Yanagisawa K, Tanuma J, Hagiwara S, Gatanaga H, Kikuchi Y, Oka S.	Epstein-Barr viral load in cerebrospinal fluid as a diagnostic marker of central nervous system involvement of AIDS-related lymphoma.	***Internal Medicine***	In press		
Minamimoto R, Tanuma J, Morooka M, Ito K, Okasaki M, Miyata Y, Shimbo T, Oka S, Kubota K.	Interim FDG-PET/CT as a predictor of prognosis for HIV-related malignant lymphoma: Preliminary study.	***Journal of Solid Tumors***	3 巻 2 号	e1-9	2013
Achhra AC, Amin J, Hoy J, Tanuma J, Sirisanthana T, Nolan D, Merati T, Giles M.	Differences in lipid measurements by antiretroviral regimen exposure in cohorts from Asia and Australia.	***AIDS Res Treat***	2012	375217 -375226	2012
Zhou J, Tanuma J, Chaiwarith R, Lee CK, Law MG, Kumarasamy N, Phanuphak P, Chen YM, Kiertiburanakul S, Zhang F, Vonthanak S, Ditangco R, Pujari S, Choi JY, Parwati Merati T, Yunihastuti E, Li PC, Kamarulzaman A, Nguyen VK, Thuy Pham TT, Lim PL	Loss to Follow up in HIV-Infected Patients from Asia-Pacific Region: Results from TAHOD.	***AIDS Res Treat***	2012	246280 -246288	2012
Kihara R, Watanabe T, Yano T, Uike N, Okamura S, Kawano F, Hanada S, Sunami K, Inoue N, Sawamura M, Yoshida S, Shimomura T, Kitano K, Kojima Y, Horibe K, Nagai H	Prognosis of mature T cell lymphoma is poorer than that of diffuse large B cell lymphoma in IPI low-risk group, but not in intermediate- and high-risk groups.	***Int J Hematol***	98 巻 1 号	98-102	2013
Ohashi H, Arita K, Suzuki Y, Tomita A, Naoe T, Hattori A, Tatsumi Y, Kato K, Nagai H	Iron chelation therapy for a case of transfusion-independent MDS-RARS with significant iron overload.	***Int J Hematol***	98 巻 1 号	151-153	2013
Yasuda T, Suzuki R, Ishikawa Y, Terakura S, Inamoto Y, Yanada M, Nagai H, Ozawa Y, Ozeki K, Atsuta Y, Emi N, Naoe T	Randomized controlled trial comparing ciprofloxacin and cefepime in febrile neutropenic patients with hematological malignancies.	***Int J Infect Dis***	In press		2013
Hagiwara K, Ito H, Murate T, Miyata Y, Ohashi H, and Nagai H	PROX1 overexpression inhibits protein kinase C beta II transcription through promoter DNA methylation.	***Genes Chromosomes Cancer***	51 巻 11 号	1024-1036	2012
Ogura M, Tsukasaki K, Nagai H, Uchida T, Oyama T, Suzuki T, Taguchi J, Maruyama D, Hotta T, Tobinai K	Phase I study of BCX1777 (forodesine) in patients with relapsed or refractory peripheral T/natural killer-cell malignancies.	***Cancer Sci***	103 巻 7 号	1290-1295	2012
Imajo K, Ueda Y, Kawano F, Sao H, Kamimura T, Ito Y, Mugitani A, Suzuki K, Uike N, Miyamura K, Uski K, Morimatsu Y, Akiyama N, Nagai H, Ohara A, Tanimoto M, Takaki K, Chayama K, Urabe M, Nagatoshi Y, Tamura K	A phase III study of the efficacy and safety of meropenem in patients with febrile neutropenia.	***The Japanese journal of antibiotics***	65 巻 4 号	271-287	2012
Matsusaka S, Mishima Y, Suenaga M, Terui Y, Kuniyoshi R, Mizunuma N, Hatake K.	Circulating endothelial progenitors and CXCR4-positive circulating endothelial cells are predictive markers for bevacizumab.	***Cancer***	117(17)	4026-32	2012
Suzuki K, Terui Y, Nakano K, Nara E, Nasu K, Ueda K, Nishimura N, Mishima Y, Sakajiri S, Yokoyama M, Takahashi S, Hatake K.	High thymidine kinase activity is a strong predictive factor for poor prognosis in PTCLs treated by CHOP.	***Leuk Lymphoma***	53(5)	849-54	2012
Nishimura N, Nakano K, Ueda K, Kodaira M, Yamada S, Mishima Y, Yokoyama M, Terui Y, Takahashi S, Hatake K.	Prospective evaluation of incidence and severity of oral mucositis induced by conventional chemotherapy in solid tumors and malignant lymphomas.	***Support Care Cancer***	20(9)	2053-9	2012

Mishima Y, Terui Y, Mishima Y, Kuniyoshi R, Matsusaka S, Mikuniya M, Kojima K, Hatake K.	High reproducible ADCC analysis revealed a competitive relation between ADCC and CDC and differences between FcγRIIIa polymorphism.	***Int Immunol***	24(8)	477-83	2012
Mishima Y, Terui Y, Yokoyama M, Nishimura N, Sakajiri S, Ueda K, Kuboki Y, Nakano K, Suzuki K, Nara E, Tsuyama N, Takeuchi K, Oguchi M, Hatake K.	R-CHOP with dose-attenuated radiation therapy could induce good prognosis in gastric diffuse large B cell lymphoma.	***Exp Hematol Oncol***	24;1(1):30	doi:10.1186/2162-3619-1-30.	2012
Ogura M, Tobinai K, Hatake K, Uchida T, Suzuki T, Kobayashi Y, Mori M, Terui Y, Yokoyama M, Hotta T.	Phase I study of obinutuzumab (GA101) in Japanese patients with relapsed or refractory B-cell non-Hodgkin lymphoma.	***Cancer Sci***	104(1)	105-10.	2013
Yamagishi M, Watanabe T	New Paradigm of T cell Signaling: Learning from Malignancies (Review Article)	***J Clin Cell Immunol***	S12:007	doi:10.4172/2155-9899	2012
Yamagishi M, Watanabe T	Molecular Hallmarks of Adult T Cell Leukemia (Review Article)	***Front Microbiol***	3: 334	doi:10.3389/fmicb.2012.00334	2012
Iwanaga M, Watanabe T, Yamaguchi K	Adult T-cell leukemia: a review of epidemiological evidence	***Front Microbiol***	3: 322	doi:10.3389/fmicb.2012.00322	2012
Nakano K, Watanabe T	HTLV-1 Rex: the courier of viral messages, making use of the host vehicle	***Front Microbiol***	3:330	doi: 10.3389/fmicb.2012.00330	2012
Kobayashi-Ishihara M, Yamagishi M, Hara T, Matsuda Y, Takahashi R, Miyake A, Nakano K, Yamochi T, Ishida T, Watanabe T	HIV-1-encoded antisense RNA suppresses viral replication for a prolonged period	***Retrovirology***	9:38	doi:10.1186/1742-4690-9-38	
Ando T, Imamura H, Suzuki R, Hideki Aizaki H, Watanabe T, Wakita T, Suzuki T	Visualization and Measurement of ATP Levels in Living Cells Replicating Hepatitis C Virus Genome RNA	***PLoS Pathogens***	8(3):	e1002561	2012
Ogawa-Goto K, Ueno T, Oshima K, Yamamoto H, Sasaki J, Fujita K, Sata T, Taniguchi S, Kanda Y, Katano H	Detection of active human cytomegalovirus by the promyelocytic leukemia body assay in cultures of PBMCs from patients undergoing hematopoietic stem cell transplantation.	***J Med Virol***	84	479-486	2012
Nakano K*, Katano H*, Tadagaki K, Sato Y, Ohsaki E, Mori Y, Yamanishi K, Ueda K (*equal contribution)	Novel monoclonal antibodies for identification of multicentric Castleman's disease; Kaposi's sarcoma-associated herpesvirus-encoded vMIP-I and vMIP-II.	***Virology***	425	95-102	2012
Iijima K, Yamada H, Miharu M, Imadome K, Miyagawa Y, Akimoto S, Kobayashi K, Okita H, Nakazawa A, Fujiwara S, Fujimoto J, Kiyokawa N.	ZNF385B is characteristically expressed in germinal center B cells and involved in B-cell apoptosis.	***Eur J Immunol***	42(12)	3405-15	2012
Arai A, Nogami A, Imadome K, Kurata M, Murakami N, Fujiwara S, Miura O.	Sequential monitoring of serum IL-6, TNF-α, and IFN-γ levels in a CAEBV patient treated by plasma exchange and immunochemotherapy.	***Int J Hematol***	96(5)	669-73	2012
Imadome K, Fukuda A, Kawano F, Imai Y, Ichikawa S, Mochizuki M, Shigeta T, Kakiuchi T, Sakamoto S, Kasahara M, Fujiwara S.	Effective control of Epstein-Barr virus infection following pediatric liver transplantation by monitoring of viral DNA load and lymphocyte surface markers.	***Pediatr Transplant***	16(7)	748-57	2012
Yang X, Wada T, Imadome K, Nishida N, Mukai T, Fujiwara M, Kawashima H, Kato F, Fujiwara S, Yachie A, Zhao X, Miyawaki T, Kanegane H.	Characterization of Epstein-Barr virus (EBV)-infected cells in EBV-associated hemophagocytic lymphohistiocytosis in two patients with X-linked lymphoproliferative syndrome type 1 and type 2.	***Herpes-viridae***	3	1	2012
Goto H, Matsuda K, Srikoon P, Kariya R, Hattori S, Taura M, Katano H, and *Okada S.	Potent antitumor activity of zoledronic acid-induced Vγ9Vδ2 T cells against primary effusion lymphoma.	***Cancer Lett***	In press		

Kudo E, Taura M, Matsuda K, Shimamoto M, Kariya R, Goto H, Hattori S, Kimura S, and *Okada S.	Inhibition of HIV-1 replication by a tricyclic coumarin GUT-70 in acutely and chronically infected cells.	***Bioorg Med Chem Lett***	23(1)	606-609	2013
Yuki H, Ueno S, Tatetsu H, Kawano Y, Niiro H, Iino T, Hata H, Okada S, Watanabe T, Akashi K, Mitsuya H, and Okuno Y.	PU.1 is a potent tumor suppressor in classical Hodgkin lymphoma cells.	***Blood***	In press		
Tsuruoka N, Arima M, Okada S, Sakamoto A, Hatano M, Arguni E, O-Wang J, Jing-Hua Y, Sekiya S, Shozu M, and Tokuhisa T.	ADAR1 induces adenosine -targeted DNA mutations in senescent Bcl6-deficient cells.	***J Bio Chem***	288(2)	826-836	2013
Terahara K, Ishige M, Ikeno S, Mitsuki Y, Okada S, Kobayashi K, and Tsunetsugu -Yokota, Y.	Evaluation of a Humanized NOD/SCID/JAK3^{null} Mouse Model: Expansion of CD4^{+} T cells with an Activated Memory Phenotype Affects Infectivity of CCR5-Tropic HIV-1 *in vivo*.	***ProS ONE***	8(1)	e53495,	2013
Uthaisar K, Sebwai W, Srikoon P, Vaeteewoottacharn K, Sawanyawisuth K, *Okada S, and *Wongkham S.	Cepharanthine suppresses metastatic potential of human cholangiocarcinoma cell lines.	***Asian Pac J Cancer Prev***	13 (KKSuppl)	149-154	2012
Komizu Y, Yukihara M, Ichihara H, Matsumoto Y, Okada S, and Ueoka R.	Therapeutic effects of hybrid liposomes for mouse model of adult T-cell leukemia/ lymphoma *in vivo*.	***Nano Bulletin***	1(1)	120105	2012
Michai M, Goto H, Hattori S, Vaeteewoottacharn K, Wongkham C, Wongkham S, and *Okada S.	Soluble CD30: a possible serum tumor marker for primary effusion lymphoma.	***Asian Pac J Cancer Prev***	13(10)	4939-4941	2012
Khaenam P, Niibori A, Okada S, Jearanaikoon P, Araki N, and *Limpaiboon T.	Contribution of RIZ1 in proliferation and migration of liver fluke-related cholangiocarcinoma cell line.	***Asian Pac J Cancer Prev***	13(8)	4007-4011	2012
Yotsumoto M, Hagiwara S, Ajisawa A, Tanuma J, Uehira T, Nagai H, Fujikawa Y, Maeda S, Kitano K, Arima N, Uno K, Iwai T, Hongo I, Ota Y, Fukutake K, Okada S.	Clinical characteristics of human immunodeficiency virus-associated Hodgkin lymphoma patients in Japan.	***Int J Hematol***	96(2)	247-253	2012
Mitsuki Y, Terahara K, Shibusawa K, Yamamoto T, Tsuchiya T, Mizukoshi F, Ishige M, Okada S, Kobayashi K, Morikawa Y, Nakayama T, Takeda M , Yanagi Y, and *Tsunetsugu-Yokota Y.	HIV-1 infection ex vivo accelerates measles virus infection by upregulating signaling lymphocytic activation molecule (SLAM) in CD4+ T cells.	***J Virol***	86(13)	7227-7234	2012
Taura M, Suico MA, Koyama K, Komatsu K, Miyakita R, Matsumoto C, Kudo E, Kariya R, Goto H, Kitajima S, Takahashi C, Shuto T, Nakao M, *Okada S, and *Kai H.	Rb/E2F1 regulate innate immune receptor Toll-like receptor 3 in epithelial cells.	***Mol Cell Biol***	32(8)	1581-1590	2012
Chihara T, Hashimoto M, Osman A, Hiyoshi-Yoshidomi Y, Suzu I, Chutiwitoonchai N, Hiyoshi M, Okada S, *Suzu S.	HIV-1 Proteins Preferentially Activate Anti-Inflammatory M2-Type Macrophages.	***J Immunol***	188(8)	3620 -3627	2012
Endo M, Nakano M, Kadomatsu T, Fukuhara S, Kuroda H, Mikami S, Hato T, Aoi J, Horiguchi H, Miyata K, Odagiri H, Matsuda T, Harada M, Horio H, Hishima T, Nomori H, Ito T, Yamamoto Y, Minami T, Okada S, Takahashi T, Mochizuki N, Iwase H, and *Oike Y.	Tumor cell-derived angiopoietin-like protein ANGPTL2 is a critical driver of metastasis.	***Cancer Res***	72(7)	1784-1794	2012

Tanimoto S, Sakai S, Kudo E, Okada S, Matsunuma S, Takahashi D, and *Toshima K.	Target-selective photo-degradation of HIV-1 protease and inhibition of HIV-1 replication in living cells by designed fullerene-sugar hybrids.	***Chemistry-An Asian Journal***	7(5)	911-914	2012
Goto H, Kariya R, Shimamoto M, Kudo E, Taura M, Katano H, and *Okada S.	The antitumor effect of berberine against primary effusion lymphoma via inhibition of NF-κB pathway.	***Cancer Sci***	103(4)	775-781	2012
Phimsen S, Kuwahara K, Nakaya T, Ohta K, Suda T, Rezano A, Kitabatake M, Vaeteewoottacharn K, Okada S, Tone S, and *Sakaguchi N.	Selective cell death of p53-insufficient cancer cells is induced by knockdown of the mRNA export molecule GANP.	***Apoptosis***	17(7)	679-690	2012
Xi Y, Watanabe S, Hino Y, Sakamoto C, Nakatsu Y, Okada S, and *Nakao M.	Hmga1 is differentially expressed and mediates transcriptional silencing of the *Cd4/Cd8* loci in T cell lineages and leukemic cells.	***Cancer Sci***	103(3)	439-447	2012
Sugihara E, Shimizu T, Kojima K, Onishi N, Kai K, Ishizawa J, Nagata K, Hashimoto N, Honda H, Kanno M, Miwa M, Okada S, Andreeff M and *Saya H.	Ink4a and Arf are crucial factors in the determination of the cell of origin and the therapeutic sensitivity of Myc-induced mouse lymphoid tumor.	***Oncogene***	31(23)	2849-2861	2012
Matsuno T, Kariya R, Yano S, Morino-Koga S, Taura M, Suico MA, Shimauchi Y, Matsuyama S, Okamoto Y, Shuto T, *Kai H, and *Okada S.	Diethyldithiocarbamate induces apoptosis in HHV-8-infected primary effusion lymphoma cells via inhibition of the NF-κB pathway.	***Int J Oncol***	40(4)	1071 -1078	2012
Hiyoshi M, Takahashi-Makise N, Y. Yoshidomi Y, Chutiwitoonchai N, Chihara T, Okada M, Nakamura N, Okada S, and *Suzu S.	HIV-1 Nef Perturbs the Function, Structure, and Signaling of the Golgi through the Src Kinase Hck.	***J Cell Physiol***	227(3)	1090-1097	2012
加藤博史、柳澤如樹、佐々木秀悟、細田智弘、菅沼明彦、今村顕史、味澤　篤	難治性エイズ関連カポジ肉腫に対してパクリタキセルが奏効した 1 例	感染症学会誌	86	287-290	2012
小林謙一郎、柳澤如樹、菅沼明彦、今村顕史、味澤　篤	梅毒性直腸炎を契機に HIV 感染症の合併が判明した 1 例	感染症学会誌	86	415-418	2012
稲葉千絵、根岸久実子、本間操、　菅沼明彦、今村顕史、味澤　篤、　大林民典	HIV 抗体,HIV-1p24 抗原同時検出試薬の性能評価	試薬と機器	61	787-791	2012
味澤　篤	免疫不全関連悪性リンパ腫の診断と治療	日本臨床	70	709-714	2012
永井宏和	悪性リンパ腫—治療のポイント	日本内科学会誌	101 巻 8 号	2322-2329	2012
永井宏和	古典ホジキンリンパ腫の診断と治療	日本臨床	70 巻 増刊号 2	568-576	2012
永井宏和	結節性リンパ球優位型ホジキンリンパ腫の診断と治療	日本臨床	70 巻 増刊号 2	561-567	2012
永井宏和	ホジキンリンパ腫の分類と病期	日本臨床	70 巻 増刊号 2	553-560	2012
永井宏和	再発・難治性の低悪性度 B 細胞性リンパ腫に対する治療戦略	Medical Practice	29 巻 3 号	1363-1368	2012
永井宏和	ホジキンリンパ腫に対する薬物療法	臨床腫瘍プラクティス	8 巻 3 号	215-221	2012
永井宏和	濾胞性リンパ腫の risk grouping と治療開始規準-FLIPI, FLIPI2, GELF 規準など	血液内科	65 巻 1 号	53-57	2012
照井康仁	mTOR 阻害剤	Trends in Hematological Malignancies	4 巻 1 号	39-41	2012
照井康仁	抗体療法　III.造血器腫瘍の診断と治療　治療法　造血器腫瘍学-基礎と臨床の最新研究動向-	日本臨床	70巻 増刊号 2	217- 221	2012

照井康仁	分子標的薬による血液毒性とその対策	臨床外科	67巻7号	878-881	2012
照井康仁	多発性骨髄腫	成人病と生活習慣病	42巻6号	749-753	2012
照井康仁	リンパ腫に対する新規薬剤開発	内科	110巻2号	257-262	2012
照井康仁	悪性リンパ腫における可溶性 IL-2 受容体測定の意義	Medical Practice	29巻8号	1314-1315	2012
照井康仁	ＣＤ２０　ＩＩ基礎研究　分子標的薬の作用機序･薬理作用　免疫炎症関連標的分子･標的経路　分子標的薬—がんから他疾患までの治癒をめざして—	日本臨床	70巻8号	170-175	2012
山岸　誠、渡邉俊樹	特集：microRNA の発現制御の異常と疾患「成人 T 細胞白血病(ATL)における microRNA の発現異常」	細胞	44(10)	15-22	2012
山岸　誠、渡邉俊樹	特集：ATL の基礎と臨床「ATL 細胞のゲノム エピゲノム異常と発現異常」	細胞	44(8)	18-22	2012
山岸　誠、渡邉俊樹	総説「2.HTLV-1 感染症と miRNA」	ウイルス	62(1)	9-18	2012
渡邉俊樹	特集：造血器腫瘍学-基礎と臨床の最新研究動向−　II.造血器腫瘍の基礎 造血器発がんリスク「ウイルスによる発がんリスク」	日本臨床	70(Suppl 2)	671-675	2012
中野和民、渡邉俊樹	特集：抗ウイルス薬 III.新規抗ウイルス薬の開発動向と展望「抗 HTLV-1 薬開発の現状」	日本臨床	70(4)	671-675	2012
岡田誠治	HIV-1感染症と悪性腫瘍	月刊薬事	54巻9号	1437-1443	2012

平成２３年度

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
Tobinai K, Igarashi T, Itoh K, Kurosawa M, Nagai H, Hiraoka A, Kinoshita T, Uike N, Ogura M, Nawano S, Mori S, Ohashi Y	IDEC-C2B8 Study Group. Rituximab monotherapy with eight weekly infusions for relapsed or refractory patients with indolent B cell non-Hodgkin lymphoma mostly pretreated with rituximab: a multicenter phase II study.	***Cancer Sci***	102 巻 9 号	1698-705	2011
Nishijima T, Komatsu H, Gatanaga H, Aoki T, Watanabe K, Kinai E, Honda H, Tanuma J, Yazaki H, Tsukada K, Honda M, Teruya K, Kikuchi Y, Oka S.	Impact of small body weight on tenofovir-associated renal dysfunction in HIV-infected patients: a retrospective cohort study of Japanese patients.	***PLoS One***	6 巻 7 号	e22661	2011
Choi JY, Zhou J, Giles M, Broom J, Templeton DJ, Law MG, Chaiwarith R, Tanuma J	Asia-Pacific HIV Observational Database. Predictors and outcomes of HIV-infected antiretroviral-naive patients with discordant responses to combination antiretroviral treatment in Asian and Australian populations: results from APHOD.	***J Acquir Immune Defic Syndr***	57 巻 1 号	e13-15	2011
Nakamura H, Teruya K, Takano M, Tsukada K, Tanuma J, Yazaki H, Honda H, Honda M, Gatanaga H, Kikuchi Y, Oka S.	Clinical symptoms and courses of primary HIV-1 infection in recent years in Japan.	***Intern Med***	50 巻 2 号	95-101	2011
Hagiwara S, Mori T, Tuchiya H, Sato S, Higa M, Watahiki M, Hoshina M, Mochizuki T, Chiba T, Miwa A, Kawachi S.	Multidisciplinary nutritional support for autologous hematopoietic stem cell transplantation: A cost-benefit analysis	***Nutrition***	27	1112-1117	2011

Goto H, Hagiwara S, Hirai R, Miyama T, Honda H, Tagashira A, Iizuka T, Mochizuki M, Teruya K, Kikuchi Y, Oka S, Miwa A.	Case of relapsed AIDS-related plasmablastic lymphoma treated with autologous stem cell transplantation and highly active antiretroviral therapy.	***Rare Tumors***	3 巻 1 号	e 11	2011
Watanabe D, Taniguchi T, Otani N, Tominari S, Nishida N, Uehira T, Shirasaka T.	Immune reconstitution to parvovirus B19 and resolution of anemia in a patient treated with highly active antiretroviral therapy: A case report.	***J Infect Chemother***	17 巻	283-287	2011
Watanabe D, Ibe S, Uehira T, Minami R, Sasakawa A, Yajima K, Yonemoto H, Bando H, Ogawa Y, Taniguchi T, Kasai D, Nishida Y, Yamamoto M, Kaneda T, Shirasaka T	Proviral DNA levels in HIV-1-infected patients receiving antiretroviral therapy strongly correlate with therapy initiation timing, but not with therapy duration.	***BMC Infect Dis***	11	146	2011
Watanabe M, Itoh K, Togano T, Kadin M-E., Watanabe T, Higashihara M, Horie R	Ets-1 Activates Overexpression of JunB and CD30 in Hodgkin Lymphoma and Anaplastic Large- Cell Lymphoma	***Am J Pathol***	180(2)	831-838	2012
Yamagishi M, Nakano K, Miyake A, Yamochi T, Kagami Y, Tsutsumi A, Matsuda Y, Sato-Otsubo A, Muto S, Utsunomiya A, Yamaguchi K, Uchimaru K, Ogawa S, Watanabe T	Polycomb-mediated loss of miR-31 activates NIK-dependent NF-kB pathway in adult T-cell leukemia and other cancers	***Cancer Cell***	21(1)	121-135	2012
Uota S, Dewan MZ, Saitoh Y, Muto S, Itai A, Utsunomiya A, Watanabe T, Yamamoto N, Yamaoka S	An IκB kinase 2 inhibitor IMD-0354 suppresses the survival of adult T-cell leukemia cells	***Cancer Sci***	103(1)	100-106	2012
Yamamoto K, Ishikawa C, Katano H, Yasumoto T, Mori N	Fucoxanthin and its deacetylated product, fucoxanthinol, induce apoptosis of primary effusion lymphomas	***Cancer Lett***	300	225-234	2011
Nakai H, Sugata K, Usui C, Asano Y, Yamakita T, Matsunaga K, Mizokuchi Y, Katano H, Iwatsuki K, Yoshikawa T	A case of erythema multiforme associated with primary Epstein-Barr virus infection	***Pediatr Dermatol***	28	23-25	2011
Katano H, Kano M, Nakamura T, Kanno T, Asanuma H, Sata T	A novel real-time PCR system for simultaneous detection of human viruses in clinical samples from patients with uncertain diagnoses	***J Med Virol***	83	322-330	2011
Fukumoto H, Kanno T, Hasegawa H, Katano H	Pathology of Kaposi's Sarcoma-Associated Herpesvirus Infection	***Front Microbiol***	2	175	2011
Imadome K, Yajima M, Arai A, Nakazawa A, Kawano F, Ichikawa S, Shimizu N, Yamamoto N, Morio T, Ohga S, Nakamura H, Ito M, Miura O, Komano J, and Fujiwara S.	Novel Mouse Xenograft Models Reveal a Critical Role of CD4+ T Cells in the Proliferation of EBV-Infected T and NK Cells.	***PLoS Pathogens***	7(10)	e1002326	2011
Kuwana Y, Takei M, Yajima M, Imadome K, Inomata H, Shiozaki M, Ikumi N, Nozaki T, Shiraiwa H, Kitamura N, Takeuchi J, Sawada S, Yamamoto N, Shimizu N, Ito M, and Fujiwara S.	Epstein-Barr Virus Induces Erosive Arthritis i 1 n Humanized Mice.	***PLoS ONE***	6(10)	E26630	2011
Arai A, Imadome K, Watanabe Y, Takahashi M, Kawaguchi T, Nakaseko C, Fujiwara S, Miura O.	Clinical features of adult-onset chronic active Epstein-Barr virus infection: a retrospective analysis.	***Int J Hematol***	93(5)	602-9	2011
Komizu Y, Yukihara M, Kariya R, Goto K, *Okada S and *Ueoka R.	Selective accumulation of hybrid liposomes into adult T-cell leukemia cells along with induction of apoptosis.	***Bioorg Med Chem Lett***	21(13)	3962-3965	2011

Ono A, Hattori S, Kariya R, Iwanaga S, Taura M, Harada H, Suzu S, and *Okada S.	Comparative study of human hematopoietic cell engraftment into Balb/c and C57BL/6 strain of Rag-2/Jak3 double-deficient mice.	***J Biomed Biotechnol***	2011	539748	2011
Taura M, Suico MA, Fukuda R, Koga T, Shuto T, Sato T, Morino-Koga S, Okada S and *Kai H	MEF/ELF4 transactivation by E2F1 is inhibited by p53.	***Nucleic Acid Res***	39(1)	76-88	2011
味澤　篤	HIV と肺がん	***The Jouranal of AIDS Research***	13 巻 1 号	13-19	2011
比島恒和、堀口慎一郎、立石陽子、河合繁雄、加藤生真、山田梢子、松坂恵介、種井善一、藤原　崇、門馬久美子、味澤　篤、秋山秀樹、坂巻壽、根本哲生、船田信顕	免疫不全状態における消化管病変の生検所見	胃と腸	46	229-238	2011
永井宏和	リンパ系腫瘍：診断と治療の進歩—成熟 B 細胞性リンパ腫	日本内科学雑誌	100 巻 7 号	1823-1741	2011
永井宏和、岡田誠治	エイズ関連悪性リンパ腫病状の特徴と治療戦略	血液内科	63 巻 4 号	443-450	2011
永井宏和	マントル細胞リンパ腫：Bendamustine により予後は改善したか	血液フロンティア	21 巻 10 号	61-68	2011
永井宏和	腫瘍崩壊症候群の病態と治療	Medicament News	2068 号	7-8	2011
永井宏和	ベンダムスチン臨床データの検討と実地診療におけるベストプラクティス	日経 CME	autum	1-7	2011
永井宏和	ホジキンリンパ腫診療の現在	***Trends in Hematological Malignancies***	3 巻 1 号	8－13	2011
宮田泰彦、永井宏和	Rituximab 併用化学療法が奏効した進行期濾胞性リンパ腫に対する rituximab 維持療法の比較試験：PRIMA study	血液内科	64 巻 1 号	53-59	2012
田沼順子、正木尚彦	HIV 感染者における B 型肝炎の重複感染に対する対応	日本臨床	69 巻 4 号	529-534	2011
今村顕史、上平朝子、加藤雪彦、堀場昌英、山中晃	いまさら聞けない HIV 感染症～患者は突然やってくる～最終回 座談会 HIV 感染者の早期発見！！見落とさないコツ	医薬の門	51 巻 3 号	224-231	2011
上平朝子	HIV 患者における腎機能障害の問題	大阪透析研究会会誌	29 巻 2 号	215-225	2011
照井康仁	2.ホジキンリンパ腫治療の最近の進歩	Annual Review 血液 2011		129-136	2011
照井康仁	血液腫瘍治療薬	新薬展望 2011		197-202	2011
照井康仁	リツキシマブは B 細胞受容体シグナルを抑制す	血液内科	62(2)	226-230	2011
照井康仁	2．治療関連合併症・悪性腫瘍 IV.　予後と病診連携	日本内科学会雑誌	第 100 巻 第 7 号	1909-1916	2011
照井康仁	外来化学療法の運営　第 73 回日本血液学会学術集会　教育講演 S-4　基本シリーズ	臨床血液	第 52 巻 第 10 号	56-61	2011
片野晴隆	カポジ肉腫関連ヘルペスウイルス(KSHV, HHV-8)とカポジ肉腫	臨床と微生物	38	233-240	2011
長谷川宏美、片野晴隆、佐多徹太郎、長谷川秀樹	特集/　皮膚科医のための感染症最新マニュアル　ウイルス感染と発癌	***Monthly Book Derma***	183	12-18	2011

土松純子，山中新也，神谷秀喜，北島康雄，松永研吾，佐多徹太郎，片野晴隆，菅野隆行	皮膚に生じた Kaposi 肉腫を契機に AIDS の診断に至った 1 例	皮膚科の臨床	53	1818-1822	2011
大田泰徳、比島恒和、望月眞、児玉良典、片野晴隆	エイズ関連リンパ腫の病理診断	病理と臨床	30	195-203	2012
後藤裕樹、岡田誠治	AIDS 関連悪性リンパ腫の現状と治療戦略	血液内科	62(5)	543-549	2011

平成２２年度

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
Nagai H, Odawara T, Ajisawa A, Hagiwara S, Watanabe T, Uehira T, Uchiumi H, Yotsumoto M, Miyakawa T, Watanabe A, Kambe T, Konishi M, Saito S, Takahama S, Tateyama M, Okada S	Whole brain radiation alone produces favourable outcomes for AIDS-related primary central nervous system lymphoma in the HAART era.	***Eur J Haematol.***	84 巻 6 号	499-505	2010
Nagai H, Ogura M, Kusumoto S, Takahashi N, Yamaguchi M, Takayama N, Kinoshita T, Motoji T, Ohyashiki K, Kosugi H, Matsuda S, Ohnishi K, Omachi K, Hotta T	Cladribine combined with rituximab (R-2-CdA) therapy is an effective salvage therapy in relapsed or refractory indolent B-cell non-Hodgkin lymphoma	***Eur J Haematol.***	86 巻 2 号	117-123	2011
Iida S, Chou T, Okamoto S, Nagai H, Hatake K, Murakami H, Takagi T, Shimizu K, Lau H, Takeshita K, Takatoku M, Hotta T.	Lenalidomide plus dexamethasone treatment in Japanese patients with relapsed/refractory multiple myeloma.	***Int J Hematol.***	92 巻 1 号	118-126	2010
Ohmachi K, Ando K, Ogura M, Uchida T, Itoh K, Kubota N, Ishizawa K, Yamamoto J, Watanabe T, Uike N, Choi I, Terui Y, Usuki K, Nagai H, Uoshima N, Tobinai K; The Japanese Bendamustine Lymphoma Study Group.	Multicenter phase II study of bendamustine for relapsed or refractory indolent B-cell non-Hodgkin lymphoma and mantle cell lymphoma.	***Cancer Sci.***	101 巻 9 号	2059-2064	2010
Kubota T, Moritani S, Yoshino T, Nagai H, Terasaki H.	Ocular adnexal marginal zone B cell lymphoma infiltrated by IgG4-positive plasma cells.	***J Clin Pathol.***	63 巻 12 号	1059-1065	2010
Kobayashi T, Kuroda J, Ashihara E, Oomizu S, Terui Y, Taniyama A, Adachi S, Takagi T, Yamamoto M, Sasaki N,Horiike S, Hatake K, Yamauchi A, Hirashima M, Taniwaki M.	Galectin-9 exhibits anti-myeloma activity through JNK and p38 MAP kinase pathways.	***Leukemia***	24 巻 4 号	843-850	2010
Matsusaka S, Chìn K, Ogura M, Suenaga M, Shinozaki E, Mishima Y, Terui Y, Mizunuma N, Hatake K.	Circulating tumor cells as a surrogate marker for determining response to chemotherapy in patients with advanced gastric cancer.	***Cancer Sci***	101 巻 4 号	1067-1071	2010
Ogura M, Tobinai K, Hatake K, Uchida T, Kasai M, Oyama T, Suzuki T, Kobayashi Y, Watanabe T, Azuma T, Mori M, Terui Y, Yokoyama M, Mishima Y, Takahashi S, Ono C, Ohata J.	Phase I study of inotuzumab ozogamicin (CMC-544) in Japanese patients with follicular lymphoma pretreated with rituximab-based therapy.	***Cancer Sci.***	101 巻 8 号	1840-1845	2010
Ueda K, Yokoyama M, Asai H, Koudaira M, Yamada S, Katsube A, Mishima Y, Sakajiri S, Takeuchi K, Saotome T, Terui Y, Takahashi S, Hatake K.	Efficacy of CHOP+/-Rituximab-like therapy plus radiation therapy for patients with diffuse large B-cell lymphoma stage I.	***Gan To Kagaku Ryoho***	37 巻 5 号	853-857	2010

Asai H, Yokoyama M, Terui Y, Ennishi D, Takeuchi K, Hatake K.	Is statin use really associated with efficacy of rituximab?	***J Clin Oncol***	20巻28号	e424-425	2010
Takeuchi K, Yokoyama M, Ishizawa S, Terui Y, Nomura K, Marutsuka K, Nunomura M, Fukushima N, Yagyuu T, Nakamine H, Akiyama F, Hoshi K, Matsue K, Hatake K, Oshimi K.	Lymphomatoid Gastropathy: A Distinct Clinicopathological Entity of Self-limited Pseudomalignant NK-cell Proliferation.	***Blood***	116巻25号	5631-5637	2010
Arai, A., Imadome, K., Fujiwara, S. and Miura O.	Autoimmune hemolytic anemia accompanied by reactivation of an Epstein-Barr virus infection with suppressed CTL response to EBV-infected cells in an elderly man.	***Inter Med***	49巻	325-329	2010
Yamamoto K, Ishikawa C, Katano H, Yasumoto T, Mori N	Fucoxanthin and its deacetylated product, fucoxanthinol, induce apoptosis of primary effusion lymphomas.	***Cancer Lett***	300	225-234	2011
Katano H, Kano M, Nakamura T, Kanno T, Asanuma H, Sata T	A novel real-time PCR system for simultaneous detection of human viruses in clinical samples from patients with uncertain diagnoses.	***J Med Virol***	83:	322-330	2011
Sakamoto K, Asanuma H, Nakamura T, Kanno T, Sata T, Katano H	Immune response to intranasal and intraperitoneal immunization with Kaposi's sarcoma-associated herpesvirus in mice.	***Vaccine***	28	3325-3332	2010
Kanno T, Sato Y, Nakamura T, Sakamoto K, Sata T, Katano H	Genotypic and clinicopathological characterization of Kaposi's sarcoma-associated herpesvirus infection in Japan.	***J Med Virol***	82	400-406	2010
Hatano B, Kojima A, Sata T, Katano H	Virus detection using viro-adembeads, a rapid capture system for viruses, and plaque assay in intentionally virus-contaminated beverages.	***Jpn J Infect Dis***	63	52-54	2010
Hagiwara S	Altered gut bacterial flora and or ganic acids in feces of patients u ndergoing autologous stem cell tr ansplantation with guinolone-based antibacterial prophylaxis	***Gan to Kagakuryoho***	37巻 6号	1075-1079	2010
Ono A, Hattori S, Kariya R, Iwanaga S, Taura M, Harada H, Suzu S, and *Okada S.	Comparative study of human hematopoietic cell engraftment into Balb/c and C57BL/6 strain of Rag-2/Jak3 double-deficient mice.	***J Biomed Biotechnol***	2011	539748	2011
Chihara T, *Suzu S, Hassan R, Chutiwitoonchai N, Hiyoshi M, Motoyoshi K, Kimura F, and *Okada S.	IL-34 and M-CSF share the receptor Fms but are not identical in biological activity and signal activation.	***Cell Death Differ***	17巻 12号	1917-1927	2010
Satoh M, Saito M, Tanaka K, Iwanaga S, Nagla S, Seki T, Okada S, Kohara M, Harada S, Kai C, and *Tsukiyama-Kohara K.	Evaluation of a recombinant measles virus expressing hempatitis C virus envelope proteins by infection of human PBMC-NOD/Scid/Jak3^{null} mouse.	***Comp Immunol Microbiol Infect Dis***	33巻 6号	e81-88	2010
Towata T, Komizu Y, Suzu S, *Ueoka R, and *Okada S	Highly selective fusion and accumulation of Hybrid Liposomes into Primary Effusion Lymphoma Cells along with induction of apoptosis.	***Biochem Biophys Res Comm***	393巻 3号	445-448	2010
Towata T, Komizu Y, Suzu S, Matsumoto Y, *Ueoka R, and *Okada S	Hybrid liposomes inhibit the growth of primary effusion lymphoma in vitro and in vivo.	***Leukemia Res***	34巻 7号	906-911	2010
Yanagisawa N, Ando M, Ajisawa A, Imamura A, Suganuma A, Tsuchiya K, Nitta K.	Clinical Characteristics of Kidney Disease in Japanese HIV-Infected Patients.	***Nephron Clin Pract.***	118巻 3号	C285-291	2010
永井宏和	マントル細胞リンパ腫の分子病態と治療戦略	血液腫瘍科	60巻 4号	506-513	2010

永井宏和	臨床医から見る分子標的治療薬のメディカルニーズ～悪性リンパ腫～	***PHARMSTAGE***	10 巻 2 号	48-50	2010
永井宏和	濾胞性リンパ腫—治療戦選択のポイント	臨床血液	51 巻 10 号	37-46	2010
永井宏和	悪性リンパ腫における分子病態解明の進歩	***Myeloma & Lymphoma***	2 巻	12-15	2010
萩原將太郎	診断と治療の Topics　HIV 関連リンパ腫	HIV 感染症と AIDS の治療	1 巻 2 号	2185-1689	2010
岡本尚，木村宏，片野晴隆，塚田訓久，今井健一，高折晃史	エイズ発症の危険因子としての微生物間相互作用	日本エイズ学会誌	12	59-66	2010
岡田誠治，片野晴隆，萩原將太郎，永田安伸，安岡彰	HIV-1 感染と悪性腫瘍	日本エイズ学会誌	12	81-88	2010
片野晴隆	特集　ヘルペスウイルスのウイルス学　Epstein-Barr ウイルス（EBV）とカポジ肉腫関連ヘルペスウイルス (KSHV, HHV-8)	ウイルス	60	237-246	2010
渡邉俊樹	特集細胞死と造血器腫瘍　ウイルスによる細胞死抑制と造血器腫瘍	血液内科	62 巻 2 号	200-207	2010
岡田誠治	エイズ関連悪性リンパ腫－その現状と治療戦略－	医学の歩み	235 巻 5 号	431-437	2010
岡田誠治	血液悪性腫瘍における細胞膜の揺らぎと膜標的療法	揺らぎと生体機能. Medical Bio	10 月別冊	91-95	2010
味澤　篤	HIV 感染者における HBV の動向と治療上の問題	医薬ジャーナル	46 巻	133-140	2010
黒井克昌、山下年成、鈴木栄治、堀口和美、有賀智之、北川大、関根進、鴇田博美、今村顕史、味澤　篤	ヒト免疫不全ウイルス感染症と乳腺疾患	乳腺の臨床	25 巻	417-428	2010
味澤　篤.	診断と治療の Topics　HIV と脳血管障害	HIV 感染症と AIDS の治療	1 巻 1 号	20-23	2010

Ⅳ. 研究成果の刊行物・別刷

ORIGINAL ARTICLE

Whole brain radiation alone produces favourable outcomes for AIDS-related primary central nervous system lymphoma in the HAART era

Hirokazu Nagai[1], Takashi Odawara[2], Atsushi Ajisawa[3], Shotaro Hagiwara[4], Tomoyuki Watanabe[5], Tomoko Uehira[6], Hideki Uchiumi[7], Mihoko Yotsumoto[8], Toshikazu Miyakawa[9], Akira Watanabe[10], Toshiyuki Kambe[11], Mitsuru Konishi[12], Seiji Saito[13], Soichiro Takahama[14], Masao Tateyama[15], Seiji Okada[16]

[1]Department of Hematology, National Hospital Organization Nagoya Medical Center, Nagoya; [2]Department of Infectious Diseases and Applied Immunology, The Institute of Medical Science, The University of Tokyo, Tokyo; [3]Division of Infectious Disease, Tokyo Metropolitan Cancer and Infectious Diseases Center Komagome Hospital, Tokyo; [4]Division of Hematology, International Medical Center of Japan, Tokyo; [5]Faculty of Psychological and Physical Science, Aichi Gakuin University, Nisshin; [6]Department of Infectious Diseases, National Hospital Organization Osaka National Hospital, Osaka; [7]Department of Medicine and Clinical Science, Gunma University Graduate School of Medicine, Gunma; [8]Department of Laboratory Medicine, Tokyo Medical University, Tokyo; [9]Department of Hematology, Faculty of Medical and Pharmaceutical Sciences Kumamoto University, Kumamoto; [10]Division of Control and Treatment of Infectious Diseases, Chiba University Hospital, Chiba; [11]Department of Respiratory Medicine, Asahi General Hospital, Asahi; [12]Center for Infectious Diseases, Nara Medical University, Nara; [13]Division of Blood Transfusion Services, Hiroshima University Hospital, Hiroshima; [14]Division of Immunology and Infectious Diseases, Clinical Research Institute, National Hospital Organization Kyushu Medical Center, Fukuoka; [15]First Department of Internal Medicine, Faculty of Medicine, University of the Ryukyus, Okinawa; [16]Center for AIDS Research, Kumamoto University, Kumamoto, Japan

Abstract

Primary central nervous system lymphoma (PCNSL) related to acquired immunodeficiency syndrome (AIDS) is a lethal disorder, but the recent application of highly active antiretroviral therapy (HAART) has significantly improved prognosis. This retrospective cohort study of AIDS-related PCNSL examined the actual clinical outcomes and prognostic variables affecting overall survival (OS) in the HAART era. Twenty-three newly diagnosed AIDS-related PCNSL at 12 regional centre hospitals for HIV/AIDS in Japan between 2002 and 2008 were consecutively enrolled. The estimated 3-yr OS rate of the entire cohort was 64% (95%CI, 41.0–80.3%). Whole brain radiation therapy (WBRT) had an independent positive impact on survival (WBRT ≥30 Gy vs. others, $P = 0.02$). Nine of 10 patients with a good performance status (PS) (0–2) remained alive with complete response, whereas 10 (77%) of 13 of those with a poor PS (3–4) died mostly after a short period. The estimated 3-yr OS rate of the groups with a good and poor PS was 100% and 38% (95%CI, 14–63%), respectively ($P = 0.01$). Leukoencephalopathy (grade ≥ 2) developed in 21% of those that survived more than 12 months after radiation. The patients receiving a curative intent radiation dose (≥30 Gy) of WBRT achieved prolonged survival while maintaining a good quality of life in the HAART era, especially among patients with a favourable PS.

Key words acquired immunodeficiency syndrome; primary central nervous system lymphoma; highly active antiretroviral therapy; whole brain radiation; leukoencephalopathy

Correspondence Hirokazu Nagai, Clinical Research Center, National Hospital Organization Nagoya Medical Center, 4-1-1, Sannomaru, Naka-ku, Nagaoya 460-0001, Japan. Tel: 81 52 951 1111; Fax: 81 52 951 9075; e-mail: nagaih@nnh.hosp.go.jp

Accepted for publication 30 January 2010

doi:10.1111/j.1600-0609.2010.01424.x

Primary central nervous system lymphoma (PCNSL) is one of several acquired immunodeficiency syndrome (AIDS)-defining illnesses (ADI), and it is the second most frequent cerebral mass lesion after toxoplasmosis among those infected with the human immunodeficiency virus (HIV) (1). This type of lymph oma typically arises at the severely immunocompromised late stage of HIV infection, and CD4+ cell counts at diagnosis are

$<20/\mu L$ in most patients (2, 3). The pathological diagnosis is usually diffuse large B cell lymphoma (4, 5). Although Epstein–Barr virus (EBV) is generally absent from PCSNL in immunocompetent patients, about 80–100% of AIDS-related PCNSL is associated with EBV in lymphoma lesions (6). Pathogenetic roles of EBV infection in AIDS-related PCNSL have been suggested. The incidence of PCSNL has significantly decreased since highly active antiretroviral therapy (HAART) was introduced (7), as have all other types of EBV-positive AIDS-related lymphomas (8). Before the introduction of HAART, the prognosis of AIDS-related PCNSL was dismal and median survival was typically <3 months (9–13). After HAART became available, the clinical outcome of AIDS-related PCNSL radically improved (14–19). However, a standard management procedure for these patients remains to be established. We performed a nationwide retrospective survey to elucidate the actual clinical outcome and to identify the significant prognostic variables of AIDS-related PCNSL in the HAART era, in addition to determining the quality of life of long-term survivors of whole brain radiation.

Patients and methods

This retrospective cohort study examined the clinical outcomes of patients diagnosed with AIDS-related PCNSL (in the HAART era) who visited the 12 regional hospitals for HIV/AIDS in Japan during the period January 2002–December 2008. HAART was defined as two kinds of nucleoside reverse transcriptase inhibitor combined with protease inhibitor or non-nucleoside reverse transcriptase inhibitor. HAART was introduced in 1997 in Japan. This study received approval from the responsible ethics committee.

Patients

The patients included in this study were newly diagnosed with AIDS-related PCNSL during the study period. The pathological diagnosis of each institution was accepted. Those with disseminated lymphoma lesions other than CNS were excluded, whereas those diagnosed with possible AIDS-related PCNSL according to some clinical-based modalities were included. All patients who satisfied the above-mentioned criteria were serially enrolled. Data from all patients registered in this study were statistically analysed.

Clinical characteristics of the patients

Data regarding age, Eastern Cooperative Oncology Group (ECOG) performance status (PS) at diagnosis, number of CD4+ cells at diagnosis, HIV viral load at diagnosis, prior AIDS, concurrent opportunistic diseases, presence of severe neurological symptoms at diagnosis and prior HAART were analysed. Diagnostic modalities and the primary therapy of all enrolled patients were also determined and analysed.

A complete response (CR) to treatment was defined as the disappearance of all clinical evidence of disease at the completion of first induction therapy. The presence of residual disease but with ≥50% decrease in the sum of the products of the greatest diameter was defined as a partial response (PR). Intra-ocular lesions were not assessed in any of the patients. Overall survival (OS) was defined as the interval from diagnosis to death from any cause. Grades of leukoencephalopathy were evaluated based on each institutional decision according to CTCAE v3.0 (20).

Statistical analysis

The primary endpoint of this study was the identification of factors that significantly impacted OS. Both multivariate and univariate Cox regression analyses were performed to assess the effects of treatment and the various baseline prognostic factors on OS. All P values are two-tailed. OS was assessed using the Kaplan–Meier method. Groups divided by clinical variables were compared using the log-rank test. Data were statistically analysed using STATA 10.0 (STATACORP LP, College Station, TX, USA).

Results

Patients' background

Table 1 shows the characteristics of the 23 registered patients with AIDS-related PCNSLs. The median age was 41 (21–60), and male gender accounted for 96% of the patients. Eleven patients developed PCNSL as ADI, and 12 patients were diagnosed with AIDS before the development of PCNSL. Radiological imaging examinations were carried out in all 23 patients. Eleven were diagnosed with PCNSL based on both imaging features and the presence of EBV DNA in cerebrospinal fluid by PCR without a brain biopsy, while three were diagnosed by radiological MRI and SPECT imaging, and the favourable response of brain tumour by radiation therapy. One patient was diagnosed at autopsy. PCR tests of EBV genome in cerebrospinal fluid were performed in 20 patients, and 16 patients out of them showed positivity (80%, 16/20). Seven (30%) were treated with HAART at diagnosis; and finally, HAART was administered to 91% of the patients. Concurrent opportunistic diseases were identified in 15 (65%). Twelve patients had other ADIs before the diagnosis of PCSNL. The median count

Table 1 Characteristics of patients with AIDS-related PCNSL (n = 23)

Gender	*n* (%)
Male	22 (96%)
Female	1 (4%)
Age(years)	
Median	41
Range	21–60
AIDS diagnosed before PCNSL, n (%)	12 (52 %)
Pneumocystis jiroveci pneumonia	6
Cytomegalovirus infection	2
Candidiasis	3
Cryptosporidiosis	1
HAART therapy before PCNSL, *n* (%)	7 (30%)
Opportunistic diseases at diagnosis of PCNSL, *n* (%)	15 (65%)
CD4+ cell count at PCNSL diagnosis (cells/mL)	
Median	22
Range	1–657
HIV viral load at diagnosis of PCSNL (copy/mL)	
Median	77000
Range	0–1.23 × 10^7
PS at diagnosis of PCNSL, n (%)	
0	2 (7%)
1	4 (17%)
2	4 (17%)
3	5 (22%)
4	8 (35%)
Ataxia and/or cognitive disturbance (grade ≥ 3) at PCNSL diagnosis, *n* (%)	12 (52%)
Diagnostic modality, n (%)	
Biopsy	8 (35%)
Imaging only	3 (13%)
Autopsy	1 (4%)
Positive for EBV genome in CSF by PCR	11 (48%)
PCR test of EBV genome in CSF	(n = 20)
Positive	16/20
Negative	4/20
HAART after diagnosis of PCNSL, *n* (%)	21 (91%)

HAART, highly active antiretroviral therapy; PCNSL, Primary central nervous system lymphoma.
Neurological symptoms graded according to CTCAE v3.0.

of CD4+ cells at PCNSL diagnosis was 22/μL (1–657), and 13 (57%) of 23 patients had a poor PS at diagnosis (3–4). Twelve patients (52%) had severe neurological symptoms defined as ataxia or cognitive disturbance grade ≥ 3 according to CTCAE v3.0 at the time of PCNSL diagnosis.

Treatment and initial response

Twenty-one patients were treated by radiotherapy alone, and only one received combined modality treatment (high-dose methotrexate and cytoxan followed by whole brain radiation (WBRT)). One patient received only best supportive care (BSC). Thirteen patients received a curative intent radiation dose (≥30 Gy) of WBRT. The overall response rate to all of these strategies including BSC was 65%, while the response rate to a curative intent WBRT was 77% (Table 2).

Table 2 Initial treatment modality and early clinical response

Treatment modality	*n* (%)	CR/PR, *n* (%)
Whole brain radiation ± local boost (≥30 Gy)	13 (57%)	10 (77%)
Whole brain radiation (<30 Gy)	5 (22%)	1 (20%)
Local brain radiation	3 (13%)	3 (100%)
Combined modality therapy	1 (4%)	1 (100%)
Best supportive care	1 (4%)	0 (0%)
Total	23	15 (65%)

Combined modality therapy: high-dose methotrexate and high-dose cytoxan followed by WBRT.

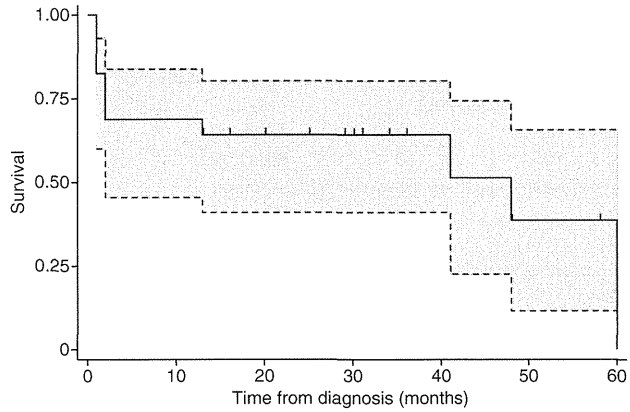

Figure 1 Overall survival curves (All patients with Primary central nervous system lymphoma). Kaplan–Meier estimate with 95% CI (dashed line). Marks indicated censored observation. The total number of censored cases was 12.

Clinical variables affecting OS

The estimated 3-yr OS rate of all patients was 64% (95% CI, 41.0–80.3%) with a 20-month median follow-up (Fig. 1).

Significant clinical variables that affected OS were distinguished using univariate and multivariate analyses. Univariate analysis showed that better PS (ECOG) at diagnosis (0–2 vs. 3–4) and receiving curative intent radiation dose (≥30 Gy) of WBRT (WBRT ≥ 30 Gy vs. others) were significant positive survival predictors (P = 0.01 and <0.01, respectively), and younger age (<40 yr vs. ≥40) also tended to affect positively on OS but did not reach statistical significance (P = 0.12) (Table 3). Multivariate analysis of these three variables revealed that receipt of WBRT (≥30Gy) had an independent positive impact on OS (P = 0.02) (Table 4). Favourable PS (ECOG) was second strong predictor to

Table 3 Factors affecting OS (univariate analysis)

Clinical variables	No. of patients	Median survival (Month)(95% CI)	*P* value*
Age (yr)			
<40	9	41 (1.7–80.3)	0.12
≥40	14	2 (2–34.1)	
PS (ECOG)			
0–2	10	48 (N/A)	0.01
3–4	13	2 (0–12.6)	
CD4 (cells/mL)			
<50	18	60 (N/A)	0.77
≥50	5	41 (0–97.7)	
Prior AIDS			
(−)	11	48 (0–114.1)	0.69
(+)	12	41(0–93.2)	
Prior HAART			
(−)	16	41 (0.6–81.4)	0.52
(+)	7	48(12.2–83.9)	
HIV viral load (copy/mL)			
$\leq 1 \times 10^5$	13	13 (N/A)	0.07
$>1 \times 10^5$	10	60 (N/A)	
Severe neurological symptoms at PCNSL onset			
(−)	12	NR	0.12
(+)	11	41 (12.3–69.7)	
Opportunistic disease			
(−)	8	48 (33.8–62.2)	0.34
(+)	15	NR	
Therapy			
WBRT (≥30 Gy)	13	60 (N/A)	<0.01
Other	10	2 (0.7–3.3)	
Response rate			
SD/PD	8	2 (N/A)	0.14
CR/PR	15	48(31.7–64.3)	

*Log-rank test.
CR, complete response; ECOG, Eastern Cooperative Oncology Group; HAART, highly active antiretroviral therapy; N/A, not applicable; NR, not reached; OS, overall survial; PCNSL, Primary central nervous system lymphoma; PR, partial response; WBRT, whole brain radiation therapy.

Table 4 Factors affecting OS (multivariate analysis)

Clinical variables	Hazard Ratio (95% CI)	*P* value
Age		
<40	1	0.09
≥40	5.27 (0.76–36.1)	
PS		
0–2	1	0.06
3–4	9.24 (0.86–96.43)	
Therapy		
WBRT (≥30Gy)	1	0.02
Other	8.10 (1.35–48.43)	

OS, overall survial; PS, performance status; WBRT, whole brain radiation therapy.

better OS with highest hazard ratio but was not statistically significant ($P = 0.06$).

Nine of ten patients with a good PS (0–2) remained alive with CR (all received curative intent WBRT), nevertheless 10 (77%) of 13 of those with a poor PS (3–4) died mostly within 2 months (7/10; 70%). The estimated 3-yr OS rate of each group was 100% and 38% (95% CI, 14–63%), respectively ($P = 0.01$, log-rank test) (Fig. 2A).

The 3-yr OS rates for 13 patients who received WBRT (≥30Gy) estimated from Kaplan–Meier survival curves and in the group that received a different type of treatment were 92% (95% CI, 57–99%) and 24% (95% CI, 4–58%), respectively ($P < 0.01$, log-rank test) (Fig. 2B).

Leukoencephalopathy and PS in survivors

Leukoencephalopathy is a late-onset, serious adverse event associated with radiation therapy to the brain

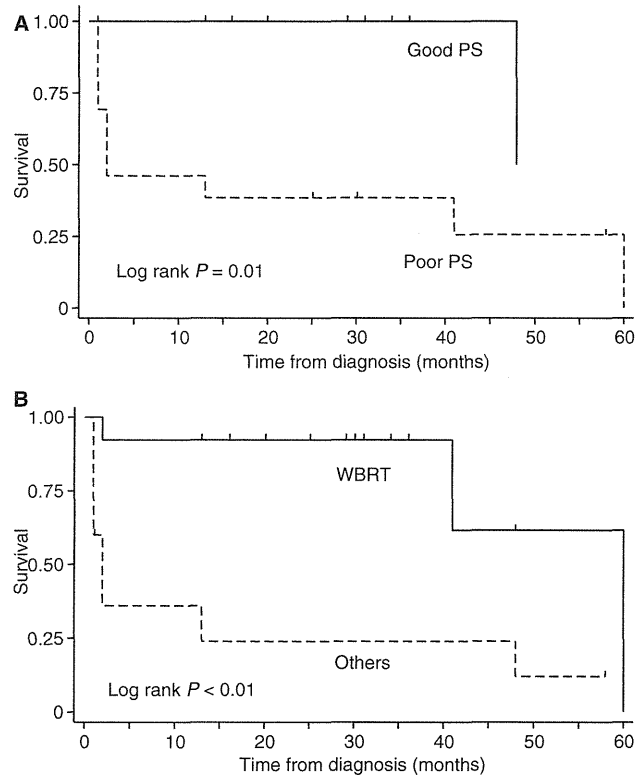

Figure 2 Overall survival curves. (A) Survival according to performance status (PS) at Primary central nervous system lymphoma(PCNSL) diagnosis. Solid line, patients with PS 0–2 (good PS); dashed line, patients with PS 3–4 (poor PS). Marks indicated censored observation. The number of censored cases was nine in good PS group and three in poor PS group. (B) Survival according to initial therapy for PCNSL. Solid line, patients receiving WBRT (≥30 Gy); dashed line, patients receiving other therapy. Marks indicated censored observation. The number of censored cases was 10 in WBRT (≥30 Gy) group and two in others' group.

Table 5 Current status and neurological symptoms of patients who survived ≥12 months

Patient No.	Survival (months)	Neurological symptoms Ataxia/cognitive disturbance	Leukoencephalopathy	PS
1	48	0/2	1	1
2	25	4/3	3	4
3	30	0/0	0	0
4	31	3/0	0	1
5	34	2/1	0	1
6	13	0/0	0	0
7	58	1/0	1	1
8	20	0/1	0	1
9	16	0/0	0	0
10	29	0/0	0	0
11	36	0/0	0	0

PS, performance status.
Neurological symptoms and leukoencephalopathy graded according CTCAE v3.0.

(21–23). We analysed the incidence and grade of radiation-related leukoencephalopathy, which was assessed among the patients who survived for ≥12 months after initial radiation therapy. Leukoencephalopathy was graded according to CTCAE v3.0. Twelve patients survived for ≥12 months after WBRT (≥30 Gy), and two patients survived for ≥12 months after local brain radiation. Among these fourteen patients, five (36%) were diagnosed with leukoencephalopathy by CT or MRI imaging, and three of them had leukoencephalopathy grade ≥2 (median follow-up, 30 months; range, 13–58 months). No signs of leukoencephalopathy have developed in eight of the 12 survivors who received WBRT (≥30 Gy).

We also analysed the current neurological symptoms and PS of 11 living patients. The PS of all patients except for one with severe neurological symptoms was ≤1 (Table 5).

Discussion

AIDS-related PCNSL was a highly lethal ADI in the pre-HAART era, with survival being generally quoted as <3 months (9–13). Many studies have indicated improved survival of patients with AIDS-related PCNSL after the introduction of HAART (14–19), but standard management for such patients has not been established.

Our retrospective cohort study of AIDS-related PCNSL in the HAART era showed favourable survival especially in patients with a good PS who underwent WBRT at the dosage of ≥30 Gy designed for curative intent. Univariate analysis showed that significant clinical factors for a favourable OS were a good PS (ECOG 0–2) at diagnosis and the receipt of WBRT (≥30 Gy). Multivariate analysis selected the receipt of WBRT (≥30 Gy) as the statistically significant clinical factor for a favourable OS. Even in the HAART era, low CD4+ cell counts was reported to be a significant poor prognostic factors for AIDS-related systemic non-Hodgkin lymphoma (24). Our data could not show that CD4+ cell count had the prognostic effect in AIDS-related PCNSL in the HAART era. Systemic non-Hodgkin lymphomas were usually treated with systemic chemotherapy, which could impair host immune status, and one of the major causes of death was severe infection during treatment. Thus CD4+ cell count in AIDS-related systemic lymphoma would be more important than in PCNSL treated with brain radiation, which might have minimal damages to host immunity, in the context of control of infectious complications.

Some reports during the HAART era have indicated improved survivals of patients with PCNSL after treatment with curative intent WBRT. However, in each study, all patients with PCNSL were not reported to be actually treated with this modality in the HAART era; the largest study comprised 25 patients (16), but only 10 of the patients described in that study underwent both WBRT (≥30 Gy) and therapy with two or three anti-retroviral agents. All of our 23 patients were diagnosed in the HAART era, 12 were treated with both HAART and the curative intent WBRT, and we followed up the survivors for longer (median: 18 months) than any other studies (14–16). The 3-yr OSs of the entire cohort, the group with a favourable PS, and the group that underwent WBRT were 64%, 100% and 92%, respectively. These data showed that the survival of patients with AIDS-related PCNSL could be favourable if treated with curative WBRT under a relatively good general PS during the HAART era. The reported 3-yr OS of patients with non-AIDS-related PCNSL is 29% when treated only with brain radiation (25) and 50–70% when treated with high-dose MTX-based chemotherapy plus brain radiation (26, 27). Our survival findings were comparable with those of immunocompetent patients and might be superior if PS is favourable at diagnosis.

One major difference between AIDS-related and immunocompetent PCNSL is considered the consistent association with EBV. The presence of EBV in the setting of prolonged immunosuppression might cause B cell activation that result in the development of PCNSL. Anti EBV therapy or HAART with/without ganciclovir and interleukin two have been applied to treat AIDS-related PCNSL, with some good responses (28–30). In the context of these concepts, the role of chemotherapy in AIDS-related PCNSL remains obscure. The adequacy of such therapeutic modalities, as WBRT, a high-dose MTX-based regimen, and com-

bined therapy should be further analysed in prospective clinical trials.

Our long-term follow-up allowed an analysis of the incidence of leukoencephalopathy, general status and neurological symptoms after therapy was completed. The adverse effects of brain radiation comprise an acute type that can occur even during radiation, an early-delayed type that occurs 2–4 months later, and a late type that manifests about 9–12 months later. Leukoencephalopathy is a late-onset complication that requires long-term follow-up. Our patients were followed up for 13–56 months, which should have allowed most leukoencephalopathy to be recognised. The incidence was 36% (5/14), and severe events (grade $\geq$ 2) developed in three patients. The PS of all eleven survivors except for one with grade 3 leukoencephalopathy was $\leq$1. Two patients showed cognitive disturbance of grade $\geq$ 2, and three showed ataxia of grade $\geq$ 2. PCNSL itself, even in the remission status, might account for some neurological symptoms. Longer observation might be required to determine the final outcome of late-onset radiation-damage to the brain.

Our findings suggested that patients with AIDS-related PCNSL achieved durable remission after curative intent WBRT, especially those with a good PS during the HAART era. These findings indicate that early diagnosis of this disease before symptoms can affect general status could result in prolonged survival with a favourable outcome. Thus, surveillance of a high-risk population for HIV infection and close follow-up of patients infected with HIV should improve the outcomes of AIDS-related PCNSL.

Acknowledgements

This study was supported by a Health and Labour Sciences Research Grant from the Ministry of Health, Labour, and Welfare of Japan (Grant number: H19-AIDS-003).

References

1. Gray F, Gherardi R, Scarvalli R. The neuropathology of the acquired immune deficiency syndrome (AIDS). A review. *Brain* 1998;**111**:245–66.
2. Pluda JM, Venzon DJ, Tosato G, Lietzau J, Wyvill K, Nelson DL, Jaffe ES, Karp JE, Broder S, Yarchoan R. Parameters affecting the development of non-Hodgkin's lymphoma in patients with severe human immunodeficiency virus infection receiving antiretroviral therapy. *J Clin Oncol* 1993;**11**:1099–107.
3. Raez LE, Patel P, Feun L, Restrepo A, Raub WA Jr, Cassileth PA. Natural history and prognostic factors for survival in patients with acquired immune deficiency syndrome (AIDS)-related primary central nervous system lymphoma (PCNSL). *Crit Rev Oncog* 1998;**9**:199–208.
4. So YT, Beckstead JH, Davis RL. Primary central nervous system lymphoma in acquired immune deficiency syndrome: a clinical and pathological study. *Ann Neurol* 1986;**20**:566–72.
5. Larocca LM, Capello D, Rinelli A, *et al.* The molecular and phenotypic profile of primary central nervous system lymphoma identifies distinct categories of the disease and is consistent with histogenetic derivation from germinal center-related B cells. *Blood* 1998;**92**:1011–9.
6. Camilleri-Broët S, Davi F, Feuillard J, *et al.* AIDS-related primary brain lymphomas: histopathologic and immunohistochemical study of 51 cases. The French Study Group for HIV-Associated Tumors. *Hum Pathol* 1997;**28**:367–74.
7. Kirk O, Pedersen C, Cozzi-Lepri A, Antunes F, Miller V, Gatell JM, Katlama C, Lazzarin A, Skinhøj P, Barton SE. Non-Hodgkin lymphoma in HIV-infected patients in the era of highly active antiretroviral therapy. *Blood* 2001;**98**:3406–12.
8. Hishima T, Oyaizu N, Fujii T, *et al.* Decrease in Epstein–Barr virus-positive AIDS-related lymphoma in the era of highly active antiretroviral therapy. *Microbes Infect* 2006;**8**:1301–7.
9. Baumgartner JE, Rachlin JR, Beckstead JH, Meeker TC, Levy RM, Wara WM, Rosenblum ML. Primary central nervous system lymphomas: natural history and response to radiation therapy in 55 patients with acquired immunodeficiency syndrome. *J Neurosurg* 1990;**73**:206–11.
10. Levine A. Acquired immunodeficiency syndrome-related lymphoma. *Blood* 1992;**80**:8–20.
11. Fine HA, Mayer RJ. Primary central nervous system lymphoma. *Ann Intern Med* 1993;**119**:1093–104.
12. Donahue BR, Sullivan JW, Cooper JS. Additional experience with empiric radiotherapy for presumed human immunodeficiency virus-associated primary central nervous system lymphoma. *Cancer* 1995;**76**:328–32.
13. Bower M, Fife K, Sullivan A, Kirk S, Phillips RH, Nelson M, Gazzard BG. Treatment outcome in presumed and confirmed AIDS-related primary cerebral lymphoma. *Eur J Cancer* 1999;**35**:601–4.
14. Hoffmann C, Tabrizian S, Wolf E, *et al.* Survival of AIDS patients with primary central nervous system lymphoma is dramatically improved by HAART-induced immune recovery. *AIDS* 2001;**15**:2119–27.
15. Skiest DJ, Crosby C. Survival is prolonged by highly active antiretroviral therapy in AIDS patients with primary central nervous system lymphoma. *AIDS* 2003;**17**:1787–93.
16. Newell ME, Hoy JF, Cooper SG, DeGraaff B, Grulich AE, Bryant M, Millar JL, Brew BJ, Quinn DI. Human immunodeficiency virus-related primary central nervous system lymphoma: factors influencing survival in 111 patients. *Cancer* 2004;**100**:2627–36.
17. Cingolani A, Fratino L, Scoppettuolo G, Antinori A. Changing pattern of primary cerebral lymphoma in the

highly active antiretroviral therapy era. *J Neurovirol* 2005;**11**(Suppl 3):38–44.
18. Wolf T, Brodt HR, Fichtlscherer S, Mantzsch K, Hoelzer D, Helm EB, Mitrou PS, Chow KU. Changing incidence and prognostic factors of survival in AIDS-related non-Hodgkin's lymphoma in the era of highly active antiretroviral therapy (HAART). *Leuk Lymphoma* 2005;**46**:207–15.
19. Bower M, Powles T, Nelson M, Mandalia S, Gazzard B, Strbbing J. Highly active antiretroviral therapy and human immunodeficiency virus-assocated primary cerebral lymphoma. *J Natl Cancer Inst* 2006;**98**:1088–91.
20. Cancer Therapy Evaluation Program, Common Terminology Criteria for Adverse Events, Version 3.0, DCTD, NCI, NIH, DHHS March 31, 2003 (http://ctep.cancer.gov), Last updated: 2006. Accessed August 9, 2006.
21. Crossen JR, Garwood D, Glatstein E, Neuwelt EA. Neurobehavioral sequelae of cranial irradiation in adults: a review of radiation-induced encephalopathy. *J Clin Oncol* 1994;**12**:627–42.
22. Conill C, Berenguer J, Vargas M, López-Soriano A, Valduvieco I, Marruecos J, Vilella R. Incidence of radiation-induced leukoencephalopathy after whole brain radiotherapy in patients with brain metastases. *Clin Transl Oncol* 2007;**9**:590–5.
23. Doyle DM, Einhorn LH. Delayed effects of whole brain radiotherapy in germ cell tumor patients with central nervous system metastases. *Int J Radiat Oncol Biol Phys* 2008;**70**:1361–4.
24. Bower M, Gazzard B, Mandalia S, *et al.* A prognostic index for systemic AIDS-related non-Hodgkin lymphoma treated in the era of highly active antiretroviral therapy. *Ann Intern Med* 2005;**143**:265–73.
25. Mead GM, Bleehen NM, Gregor A, *et al.* A medical research council randomized trial in patients with primary cerebral non-Hodgkin lymphoma: cerebral radiotherapy with and without cyclophosphamide, doxorubicin, vincristine, and prednisone chemotherapy. *Cancer* 2000;**89**:1359–70.
26. Blay YJ, Conroy T, Chevreau C, *et al.* High-dose methotrexate for the treatment of primary cerebral lymphomas: analysis of survival and late neurologic toxicity in a retrospective series. *J Clin Oncol* 1998;**16**:864–71.
27. Abrey LE, Yahalom J, DeAngelis LM. Treatment for primary CNS lymphoma: the next step. *J Clin Oncol* 2000;**18**:3144–50.
28. Slobod KS, Taylor GH, Sandlund JT, Furth P, Helton KJ, Sixbey JW. Epstein–Barr virus-targeted therapy for AIDS-related primary lymphoma of the central nervous system. *Lancet* 2000;**356**:1493–4.
29. Aboulafia DM, Ratner L, Miles SA, Harrington WJ Jr. AIDS Associated Malignancies Clinical Trials Consortium Antiviral and immunomodulatory treatment for AIDS-related primary central nervous system lymphoma: AIDS Malignancies Consortium pilot study 019. *Clin Lymphoma Myeloma* 2006;**6**:399–402.
30. Aboulafia DM, Puswella AL. Highly active antiretroviral therapy as the sole treatment for AIDS-related primary central nervous system lymphoma: a case report with implications for treatment. *AIDS Patient Care STDS* 2007;**21**:900–7.

doi:10.1111/j.1600-0609.2010.01498.x

ERRATUM

Whole brain radiation alone produces favourable outcomes for AIDS-related primary central nervous system lymphoma in the HAART era. Eur J Haematol 2010 84(6):499–505. Epub 2010 Mar 10

The following author was missing from the above article: Junko Tanuma (AIDS Clinical Center, National Center for Global Health and Medicine, Tokyo 162–8655, Japan).

The authors apologize that they did not notice during the proof revisions that Dr Junko Tanuma's name was missing and accept full responsibility for this.

The correct list of authors is as follows:

Hirokazu Nagai, Takashi Odawara, Atsushi Ajisawa, Junko Tanuma, Shotaro Hagiwara, Tomoyuki Watanabe, Tomoko Uehira, Hideki Uchiumi, Mihoko Yotsumoto, Toshikazu Miyakawa, Akira Watanabe, Toshiyuki Kambe, Mitsuru Konishi, Seiji Saito, Soichiro Takahama, Masao Tateyama, Seiji Okada

Non-AIDS-defining hematological malignancies in HIV-infected patients: an epidemiological study in Japan

Shotaro Hagiwara[a], Mihoko Yotsumoto[b], Takashi Odawara[c], Atsushi Ajisawa[d], Tomoko Uehira[e], Hirokazu Nagai[f], Junko Tanuma[g] and Seiji Okada[h]

Objective: To clarify the incidence and clinical outcomes of non-AIDS-defining hematological malignancies (NADHMs), excluding non-Hodgkin's lymphomas, in HIV-infected patients.

Design: A nationwide epidemiological study was conducted to evaluate the incidence and clinical outcomes of NADHMs.

Methods: Questionnaires were sent to 429 regional AIDS centers and 497 educational hospitals certified by the Japanese Society of Hematology. Data from 511 institutes were obtained.

Results: From 1991 to 2010, 47 patients with NADHMs were detected (median age, 42.0 years; male, 93.6%). The median CD4-positive T-cell count was 255/μl, and the median duration from the diagnosis of HIV infection to development of hematological malignancy was 28.0 months. Most patients with acute leukemia were treated with standard induction chemotherapy. Complete remission rates and median overall survival periods for acute myeloblastic leukemia (AML) and acute lymphoblastic leukemia (ALL) were 70.0 and 85.7% and 13 and 16 months, respectively. Three of four patients with chronic-phase chronic myeloid leukemia (CML-CP) were well controlled with imatinib. Five patients (2 AML, 1 ALL, 1 accelerated-phase CML, and 1 myeloma) were treated with autologous or allogeneic stem-cell transplantation. Comparison of patients over the two periods (1991–2000 and 2001–2009) revealed a 4.5-fold increase in the incidence of hematological malignancies.

Conclusion: The incidence of NADHMs has increased in the past decade. The prognosis of these patients was similar to that of HIV-negative patients; therefore, standard chemotherapy may be a feasible treatment option for HIV-infected patients with hematological malignancies.

AIDS 2013, **27**:279–283

[a]Division of Hematology, Department of Internal medicine, National Medical Center for Global Health and Medicine, [b]Department of Laboratory Medicine, Tokyo Medical University, [c]Department of Infectious Diseases and Applied Immunology, The Institute of Medical Science, The University of Tokyo, [d]Division of Infectious Disease, Tokyo Metropolitan Cancer and Infectious Diseases Center Komagome Hospital, Tokyo, [e]Department of Infectious Diseases, National Hospital Organization OsakaNational Hospital, Osaka, [f]Department of Hematology, National Hospital Organization Nagoya Medical Center, Nagoya, [g]AIDS Clinical Center, National Medical Center for Global Health and Medicine, Tokyo, and [h]Center for AIDS Research, Kumamoto University, Kumamoto, Japan.

Correspondence to Shotaro Hagiwara, MD, Grad Dip Clin Epid, PhD, Division of Hematology, Department of Internal Medicine, National Medical Center for Global Health and Medicine, 1–21–1 Toyama, Shinjuku, Tokyo 162–8655, Japan.

Tel: +81 3 3202 7181; fax: +81 3 3207 1038; e-mail: shagiwar@hosp.ncgm.go.jp
Received: 1 June 2012; revised: 4 September 2012; accepted: 12 September 2012.

DOI:10.1097/QAD.0b013e32835a5a7a

ISSN 0269-9370 © 2013 Wolters Kluwer Health | Lippincott Williams & Wilkins