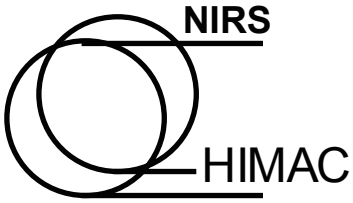


QST-R-5

HIMAC における重粒子線治療の発展
- 重粒子医科学センター 20 年の歩み、記念業績集 -

Carbon Ion Radiotherapy at NIRS-HIMAC
- Research Compendium -

2017 年 3 月
March, 2017

放射線医学総合研究所
〒 263-8555 千葉市稲毛区穴川 4-9-1
National Institute of Radiological Sciences
9-1 Anagawa 4-chome, Inage-ku, Chiba 263-8555, JAPAN

記念業績集の発行に当たって

放射線医学総合研究所(放医研)では、重粒子線治療に特化した研究を推進するために1993年4月重粒子治療センターが当時の病院部、医用重粒子研究部、臨床研究部などの部の垣根を越えて再編され発足しました。重粒子治療センターは2001年4月放医研の独法化に伴い重粒子医科学センターと改称されることとなりましたが、基本的に病院を含む重粒子線治療研究に特化した臨床医学、物理工学、生物学の各研究分野が一つなって研究を実施するセンター制は変わらず、センターとして多くの研究が実施され、念願であった重粒子線治療の保険収載をはじめ、普及小型装置の開発、スキャニング照射、超伝導回転ガントリーの実用化など世界の重粒子線治療研究を先導する数多くの成果が生み出され、最近では年間に700名以上の重粒子線治療が実施されるとともに40編程度の英文原著論文もセンターから発表されています。

2016年4月放医研と日本原子力研究開発機構の一部との統合により量子科学技術研究開発機構が新たに発足しましたが、統合に伴い、重粒子医科学センターは、機構全体としてより多様な研究を効率よく実施するために病院とその他のいくつかの研究部として再出発することとなりました。

今回の組織再編の節目にあたり、20年以上にわたるセンターの業績についてセンターに所属した各研究分野の最後の責任者が中心となり英文原著論文を中心に460編をまとめることができました。

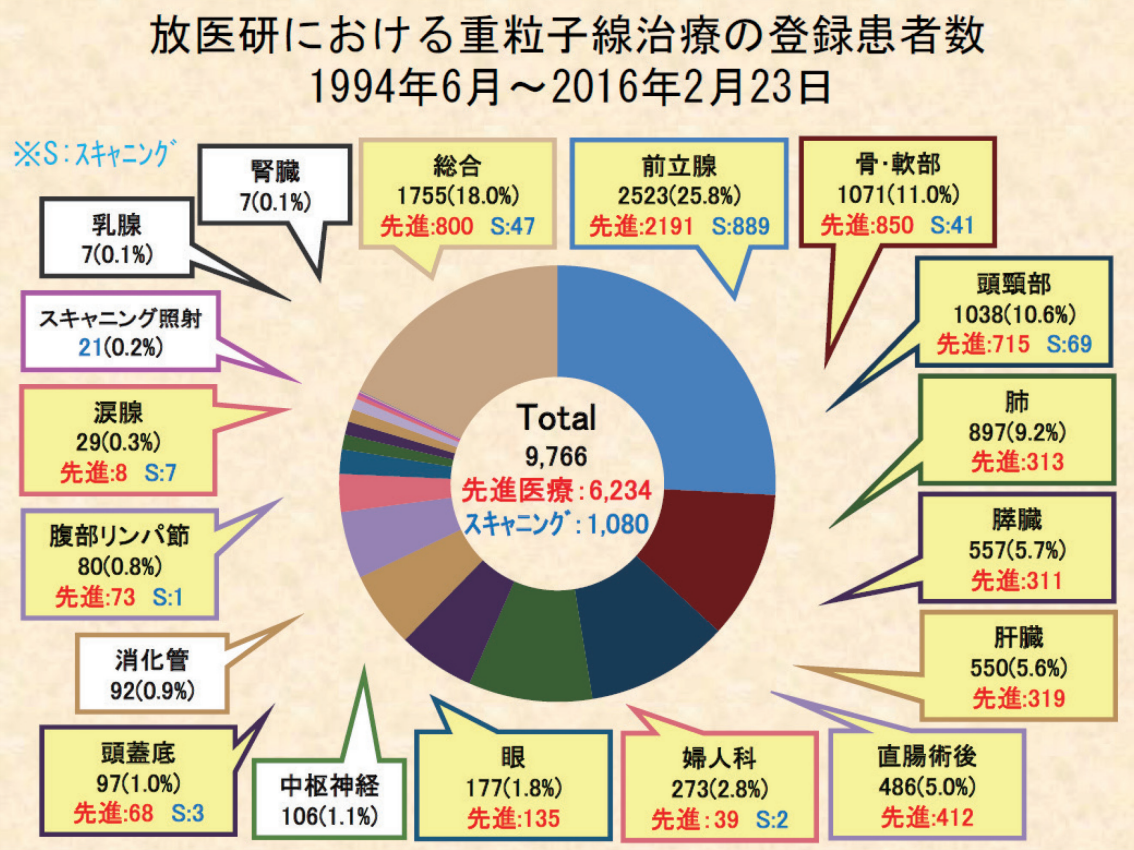
これらの業績は、この間に100床の病棟管理を行いつつ70以上の重粒子線治療臨床試験の実施した医師を中心とする臨床研究者、臨床サイドからの要望に答えつつ、夜間、休日の実験等を余儀なくされた生物、物理関係の研究者の方々の相互の協力と努力の結晶というべきものでありますが、20年以上の長期にわたることや著作権等のためにすべてを網羅できていない可能性が残ることをお許しいただければ幸いです。またセンター外にあってセンターの研究、運営に多大のご協力いただいた多くの方々に感謝申しあげます。

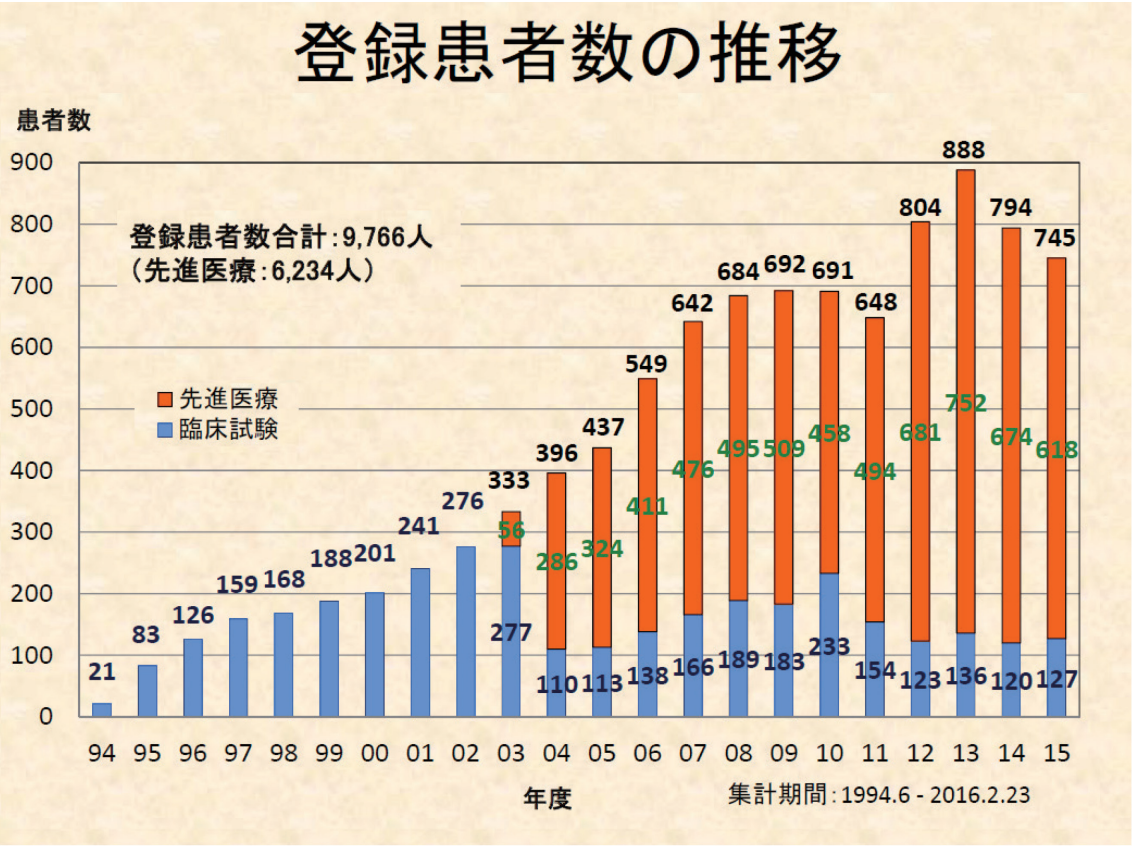
2017年1月

放射線医学総合研究所臨床研究クラスタ長
（元重粒子医科学センター長）
鎌田　正

HIMAC を中心とした重粒子線治療の歴史

年度	主な出来事
1984 年	政府による、がん制圧を目指した「対がん 10 か年総合戦略」開始 その一環として重粒子線がん治療装置 HIMAC（Heavy Ion Medical Accelerator in Chiba）建設計画開始
1988 年	HIMAC 建設開始
1993 年	HIMAC 完成 重粒子線治療センター設置
1994 年	炭素イオン線を用いた臨床試験開始 HIMAC の高度化等の研究開発開始
2001 年	治療患者数 1000 名突破 重粒子医科学センターに改組
2003 年	安全性と効果が認められ、厚労省より高度先進医療（現在、先進医療）に承認
2004 年	普及小型化のための要素技術研究開発開始
2006 年	次世代照射システム研究開発開始
2009 年	治療患者数 5000 名突破
2010 年	群馬大学重粒子線医学研究センター(GHMC) 普及小型 1 号機 治療開始
2011 年	次世代照射システムの一環としてスキャニング照射治療開始
2013 年	九州国際重粒子線がん治療センター(SAGA-HIMAT) 普及小型 2 号機 治療開始
2015 年	神奈川県立がんセンター(i-ROCK) 普及小型 3 号機 治療開始
2016 年	超伝導重粒子線回転ガントリー完成 切除非適応骨軟部腫瘍が厚労省より保険診療に承認 治療患者数 10000 名突破


放医研における重粒子線治療の登録患者数
1994年6月～2016年2月23日
※S：ｽｷｬﾆﾝｸﾞ
腎臓
7(0.1%)
乳腺
7(0.1%)
スキャニング照射
21(0.2%)
涙腺
29(0.3%)
先進:8 S:7
腹部リンパ節
80(0.8%)
先進:73 S:1
消化管
92(0.9%)
頭蓋底
97(1.0%)
先進:68 S:3
中枢神経
106(1.1%)
眼
177(1.8%)
先進:135
婦人科
273(2.8%)
先進:39 S:2
直腸術後
486(5.0%)
先進:412
肝臓
550(5.6%)
先進:319
膵臓
557(5.7%)
先進:311
肺
897(9.2%)
先進:313
頭頸部
1038(10.6%)
先進:715 S:69
骨･軟部
1071(11.0%)
先進:850 S:41
総合
1755(18.0%)
先進:800 S:47
前立腺
2523(25.8%)
先進:2191 S:889
Total
9,766
先進医療:6,234
ｽｷｬﾆﾝｸﾞ:1,080


登録患者数の推移
患者数
登録患者数合計:9,766人
（先進医療:6,234人）
先進医療
臨床試験
年度
集計期間:1994.6 - 2016.2.23

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論文リスト

HIMAC における重粒子線治療の発展
- 重粒子医科学センター 20 年の歩み、記念業績集 -

2017 年 3 月発行

企画・編集：放射線医学総合研究所
重粒子医科学センター記念業績集編纂 WG
(鎌田正、野田耕司、辻比呂志、白井敏之、
今井高志、藤田敬、村上健)
発　行　　：国立研究開発法人量子科学技術研究開発機構
放射線医学総合研究所
臨床研究クラスター運営室
協　力　　：(株) サンメディア