	271,600,000
Facility	42	552	1542
Population per facility	1,095,000	229,000	176,000
No. of New Pt treated by RT a year	19,773	79,086	560,262
New Pt/population (%)	0.043	0.063	0.21
Treatment machine (external)	71	756	2,744
Linac/betatron/microtron	61	636	2,466
Cobalt-60 (Tele)	10	120	314
RT Oncologist	100	486	2,777
Technologist	205	952	7,167
Patients per facility	471	143	373
Patients per machine (external)	278	104	205
Patients per oncologist	198	162	211
Patients per technologist	96	83	65

* 98 4

† tentative data

10 , 120 , 314
 가 , , 100 , 486 , 2,777
 205 , 952 , 7,167
 471 , 143 , 373
 가 가
 278 , 104 , 205 가
 가 198 ,
 162 , 211 가 가
 96 , 83 , 65
 가

7 :
 201 300 8 , 301 400
 8 가 100 4
 1,200
 348 (Table 5) 201
 300 12 , 101 200
 10 100 4 ,
 501 600 1 , 601 700
 1 263

2.

(structure)
 가 89%
 6MeV 가 (Table 2).
 89% . 1
 4MeV 가 , 4 Co-60
 11%가 가
 95%, 가 91%
 83%
 Tabel 3 가 1 가 36%
 2 64% 가
 38%

Table 3. Comparison of Facility Size between Korea and USA

	Facility (%) of Korea (1997)	Facility (%) of USA (1994)
No. of Radiation oncologists		
1	36	29
>1	64	71
No. Medical Physicists		
<1	38	35
1 2	62	65

3.

(Loading)

Table 4

Table 2. Comparison of Facility Capability between Korea and USA

Equipments	Facility (%) of Korea (1997)	Facility (%) of USA (1994)
Highest Energy Treatment Machine (MeV)		
Linear Accelerator 10 23	60	64
Linear Accelerator 6 <10	29	23
Linear Accelerator 4 <6	2	8
Cobalt Unit	10	5
Simulator		
Yes	95	95
No	5	5
Treatment Planning		
Yes	91	95
No	9	5
QA program in use		
Yes	83	96
No	17	4

Table 4. Distribution of Patient Load by Facility in Korea and USA

No. of New Patients a year	Facility (%) of Korea (1997)	Facility (%) of USA [†] (1994)
100		
101 200	9.8	5.5
201 300	9.8	17
301 400	20	21
401 500	20*	19
501 600	9.8	12*
601 700	7.3	8.3
701 800	4.9	6.8
801 900	2.4	4.9
901 1,000	2.4	2.7
1,001 1,100	2.4	2.4
1,101 1,200	0	1.1
>1,200	9.8	0.97

Median (Korea) : 348 patients/year, *Median category,
[†] Academic + hospital based

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The Structure of Korean Radiation Oncology in 1997

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Purpose : To measure the basic structural characteristics of radiation oncology facilities in Korea during 1997 and to compare personnel, equipments and patient loads between Korea and developed countries.

Method and Materials : Mail surveys were conducted in 1998 and data on treatment machines, personnel and performed new patients were collected. Responses were obtained from the 100 percent of facilities. The consensus data of the whole contry were summarized using Microsoft Excel program.

Results : In Korea during 1997, 42 facilities delivered megavoltage radiation therapy with 71 treatment machines, 100 radiation oncologists, 26 medical physicist, 205 technologists and 19,773 new patients. Eighty nine percent of facilities in Korea had linear accelators at least 6 MeV maxium photon energy. Ninety five percent of facilities had simulators while five percent of facilities had no simulator. Ninety one percent of facilities had computer planning systems and eighty three percent of facilities reported that they had a written quality assurance program. Thirty six percent of facilities had only one radiation oncologist and thirty eight percent of facilities had no medical physicists. The median of the distribution of annual patients load of a facility, patients load per a machine, patients load per a radiation oncologist, patients load per a therapist and therapists per a machine in Korea were 348 patients per a year, 263 patients per a machine, 171 patients per a radiati on oncologis, 81 patients per a therapist, and 3 therapists per a machine respectively.

Conclusion : The whole scale of the radiation oncology departments in Korea was smaller than Japan and USA in population ratio regard. In case of hardware level like linear accelerators, simulators and computer planning systems, there was no big diffrences bewteen Korea and USA. The patients loads of radiation oncologists and therapists had no significant differences as compared with USA. However, it was desirable to consider the part time system in USA because there were a lot of hospitals which did not employ medical physicists.

Key Words : Radiation Therapy, Statistics, PCS, Quality assurance structure