第35回日本脳神経外科国際学会フォーラム

The 35th Japan Neurosurgical English Forum (JNEF)

2021年11月12日(金)・13日(土)

開催形式 Web開催

会長 谷口 理章 大阪脳神経外科病院
間脳下垂体外科・内視鏡センター長

事務局
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第35回 日本脳神経外科国際学会フォーラム

The 35th Japan Neurosurgery English Forum

JNEF2021

プログラム・抄録集

2021年11月12日（金）

WEB開催
（淡路夢舞台国際会議場）

当番世話人・会長：谷口　理章
（大阪脳神経外科病院　間脳下垂体外科・内視鏡センター長）

ご挨拶

いよいよ昨年延期となりました第35回日本脳神経外科国際学会フォーラム、ならびに第34回日本脳神経外科同時通訳夏季研修会を開催できる日がやってまいりました。

皆様にはコロナ禍での WEB 開催にも関わらず、多数の参加登録をいただき、大変感謝いたします。皆様の同時通訳に対する情熱を改めて強く感じ、感銘した次第です。あいにく“ようこそ淡路島へ”とはいかなくなりましたが、このような開催形態が今回限りとなることを願いつつ、逆に“こんな年もあったね”と記憶に残る会になれば幸いです。

今後も on-site での同時通訳が基本であり、このままコロナ禍が収束し、皆様と会場で集まれることを強く祈念する次第ですが、一方で on-line での同時通訳の要請は完全には無くならないものと考えます。このためオプションとして on-line での同時通訳手段を整備しておくことも必要と考えます。今回の会でそのノウハウが蓄積され、今後に生かすことができれば、このような開催形態も意味があったのではないかと存じます。

今回は Zoom の webinar ではなく meeting で会議を行う予定ですので、参加者全員が常に発言することが可能です。リアルな会場と同様、活発なご討議、ご指導をお願いしたいと存じます。ただ同時通訳に割り当てられた trainee のみ会場（meeting 主音声）への発言ができませんので、会場への連絡が必要なときはチャットを用いてください。また、できるだけ簡素化したマニュアルをホームページにアップいたしますので、事前にこちらをご確認いただけると幸いです。

ランチョンセミナーでは大宅宗一先生に、新しい手術教育ツールとしての手術動画配信サービス（ope x park）の可能性について、また同時通訳団の本サービスへの関わり方についてご講演をお願いしております。また近貴志先生はすでに WFNS 関連の多数の Webinar で on-line での同時通訳をされており、そのご経験について特別講演でお話していただきます。いずれも皆様の今後のご活動に少なからず役立つものと確信していますので、どうぞよろしくご聴講ください。

Zoom では残念ながら多くの参加者がランダムにお互い会話をする通常の懇親会のような設定ができません。このため今回は例年のような懇親会はできませんが、初日夕方に Sammy’s award ならびに会長賞の表彰式を執り行いたいと思います。どうぞお時間の許す限りご参加いただきますようお願いいたします。

何分初めての試みであり、想定通りに進行できるか不安も多々あります。しかしながら今後の改善策の基にしていくためにも、問題点・不備については厳しくご指摘いただければと思います。どうぞよろしくお願いいたします。

2021年10月

第35回日本脳神経外科国際学会フォーラム（JNEF）
第34回日本脳神経外科同時通訳夏季研修会（SIGNS）

当番世話人・会長 谷口　理章
大阪脳神経外科　間脳下垂体外科・内視鏡センター長

日本脳神経外科国際学会フォーラム

名誉会員

阿部　俊昭　　池﨑　清信　　伊藤　昌徳　　植村　研一　　亀山　元信
小林　茂昭　　佐伯　直勝　　佐藤　　修　　茂野　　卓　　中川　　洋
西澤　　茂　　藤井　清孝　　細田　浩道　　本郷　一博　　水野　順一

運営委員

赤井　卓也　　遠藤　俊毅　　大宅　宗一　　荻野　雅宏　　近　　貴志
近藤　　威　　坂田　勝巳　　柴田　　靖　　下地　一彰　　平　　孝臣
太組　一朗　　竹井　　太　　伊達　　勲　　谷口　理章　　徳川　城治
名取　良弘　　西岡　　宏　　原　　淑恵　　樋口　佳則　　藤巻　高光
松村　　明　　松山　純子　　三原　千惠　　村垣　善浩　　安田　宗義

敬称略　氏名50音順

次期開催のご案内

第36回日本脳神経外科国際学会フォーラム
第35回日本脳神経外科同時通訳夏季研修会

会長：柴田　靖
（筑波大学水戸地域医療教育センター / 水戸協同病院　脳神経外科）

会期：2022年7月22日（金）～23日（土）
会場：つくば国際会議場（茨城県つくば市）

本学会に関するお問い合わせ

【会期中の連絡先（連絡事務局）】
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SNEF/ JNEF のあゆみ

	President	Place	Date
第 1 回	細田　浩道	大磯プリンスホテル	1993.8.26
第 2 回	工藤　　忠	ホテルコスモ横浜	1994.3.31
第 3 回	大井　静雄	大磯プリンスホテル	1994.8.25
第 4 回	藤本　　司	ホテルコスモ横浜	1995.2.17
第 5 回	津金　隆一	大磯プリンスホテル	1995.9.8
第 6 回	千葉　康洋	新横浜プリンスホテル	1996.3.15
第 7 回	山本　勇夫	大磯プリンスホテル	1996.8.30
第 8 回	藤井　康孝	ホテルコスモ横浜	1997.3.28
第 9 回	森井　誠二	大磯プリンスホテル	1997.9.5
第 10 回	桑名　信匡	ホテルコスモ横浜	1998.3.20
第 11 回	阿部　俊昭	湘南国際村センター	1998.7.31
第 12 回	伊藤　昌徳	東京赤坂ザ・フォーラム	1999.3.31
第 13 回	平　　孝臣	東京赤坂ザ・フォーラム	1999.7.30
第 14 回	佐伯　直勝	東洋日本都市センター会館	2000.3.10
第 15 回	森本　哲也	かしはら万葉ホール	2000.8.4
第 16 回	中洲　庸子	ピアザ淡海	2001.7.27
第 17 回	西澤　　茂	ヤマハリゾートつま恋	2002.7.19
第 18 回	伊達　　勲	岡山コンベンションセンター	2003.7.18
第 19 回	宝金　清博	札幌コンベンションセンター	2004.7.16
第 20 回	本郷　一博	長野県松本文化会館	2005.7.15
第 21 回	松村　　明	つくば国際会議場	2006.7.21
第 22 回	佐伯　直勝	かずさアカデミアホール	2007.7.20
第 23 回	伊藤　昌徳	ホテルオークラ東京ベイ	2008.7.18-19
第 24 回	水野　順一	長良川国際会議場	2009.7.10
第 25 回	藤巻　高光	大宮ソニックシティ	2010.7.23-24
第 26 回	池﨑　清信	ヒルトン福岡シーホーク	2011.7.22-23
第 27 回	赤井　卓也	石川県立音楽堂	2012.7.27-28
第 28 回	坂田　勝巳	横浜シンポジア	2013.7.26-27
第 29 回	村垣　善浩	学術総合センター	2014.7.25-26
第 30 回	近藤　　威	淡路夢舞台国際会議場	2015.7.24-25
第 31 回	名取　良弘	嘉穂劇場	2016.7.22-23
第 32 回	荻野　雅宏	大宮ソニックシティ	2017.7.14-15
第 33 回	西岡　　宏	一橋講堂（旧 学術総合センター）	2018.7.20-21
第 34 回	太組　一朗	川崎市国際交流センター	2019.7.26-27
第 35 回	谷口　理章	WEB 開催（淡路夢舞台国際会議場）	2021.11.12-13
第 36 回	柴田　　靖	つくば国際会議場	2022.7.22-23

第 1 回から第10回までは SNEF; Shonan Neurosurgery English Forum と称した

歴代 Sammy's Award 受賞者

		Winner	所属（受賞時）
第11回		木暮　太郎	東京慈恵会医科大学
第12回		美馬　達夫	高知医科大学
第13回		小山　　徹	信州大学
第14回		石原正一郎	防衛医科大学
第15回	Senior	西澤　　茂	浜松医科大学
	Junior	長島　　久	信州大学
第16回	Senior	常喜　達裕	東京慈恵会医科大学
	Junior	藤井登志春	富山労災病院
第17回	Senior	赤井　卓也	金沢医科大学
	Junior	福住　曜子	東京慈恵会医科大学
第18回	1 位	近藤　　威	神戸大学
	2 位	松山　純子	別府リハビリテーションセンター
	3 位	安田　宗義	日立製作所水戸総合病院
第19回	1 位	藤巻　高光	帝京大学
	2 位	安田　宗義	日立製作所水戸総合病院
	3 位	小股　　整	新潟市信楽園病院
第20回	1 位	安田　宗義	日立製作所水戸総合病院
	2 位	藤本　礼尚	西新潟中央病院
	3 位	森本　哲也	大阪警察病院
第21回	1 位	Adam Tucker	西宮協立脳神経外科病院
	2 位	水野　順一	愛知医科大学
	3 位	大須賀　覚	筑波大学
第22回	1 位	太組　一朗	日本医科大学千葉北総病院
	2 位	廣野誠一郎	千葉大学
	3 位	下地　一彰	順天堂大学練馬病院
第23回	1 位	徳川　城治	順天堂大学
	2 位	大宅　宗一	東京大学大学院医学系研究科
	3 位	秋山　雅彦	富士市立中央病院
第24回	1 位	Nunung Nur Rahmah	信州大学
	2 位	遠藤　俊毅	東北大学
	3 位	菊池陽一郎	岡山大学
第25回	1 位	遠藤　俊毅	東北大学
	2 位	菊池陽一郎	岡山大学
	3 位	中村　　聡	国際医療福祉大学
第26回	1 位	大原　信司	福岡山王病院
	2 位	近　　貴志	新潟県立中央病院
	3 位	下地　一彰	順天堂大学
第27回	1 位	棗田　　学	新潟大学
	2 位	大宅　宗一	埼玉医科大学国際医療センター
	3 位	中村　　聡	国際福祉大学三田病院
第28回	1 位	山下　麻美	鹿児島大学
	2 位	Alexander Zaboronok	筑波大学
	3 位	東田　哲博	小田原市立病院
第29回	1 位	田中　將太	東京大学
	2 位	遠藤　俊毅	東北大学
	3 位	荻野　雅宏	獨協医科大学
第30回	1 位	大宅　宗一	埼玉医科大学国際医療センター
	2 位	藤巻光太郎	京都大学
	3 位	荻野　雅宏	獨協医科大学

		Winner	所属（受賞時）
第31回	1 位	下地　一彰	順天堂大学
	2 位	丹羽　良子	埼玉医科大学総合医療センター
	3 位	松原　鉄平	九州大学
第32回	1 位	Alexander Zaboronok	筑波大学
	2 位	綿谷　崇史	静岡県立こども病院
	3 位	赤星　　南	筑波大学
第33回	1 位	松橋　阿子	国立成育医療研究センター
	2 位	綿谷　崇史	静岡県立こども病院
	3 位	折口　槙一	千葉大学
第34回	1 位	末永　　潤	横浜市立大学
	2 位	木下　裕介	中村記念病院
	3 位	大倉　英浩	順天堂大学浦安病院

タイムテーブル

11月12日（金）

9:00-9:30
教育講演
演者：植村 研一　座長：谷口　理章

9:30-10:00
Zoom 説明・練習

10:00-10:05　JNEF Opening remarks

10:05-10:55
Session Ⅰ
血管障害１
座長：坂田　勝巳、遠藤　俊毅

11:00-11:50
Session Ⅱ
血管障害２
座長：原　淑恵、徳川　城治

12:00-13:00
第35回 JNEF ランチョンセミナー
演者：大宅　宗一
座長：谷口　理章
共催：株式会社 OPExPARK

13:05-13:25　運営委員会／休憩

13:30-14:20
Session Ⅲ
小児・その他
座長：赤井　卓也、村垣　善浩

14:25-15:15
Session Ⅳ
脊髄
座長：荻野　雅宏、安田　宗義

15:15-15:30　休憩

15:30-16:00
Session Ⅴ
腫瘍・その他
座長：西岡　宏

16:05-16:55
Session Ⅵ
機能
座長：太組　一朗

17:00-17:10　JNEF Closing remarks

17:10-18:10
特別講演
演者：近　貴志
座長：近藤　威

18:15-
表彰式

11月13日（土）

8:45-9:00
日英同時通訳研修オリエンテーション

9:10-10:10
日英同時通訳研修（第1部）
臨床
座長：三原　千恵

10:10-10:20　休憩

10:20-11:20
日英同時通訳研修（第2部）
基礎
座長：柴田　靖

11:20-11:50
日英同時通訳研修（第3部）　時事
座長：平　孝臣

11:50-12:00　集計

12:00-12:30
次期会長挨拶　表彰式　団長総括

12:30　閉会

プログラム

11月12日（金）

9:00–9:30　**教育講演**　　演者：植村 研一
座長：谷口 理章

9:30–10:00　**Zoom 説明・練習**

10:00–10:05　**JNEF Opening remarks**

10:05–10:55　**Session Ⅰ　血管障害 1**
Moderators: Katsumi Sakata, Toshiki Endo

a-1 A rare case of secondary moyamoya disease associated with Graves' disease which was difficult to diagnose
Yosuke Maezawa（Department of Internal Medicine, Tsukuba University Hospital Mito Clinical Education and Training Center, Mito Kyodo General Hospital）
Commentator: Takashi Kon

a-2 Intraoperative electrocorticogram in STA-MCA bypass for moyamoya disease is a useful predictor of cerebral hyperperfusion syndrome
Kento Tsuburaya（Department of Neurosurgery, Yokohama City University School of Medicine）
Commentator: Masaaki Taniguchi

a-3 Tracheal shift in chest X-ray is a predictive factor of difficult inducibility of the guiding catheter in mechanical thrombectomy
Fukutaro Ohgaki（Department of Neurosurgery, Yokohama City University School of Medicine）
Commentator: Miyu Kikuchi

a-4 Marked Reduction of Cerebral Vasospasm with Intrathecal Urokinase Injection Therapy after Endovascular Coil Embolization of the Aneurysmal Subarachnoid Hemorrhage
Arata Nagai（Department of Neurosurgery, Iwaki City Medical Center）
Commentator: Yuzo Terakawa

11:00–11:50 **Session Ⅱ　血管障害２**

Moderators: Yoshie Hara, Joji Tokugawa

b-1 Oscillatory shear index: a useful parameter to predict thin-walled regions in intracranial aneurysms

Hidehito Kimura（Department of Neurosurgery, Kobe University Graduate School of Medicine）

Commentator: Kunihiko Kodama

b-2 A Simple Method to Estimate the Trajectory to the Genu of the Corpus Callosum in the Interhemispheric Approach for Distal Anterior Cerebral Artery Aneurysms

Yasutaka Imada（Department of Neurosurgery, Yamada Memorial Hospital）

Commentator: Mami Yamashita

b-3 Ultra-High-Resolution Computed Tomographic Angiography Improve Visualization of the Subcallosal Artery Better than Conventional Detector Computed Tomographic Angiography: Case Serise

Yoshimichi Sato（Department of Neurosurgery, Tohoku University Graduate School of Medicine）

Commentator: Yusuke Kinoshita

b-4 Bow hunter’s syndrome due to embolic mechanism; case report and literature review reveals features of cases

Yuto Shingai（Department of Neurosurgery, Graduate School of Medicine, Tohoku University / Department of Neurosurgery, National Hospital Organization Sendai Medical Center）

Commentator: Mizuho Inoue

12:00–13:00 **第35回 JNEF ランチョンセミナー**

Moderator：Masaaki Taniguchi

Surgical education in Neurosurgery: What we obtain from overseas and what we provide to overseas

Soichi Oya（Department of Neurosurgery, Saitama Medical Center/University）

共催：株式会社 OPExPARK

13:05–13:25 **運営委員会／休憩**

13:30–14:20　Session Ⅲ　小児・その他

Moderators: Takuya Akai, Yoshihiro Muragaki

c-1 Suturectomy and post-operative molding helmet therapy improves cosmetic outcomes of craniosynostosis infants

Yuki Ebisudani（Department of Neurological Surgery, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences）

Commentator: Hidehiro Okura

c-2 Limited Dorsal Myeloschisis without Extradural Stalk of Coexisting Congenital Dermal Sinus and Dorsal Lipoma with Osteochondral Tissue Migration

Yuki Kawamoto（Department of Pediatric Neurosurgery, Takatsuki Hospital / Department of Neurosurgery, Osaka Neurological Institute Neurosurgery）

Commentator: Takashi Araki

c-3 Using the internet to ease transition into neurosurgical residency for Japanese medical students

Sara Ganaha（Shizuoka Medical Center）

Commentator: Joji Tokugawa

c-4 Healthcare digital transformation: a digital device can improve our work efficiency and quality

Shinya Miyamoto（Department of Neurosurgery, Teikyo University Chiba Medical Center）

Commentator: Ryoko Niwa

14:25–15:15　Session Ⅳ　脊髄

Moderators: Masahiro Ogino, Muneyoshi Yasuda

d-1 Feasibility and clinical applications of a Hybrid Operation Room for minimally invasive spine surgery

Yasushi Shin（Department of Neurosurgery, Osaka Police Hospital）

Commentator: Ryu Kurokawa

d-2 Apparent diffusion coefficient predicts neurological outcomes in patients with cervical spinal cord injury

Tomoo Inoue（Department of Neurosurgery, Saitama Red Cross Hospital / Department of Neurosurgery, Tohoku University Graduate School of Medicine）

Commentator: Jun Suenaga

d-3 A case of cervical disc herniation after syringomyelia, which was difficult to judge the indication for surgery

Hitoshi Aiyama（Department of Neurosurgery, Mito Kyodo General Hospital）

Commentator: Takafumi Wataya

d-4 Effectiveness of the immersive virtual reality（VR）in postoperative shoulder pain management and its impact on upper limb function

Alexey Anastasiev（Department of Neurosurgery, Graduate School of Comprehensive Human Sciences, University of Tsukuba）

Commentator: Joji Inamasu

15:15–15:30 **休憩**

15:30–16:00 **Session Ⅴ　腫瘍・その他**

Moderator: Hiroshi Nishioka

e-1 *In situ* absorbed dose evaluation using gold nanoparticles in boron neutron capture therapy for malignant brain tumors

Alexander Zaboronok（Department of Neurosurgery, Faculty of Medicine, University of Tsukuba）

Commentator: Shota Tanaka

e-2 A case of pituitary adenoma with aggressive progression: a rare but forgotten pathology escaping the current definition of pituitary carcinoma

Naoki Takenoya（Department of Neurosurgery, Saitama Medical Center/University）

Commentator: Yuko Goto

e-3 Intravenously administered human Multilineage-Differentiating Stress-Enduring Cells afford neuronal repair and functional recovery in a mouse lacunar infarction model

Daiki Aburakawa（Department of Neurosurgery, Tohoku University Graduate School of Medicine）

Commentator: Lushun Chalise

16:05–16:55 **Session Ⅵ　機能**

Moderator: Ichiro Takumi

f-1 Neuropsychological and neurological deficits after insular cortex resection in pediatric epilepsy surgery

Naoki Ikegaya（Departments of Neurosurgery, Epilepsy Center, National Center Hospital of Neurology and Psychiatry（NCNP）/ Department of Neurosurgery, Yokohama City University School of Medicine）

Commentator: Atsushi Saito

f-2　Microsurgery is an effective treatment for trigeminal neuralgia without vascular compression

Atsuhiko Ninomiya（Department of Neurosurgery, Graduate school of Medicine, Tohoku University）

Commentator: Tomoo Inoue

f-3　Dynamic tractography-based localization of spike sources and animation of spike propagations in temporal lobe epilepsy patients

Takumi Mitsuhashi（Epilepsy Center, Juntendo University /

Department of Neurosurgery, Juntendo University Nerima Hospital）

Commentator: Seiichiro Hirono

f-4　Accuracy of stereo-encephalography electrode implantation and the effect of temporal muscle

Yuya Fujita（Epilepsy Center, Osaka University Hospital /

Department of Neurosurgery, Osaka University Hospital）

Commentator: Takahiro Miyahara

17:00–17:10　JNEF Closing remarks

17:10–18:10　特別講演　STAY HOME 期間の英語学習と Webinar 同時通訳の経験

演者：近 貴志（昭和大学 脳神経外科）

座長：近藤 威（新須磨病院 脳神経外科）

18:15–　表彰式

11月13日（土）

8:45–9:00　日英同時通訳研修オリエンテーション　谷口 理章

9:10–10:10　日英同時通訳研修（第 1 部）　座長：三原 千恵

臨床

i-1　Sports activity in patients who has Arachnoid cysts

くも膜嚢胞を有する患者のスポーツ参加

国際医療福祉大学成田病院 脳神経外科　下地 一彰

i-2　Pituitary incidentaloma の長期経過観察と治療適応

将道会総合南東北病院 脳神経外科　松山 純子

i-3　院外心停止で発症したくも膜下出血の特徴と転帰

兵庫県災害医療センター・神戸赤十字病院 脳神経外科　原 淑恵

10:10–10:20　**休憩**

10:20–11:20　日英同時通訳研修（第２部）　座長：柴田 靖

基礎

ii-1 経過中に卵巣癌を発症し化学療法にて腫瘍体積の縮小をみた神経鞘腫が疑われる小脳橋角部腫瘍の一例
—腫瘍発生機序および薬剤反応性に関する分子生物学的考察を含めて—

埼玉医科大学病院 脳神経外科
藤巻 高光、岳田 安奈、氏原 匡樹、平田 幸子、高畠 和彦、脇谷 健司、小林 正人

ii-2 プレシジョン・メディシンを念頭に入れた脳腫瘍モデル確立の試み

新潟大学脳研究所 脳神経外科　嚢田 学

ii-3 放射光を利用する新規放射線療法を探る

新須磨病院 脳神経外科　近藤 威

11:20–11:50　日英同時通訳研修（第３部）　座長：平 孝臣

時事

iii-1　シルバー民主主義

飯塚病院 脳神経外科　名取 良弘

11:50–12:00　**集計**

12:00–12:30　**次期会長挨拶**　**柴田 靖（筑波大学水戸地域医療教育センター / 水戸協同病院 脳神経外科）**

表彰式

団長総括　**日本脳神経外科同時通訳団 団長　大宅 宗一**

12:30　**閉会　同時通訳研修閉会の辞**　**谷口 理章**

JNEF2021

ABSTRACT

a-1 A rare case of secondary moyamoya disease associated with Graves' disease which was difficult to diagnose

Yosuke Maezawa[1], Hitoshi Aiyama[2], Yuki Yamamoto[3], Kazuya Nagasaki[1], Yasushi Shibata[2]

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Department of Neurosurgery, Tsukuba University Hospital Mito Clinical Education and Training Center, Mito Kyodo General Hospital, Mito, Ibaraki, Japan[2]
Department of Endocrinology and Metabolism, Tsukuba University Hospital Mito Clinical Education and Training Center, Mito Kyodo General Hospital, Mito, Ibaraki, Japan[3]

Introduction: Moyamoya syndrome is known as secondary moyamoya disease. There is a variety of primary illnesses such as brain tumor, meningitis, autoimmune disease, and thyrotoxicosis which their relations are not clear. We report a rare case of moyamoya syndrome on Graves' disease.

Case report: An 18-year-old woman was admitted to our hospital due to some convulsions. She had symptoms of palpitations and fatiguability for half a year and transient numbness in her upper left limb and dysarthria for a month. Brain CT revealed two low-density areas in her right frontal lobe. In physical findings, tachycardia and diffuse thyroid swelling were discovered. A blood test revealed thyrotoxicosis and antithyroid antibody which made the diagnosis of Graves' disease. After the medication for thyrotoxicosis, no epileptic or ischemic attack was observed. The brain MRI showed FLAIR high and DWI high signals on the same lesions as brain CT that suspects subacute subcortical infarction which cannot explain her symptoms. For these lesions, we conducted brain MRI/MRA again after her discharge which showed bilateral internal carotid artery occlusion. We diagnosed Graves' disease and moyamoya syndrome.

Discussion: Moyamoya disease or syndrome would cause symptoms like a stroke which sometimes needs neurosurgical treatment. In our case, therapy for Graves' disease made the symptom stable. There are only two reports that are without neurosurgical treatment and only treated with medication. We will continue medication and repeat radiological follow-up for this patient.

Conclusion: In this case, diagnosing moyamoya syndrome was difficult because epilepsy or thyrotoxicosis was suspected initially as a cause of her symptoms. Diagnosing moyamoya disease, it is necessary to confirm whether there are any background diseases such as Graves' disease.

Key words: Moyamoya syndrome, Moyamoya disease, Graves' disease, thyrotoxicosis,
もやもや病、類もやもや病、バセドウ病

a-2 Intraoperative electrocorticogram in STA-MCA bypass for moyamoya disease is a useful predictor of cerebral hyperperfusion syndrome

Kento Tsuburaya, Naoki Ikegaya, Hidetoshi Murata, Mitsuru Sato, Yuhei Miyake, Ryosuke Suzuki, Yu Iida, Yuya Imanishi, Kazuki Miyazaki, Hibiki Yoshikawa, Kensuke Tateishi, Nobuyuki Shimizu, Jun Suenaga, Tetsuya Yamamoto

Department of Neurosurgery, Yokohama City University School of Medicine

Introduction: Prediction of cerebral hyperperfusion syndrome (CHP) after superficial temporal artery to middle cerebral artery (STA-MCA) bypass surgery in moyamoya disease helps determine adequate postoperative management, and it may prevent complications such as cerebral hemorrhage. The utility of electrocorticogram (ECoG) in CHP prediction remains unclear. In this study, we recorded ECoG before and after anastomosis procedure to predict CHP.

Methods: A total 11 anastomoses in 6 patients who underwent STA-MCA single or double bypass for moyamoya disease between December 2018 and April 2020 were included. ECoGs just distal to the anastomosis were recorded before and after a bypass procedure. Spectral powers in each frequency band were analyzed. Spectral powers of pre- and post-bypass and changes of power levels in surgeries with CHP were compared with those without CHP (non-CHP).

Results: The mean age at surgery was 29 (10-60). CHPs were present in 3 of 11 anastomoses. Pre-bypass spectral power ratio of alpha band was significantly lower and that of slow wave (delta and theta band) tended to be higher in CHP group than those in non-CHP group (CHP vs non-CHP: 19% vs 25%, alpha-band, $p < 0.01$; 47% vs 40%, slow wave, $p=0.08$). Those relations were disappeared after bypass surgery (CHP vs non-CHP: 20% vs 21%, alpha-band, $p=0.47$, 41% vs 39%, slow wave, $p=0.60$). The increase in the power ratio of alpha band and the decrease in that of slow wave after anastomosis were greater in CHP group than those in non-CHP group (CHP vs non-CHP: +14% vs -15%, alpha-band, -13% vs -4%, slow wave).

Conclusion: ECoG data analysis including pre-bypass spectral band ratio and changes in power levels was associated with CHP, suggesting that it may be a predictor of CHP.

Key words: electrocorticogram, STA-MCA bypass, moyamoya disease, cerebral hyperperfusion syndrome,
皮質脳波、浅側頭動脈－中大脳動脈バイパス術、もやもや病、過灌流症候群

a-3 Tracheal shift in chest X-ray is a predictive factor of difficult inducibility of the guiding catheter in mechanical thrombectomy

Fukutaro Ohgaki, Jun Suenaga, Ryosuke Suzuki, Nobuyuki Shimizu, Tetsuya Yamamoto

Department of Neurosurgery, Yokohama City University School of Medicine

Objective: In recent years, mechanical thrombectomy has increasingly been used to treat acute large vessel occlusion. However, inducing the guiding catheter is difficult in a few cases. Since good prognosis and reduced time for recanalization are related to prompt induction of the guiding catheter, we examined patient background and treatment course to predict difficulty in induction of the guiding catheter by pre-treatment information.

Materials and Methods: We retrospectively examined 33 patients that underwent mechanical thrombectomy at our hospital between Apr. 2017 and Mar. 2021, including difficult cases in inducing the guiding catheter, thereby needing a change in the approach route from the initial puncture point. The background and treatment course of these patients were compared with those of patients in whom the approach route was not changed.

Results: In 5 out of 33 patients, the time from the beginning of treatment to induction of the guiding catheter (67.6 ± 35.5 vs 12.3 ± 8.2 min) and final recanalization (96.2 ± 35.7 vs 49.3 ± 28.8 min) was delayed. Additionally, in all the changed cases, the tracheal shift ≥ 2 times the diameter of the trachea in the chest X-ray was considered positive. In 14 positive cases, the delay in inducing guiding catheter was correlated positively ($P < 0.05$).

Conclusions: In the tracheal shift positive cases, inducing the guiding catheter is expectedly difficult. Disinfecting the upper right limb and affected side of the neck in advance and preparing for change the approach route during mechanical thrombectomy is considered desirable.

Key words: mechanical thrombectomy（機械的血栓回収）、large vessel occlusion（主幹動脈閉塞）、guiding catheter induction（ガイディングカテーテル誘導）、approach route（アプローチルート）、tracheal shift（気管偏位）

a-4 Marked Reduction of Cerebral Vasospasm with Intrathecal Urokinase Injection Therapy after Endovascular Coil Embolization of the Aneurysmal Subarachnoid Hemorrhage

Arata Nagai[1], Yasuhiro Suzuki[1], Tomohisa Ishida[1], Yoshimichi Sato[2], Teiji Tominaga[2]

Department of Neurosurgery, Iwaki City Medical Center, Iwaki, Japan[1]
Department of Neurosurgery, Tohoku University Graduate School of Medicine, Sendai, Japan[2]

Background: Delayed cerebral vasospasm after subarachnoid hemorrhage (SAH) has long been recognized as a risk of poor prognosis after successful treatment of ruptured intracranial aneurysms. Efforts to prevent vasospasm by removing clot from the subarachnoid space have produced mixed results. Among them, intrathecal urokinase (UK) administration combined with endovascular treatment (EVT) can reduce incidence of symptomatic vasospasm.

Objective: To demonstrate detailed analysis of the relationship between symptomatic vasospasm and the residual SAH after UK administration.

Methods: We collected data on 348 patients who underwent EVT and intrathecal UK administration for aneurysmal SAH at our institution between 2010 and 2021. Of these, 163 met the study entry criteria. The patients were separated into two groups according to whether SAH remained in any cisterns, the sylvian fissures, and the frontal interhemispheric fissure. The incidence of symptomatic vasospasm and the clinical outcomes were assessed.

Results: Symptomatic vasospasm occurred in 5.0% (8/163). In patients with symptomatic vasospasm, the residual SAH in the sylvian fissures and/or the frontal interhemispheric fissure was significantly higher than those of patients without symptomatic vasospasm ($p<0.0001$). Astonishingly, patients whose SAH was well washed away by UK administration, the incidence of symptomatic vasospasm was 0% (0/112). There was no statistical difference between the groups in terms of patients modified Rankin Scale at discharge.

Conclusion: Intrathecal UK administration after EVT for aneurysmal SAH markedly reduces the risk of clinically evident vasospasm. We hope our data supports to develop a refined treatment regimen after aneurysmal SAH.

Key words: aneurysm, coil embolization, subarachnoid hemorrhage, urokinase, vasospasm

b-1 Oscillatory shear index: a useful parameter to predict thin-walled regions in intracranial aneurysms

Hidehito Kimura[1], Masaaki Taniguchi[2], Takashi Sasayama[1]

Department of Neurosurgery, Kobe University Graduate School of Medicine, Kobe, Japan[1]
Department of Neurosurgery, Osaka Neurological Institute, Toyonaka, Japan[2]

Background: The thin-walled regions (TIWR) of intracranial aneurysms has a high risk of rupture during surgical manipulation. Possibility using Wall Shear Stress (WSS) and Pressure (PS) based on Computational Fluid Dynamics (CFD) analysis remain controversial. In this study, we investigated whether the oscillatory shear index (OSI) can predict TIWRs.

Methods: Twenty-five unruptured aneurysms were retrospectively analyzed; the position and orientation of the CFD color maps were adjusted to match the intraoperative micrographs. The red area on the aneurysm wall was defined as TIWR, and if the same regions on the color map as TIWR mostly had low OSI (lower quartile range), high Time-averaged WSS (TAWSS), or high PS (upper quartile range), each was defined as a matched region, and divided by the total number of TIWRs to calculate the match rate. In addition, the mean values of OSI, TAWSS, and PS corresponding to TIWRs were quantitatively compared with those in adjacent thick-walled regions.

Results: Among 27 TIWRs of 25 aneurysms, 23, 10, 14 regions had low OSI, high TAWSS, and high PS regions (match rate: 85.2%, 37.0%, and 51.9%), respectively. Receiver operating characteristic curve analysis demonstrated that OSI was the most effective hemodynamic parameter (area under the curve, 0.881). Multivariate analysis showed that OSI was a significant independent predictor of TIWRs (odds ratio, 18.30 [95% CI, 3.2800-102.00], $P < 0.001$).

Conclusions: Low OSI is a strong predictor for TIWRs. This finding will be beneficial in reducing the risk of intraoperative rupture and hopefully provides predictive data for future rupture risk.

Key words: computational fluid dynamic (CFD) analysis 数値流体力学解析、
Oscillatory shear index (OSI) 振動せん断指数、Wall shear stress (WSS) 壁面せん断応力、Pressure (PS) 圧、
thin-walled regions (TIWRs) 壁菲薄部、thick-walled regions 壁肥厚部、intracranial aneurysms 頭蓋内動脈瘤、
color maps カラーマップ（CFD 解析結果をそれぞれのパラメタにおいて RGB カラーで低値から高値にかけて青から緑、黄、赤にカラー分布で色分けして表示したもの）、
intraoperative micrographs（脳動脈瘤の）術中顕微鏡写真

b-2 A Simple Method to Estimate the Trajectory to the Genu of the Corpus Callosum in the Interhemispheric Approach for Distal Anterior Cerebral Artery Aneurysms

Yasutaka Imada, Chie Mihara, Tetuji Takeda

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Objective: The interhemispheric approach (IHA) for the distal anterior cerebral artery (DACA) aneurysms presents surgeons with some unique problems, including difficulties establishing proximal control due to the anatomical relationship between the proximal A2 segment and genu of the corpus callosum (GCC), and also the risk of premature rupture due to inadvertent retraction of the frontal lobe adhering to the aneurysmal dome. Therefore, the surgical trajectory to a DACA aneurysm in the IHA is very important. The purpose of this study was to clarify the anatomical landmarks indicating the trajectory to the GCC at the early stage of dissection for the correct intraoperative orientation.

Materials and Methods: "Point A" was defined as the crossing point between the frontal bone and the line connecting the projected external acoustic opening (EAO) and the GCC on the midline slice of the sagittal three-dimensional computed tomography angiography (3D-CTA) images. We measured the distance from the nasion to Point A using midline sagittal slice images from 50 patients who underwent 3D-CTA at our institution.

Results: The average distance was 7.0 cm (± 0.3 cm). Therefore, if the spatula is inserted in the direction of the EAO from Point A (7 cm above the nasion), the GCC should be located deep on the extension of the spatula.

Conclusion: Point A and the EAO can be used as landmarks indicating the trajectory to the GCC for the correct intraoperative orientation in the IHA for DACA aneurysms.

Key words: interhemispheric approach, genu of the corpus callosum, distal anterior cerebral artery aneurysm, pericallosal artery, callosomarginal artery, surgical trajectory

b-3 Ultra-High-Resolution Computed Tomographic Angiography Improve Visualization of the Subcallosal Artery Better than Conventional Detector Computed Tomographic Angiography: Case Serise

Yoshimichi Sato[1], Toshiki Endo[1], Shingo Kayano[2], Kuniyasu Niizuma[1], Hidenori Endo[1,3], Teiji Tominaga[1]

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Department of Neurosurgery, Sendai Medical Center, Sendai, Japan[3]

Background and purpose: The ultra-high-resolution computed tomographic angiography (UHR-CTA) device became available for clinical practice in 2017. The features of this CT scanner are the improvement of the detector system and a small x-ray focus. Therefore, we investigated whether UHR-CTA can image the subcallosal artery (ScA) compared with conventional detector CTA (C-CTA).

Materials and Methods: 74 patients who underwent intracranial UHR-CTA and 48 patients who underwent intracranial C-CTA between April 2019 and May 2020 were enrolled in this study. Two board-certified neurosurgeons participated as observers and compared the number of patients that the ScA was recognized between the UHR-CTA and C-CTA images.

Results: The first observer revealed the ScA in 62% of the UHR-CTA patients and 33% of the C-CTA patients. The second observer revealed the ScA in 59% of the UHR-CTA patients and 39% of the C-CTA patients. The Cohen's kappa coefficient was 0.77 for UHR-CTA and 0.78 for C-CTA. The difference of the description ratio was significantly under 0.05 in both observers calculate by Fisher exact test.

Conclusions: UHR-CTA improved visualization of the SCA. UHR-CT is a simple, noninvasive, and easily accessible method to evaluate microvasculature, such as the SCA, especially in the area of neurosurgery.

Key words: UHR-CTA, C-CTA, Subcallosal artery

b-4 Bow hunter's syndrome due to embolic mechanism; case report and literature review reveals features of cases

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Department of Neurosurgery, Sendai East Neurosurgical Hospital, Sendai, Miyagi, Japan[3]

Background: Bow hunter's syndrome (BHS) is an uncommon cause of vertebrobasilar ischemic stroke which results from occlusion or injury to the vertebral artery during neck rotation. While hemodynamic insufficiency is the predominant underlying mechanism of this entity, BHS due to embolic mechanism is rare. We herein report a case of BHS characterized by repeated posterior circulation embolism, and give some considerations of BHS due to embolic mechanism.

Case presentation: A 57-year-old male, complaining of dizziness during his neck rotation, suffered from repeated embolic stroke in posterior circulation. Digital subtraction angiography revealed stenosis and caliber irregularity of the V3 segment of the left nondominant-side VA, which occluded while rotating the neck to the right side. The patient was diagnosed as BHS with embolic mechanism due to endothelial damage caused by osteophyte at C1 foramen transversarium. After performing C1-C2 fusion surgery, the patient never had recurrence of stroke and dizziness.

Result: According to the literature review, BHS due to embolic mechanism tends to occur in young male adults manifesting as recurrent stroke in the posterior circulation. In addition, affection of the nondominant-side VA can cause BHS with embolic mechanism. Conclusion: BHS due to an embolic mechanism should be considered as a differential diagnosis if patients have repeated embolic strokes in the posterior circulation.

Key words: Bow hunter's syndrome, vertebrobasilar ischemic stroke 椎骨脳底循環系脳梗塞、
hemodynamic stroke 血行力学性脳梗塞、embolic stroke 塞栓性脳梗塞、posterior circulation 後方循環系

c-1 Suturectomy and post-operative molding helmet therapy improves cosmetic outcomes of craniosynostosis infants

Yuki Ebisudani[1], Masahiro Kameda[2], Eijirou Tokuyama[3], Takaya Seno[3], Yousuke Tomita[1], Takao Yasuhara[1], Isao Date[1]

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Department of Neurosurgery, Osaka Medical and Pharmaceutical University Hospital, Osaka, Japan[2]
Department of Plastic and Reconstructive Surgery, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan[3]

Background: Craniosynostosis is a developmental craniofacial anomaly resulting in an abnormally shaped skull. In some cases, the increased intracranial pressure can lead to developmental disability. We established the Okayama Craniofacial Center (OCFC) consisting of craniosynostosis experts in various fields to raise awareness of craniosynostosis and access to consultation. In 2019, we treated four cases of infantile craniosynostosis using a novel technique consisting of suturectomy and post-operative molding helmet therapy.

Methods: We treated four infants with craniosynostosis using suturectomy and post-operative molding helmet therapy in 2019.

Results: All four patients included in this study had sagittal craniosynostosis. As this treatment was developed for infants under six months, in this study, surgery was performed before the age of six months in all cases but one. The median age at surgery was 5.5 months. Post-operative molding helmet therapy is generally started before six months of age to avoid positional plagiocephaly. The median duration of post-operative molding helmet therapy was eight months. In all four cases, the surgery was completed without major complications and cranial morphology had improved within 18 months after surgery. However, one case with poor growth of intracranial volume should be carefully followed-up.

Conclusion: Suturectomy and post-operative molding helmet therapy could be a new option for infantile sagittal craniosynostosis. Early detection and intervention will contribute to proper treatment.

Key words: craniosynostosis, post-operative molding helmet therapy, suturectomy

c-2 Limited Dorsal Myeloschisis without Extradural Stalk of Coexisting Congenital Dermal Sinus and Dorsal Lipoma with Osteochondral Tissue Migration

Yuki Kawamoto[1,2], Natsuki Nakamura[1], Hideyuki Arita[3], Kazushize Maeno[3], Hidetsuna Utsunomiya[4], Takato Morioka[5] , Atsuko Harada[1]

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Department of Neurosurgery, Harasanshin Hospital, Fukuoka, Japan[5]

Limited dorsal myeloschisis (LDM) is characterized by a focal closed neural defect and a fibroneural stalk linking the skin lesion to the underlying spinal cord. We report an atypical case of LDM without extradural stalk of coexisting congenital dermal sinus (CDS) and dorsal lipoma with osteochondral tissue migration. A full-term boy was noted at birth to have a dimple in the lower thoracic lesion. He was neurologically normal. 3D CT showed the osteochondral tissue at the T10 vertebral level and MRI demonstrated the dorsal lipoma at the T8 vertebral level but tethering tract was not apparent. Resection of osteochondral tissue was performed at 18 days of age. The stalk started from the dimple and passed through the edge of the osteochondral tissue without continuity of the dura mater. Histopathologically, CDS lined by stratified squamous epithelium were noted in the subcutaneous layer and contiguous osteochondral tissue. At the age of 2 years 8 months, he had right foot spastic paralysis. MRI showed the tethering tract from lipoma at the T8 to T9 vertebral level was apparent. Untethering surgery was performed at the age of 2 years 11 months. The stalk started from the edge of lipoma and joined the dura matter, but no extradural stalk was found. Right foot spastic paralysis improved after the surgery. Histological examination of the intradural stalk revealed S100-immunopositive peripheral nerve fibers, which is the histopathological feature of LDM. It was conceivable the extradural stalk originally linked to the skin lesion but subsequently regressed and was replaced by the adipose tissue and osteochondral tissue.

Key words: Limited dorsal myeloschisis, congenital dermal sinus, spinal lipoma, osteochondral tissue, extradural stalk,
限局性背側脊髄披裂、先天性皮膚洞、脊髄脂肪腫、骨組織、硬膜外索状物

c-3 Using the internet to ease transition into neurosurgical residency for Japanese medical students

Sara Ganaha

Shizuoka Medical Center, Shimizu, Shizuoka, Japan

Background: Many Japanese medical students develop an interest in neurosurgery early on in their education. However, upon entering a neurosurgical residency program, they are often times faced with many challenges due to a substantial knowledge gap in clinical neurosurgery, which can lead to burnout. Factors contributing to this knowledge gap may include: 1) the lack of neurosurgical interest groups at their home institution, 2) having had short rotations in neurosurgery, 3) difficulty in accessing neurosurgical faculty for mentorship, 4) the steep learning curve in neurosurgery, and 5) the lack of established neurosurgical bootcamps for interns as seen in North America.

Objective: To ease the transition into neurosurgical residency for Japanese medical students by promoting self-learning using free neurosurgical websites in English.

Methods: A few selected online neurosurgical websites with high international ratings will be reviewed. These resources include YouTube channels which discuss commonly performed neurosurgical procedures, as well as neuroanatomy, neuroimaging, and basic patient management. In addition, methods to aid the non-native English speaker in navigating such websites using the auto-translation and caption features, will be discussed.

Results: Based on observations of medical students abroad, and also from personal experience—free neurosurgical websites have become an indispensable tool to prepare the novice for neurosurgical residency.

Conclusion: Japanese medical students are encouraged to use online neurosurgical resources to acquire clinical skills and knowledge prior to neurosurgery residency.

Key words: internet インターネット、YouTube ユーチューブ、medical students 医学生 、
medical education 医学教育、early exposure 早期体験・暴露、
neurosurgical boot camp 脳神経外科集中トレーニング

c-4 Healthcare digital transformation: a digital device can improve our work efficiency and quality

Shinya Miyamoto, Ryosuke Yoshioka, Keisuke Yamada, Hajime Nishido, Ririko Takeda, Yasushi Ino, Katsumi Hoya

Department of Neurosurgery, Teikyo University Chiba Medical Center

Although, digital transformation (DX) has been proposed in many industries, it has seldom focused in the Japanese medical field. It is often reported that Japan's labor productivity is lowest in the developed countries mostly due to poor DX, and the healthcare industry is not an exception. Accordingly, we developed several digital devices and programs to help us work more efficiently and professionally.

We herein demonstrate one of the devices that measures the acceleration of a patient's extremity or a trunk and sends the data wirelessly to another digital device immediately. The acceleration data is converted to digital data that is evaluated by the program that surmises that the event was an attack of tremors of a patient with epilepsy, could-be harmful body movement of a restrained patient, or even a fall out of a bed. The device beeps and displays a warning, preventing a severe injury or deterioration of the patient's condition.

Digital devices not only improve work efficiency but also have a great potency in changing healthcares and treatments themselves. Since healthcare workers should know their own facing problems better than digital engineers, we should review our own work environment, understand the current problems in daily work, and try to apply digital technologies to solve them by ourselves.

d-1 Feasibility and clinical applications of a Hybrid Operation Room for minimally invasive spine surgery

Yasushi Shin

Department of Neurosurgery, Osaka Police Hospital

Introduction: Minimally invasive procedures and technologies can be broadly characterized as traditional open procedures that involve small incisions, fine-needle procedures, endoscopy, tubular retractor-muscle dilatation, and miscellaneous technologies. We review our experiences of minimal access spine techniques and minimally invasive technologies and concepts.

Materials and Methods: The procedures were performed in a hybrid operating room using C-arm cone-beam computed tomography (CT) equipped with a laser-guided navigation system (Artis Zeego, SIEMENS and CURVE navigation system, Brain Lab). Since November 2016, 157 consecutive patients have undergone a neurosurgical procedure in this operating room (skull base surgery, endoscopic surgery, keyhole surgery, and spine surgery.) Cases were selected for image guidance when a referring surgeon felt that there would be benefits for pursuing the procedure using minimally invasive concepts. The efficacy and safety of the procedures were assessed.

Results: The minimally invasive surgical procedure concepts can be categorized as follows: 1) anatomical and physiological consideration (C1-C2 distraction and fixation for Chiari malformation, motion preservation, and direct lateral approach for Cranio cervical pathologies); 2) endoscope and exoscope surgery; 3) hybrid operating room, in which we can utilize both robotic arm intraoperative CT and neuronavigation; 4) preoperative simulation; and 5) integrations of these modalities. The selected pathologies can be safely and effectively treated using minimally invasive techniques. Key considerations for the use of these techniques include safe management of the vertebral artery and tailored surgical corridors after intrafascial muscle dissection.

Conclusion: Hybrid operating rooms enable us to integrate minimally invasive techniques and concepts, such as preoperative planning, intraoperative navigation, multimodal image fusion, image-guided surgery, endoscopic procedures, and minimally invasive concepts based on anatomy and physiology.

Key words: Minimally invasive spine surgery, Hybrid Operation Room, Endoscopic spine surgery, Neuronavigation, Intraoperative CT, Craniosurvical junction, Spine tumor

d-2 Apparent diffusion coefficient predicts neurological outcomes in patients with cervical spinal cord injury

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Object: The purpose of this study is to evaluate the apparent diffusion coefficient (ADC) values in magnetic resonance (MR) imaging as a possible neurological outcome parameter in patients with cervical spinal cord injury (SCI). There is a significant association between the severity or neurological recovery of cervical SCI and MR imaging, but little is reported for the importance of ADC values in the management of patients with SCI.

Methods: We performed a retrospective analysis of 60 patients with cervical SCI who underwent surgery. All the patients were evaluated by using the American Spinal Injury Association Impairment Scale (AIS) on admission and 6 months after injury. Spearman correlation were performed to analyzed the association between ADC values and neurological outcome. A receiver operating characteristic (ROC) curve was generated to evaluate the performance of the prediction rule.

Results: On admission, ADC values showed a strong association with baseline AIS grades ($r = 0.65$, $p < 0.0001$). The ADC values at maximal compression level was significantly lower than other location. Six months after, ADC values also demonstrated a strong association with AIS grades ($r = 0.43$, $p < 0.001$). Calculation of area under ROC curves (AUC) revealed that ADC values (AUC = 0.857, $p < 0.0001$) contributed to the greatest predictor of functional AIS improvement.

Conclusions: This study showed the relevance of the ADC values in the evaluation of neurological impairments in patients with SCI.

Key words: American Spinal Injury Association Impairment Scale, Apparent diffusion coefficient, Cervical Spinal Cord Injury, Magnetic resonance imaging, Neurological recovery, Receiver operating characteristic, Spearman correlation

d-3 A case of cervical disc herniation after syringomyelia, which was difficult to judge the indication for surgery

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Introduction: The surgical indications of cervical disc herniation include severe or progressive neurological symptom and severe pain that conservative treatments are not effective. We will present a patient of cervical disc herniation who had a history of syringomyelia.

Case report: A 57-year-old man came to our clinic with sudden left arm pain. He had left arm and body trunk dysesthesia of pain and temperature at the level of left C4-Th3 after syringo-subarachnoid shunt for syringomyelia thirty years ago. Physical examination revealed left C5 painful radiculopathy without motor palsy. Magnetic resonance imaging of the cervical showed left C4/5 cervical disc herniation. He also had a history one year before of this radiculopathy that was suspected of adhesive arachnoiditis of level Th2/3 which the symptom was left trunk pain and improved with using analgesics for several months. Because of no motor palsy, conservative treatment using analgesics was performed which was effective. After one-year conservative treatment, the painful radiculopathy got worse and finally neurosurgical treatment was performed. After C4/5 anterior cervical disc fusion, the radiculopathy improved dramatically.

Discussion: There are no case reports that painful radiculopathy occurred on the dysesthesia area caused by syringomyelia. Because his pain was controllable with medication and he had no motor palsy, it took one year for the surgical adaptation which was so effective retrospectively.

Conclusion: We reported a case of cervical disc herniation which was difficult to judge the surgical adaptation due to the history of syringomyelia and adhesive arachnoiditis. But the severe radiculopathy which can explain with the cervical disc herniation should be surgically treated.

Key words: cervical disc herniation 頚椎椎間板ヘルニア、syringomyelia 脊髄空洞症、
radiculopathy 神経根症状、adhesive arachnoiditis 癒着性くも膜炎、
syringo-subarachnoid shunt 空洞 - くも膜下腔シャント

d-4 Effectiveness of the immersive virtual reality (VR) in postoperative shoulder pain management and its impact on upper limb function

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Objective: In this pilot study, we explored the potential of virtual reality (VR) in postoperative shoulder pain management and evaluated the effects of a digital interactive environment on upper limb function.

Materials and Methods: The initial study included 10 patients aged 18 to 35 years (25.4 ± 0.8) who underwent surgical treatment of the capsular-ligamentous apparatus of the shoulder joint. The main group (MG) included 7 patients, the gender distribution was 3 women (42.86%), and 4 men (57.14%) In 5 of 7 patients (71.43%), the lesion was on the side of the dominant limb. The control group (CG) consisted of 3 patients whose post-immobilization movement recovery was based on a standard recovery protocol without VR support; among them were 1 woman (33.33%) and 2 men (66.67%). CG patients (100.00%) had a lesion on the side of the dominant limb. The visual analog scale (VAS) was used to measure pain before and after the treatment procedures. In addition, upper limb function and functional independence were assessed using the DASH functional scale.

Results and Conclusion: The control points of the study indicated a tendency for the dominant recovery of MG patients in whom rehabilitation measures included additional exercises in VR. The immersion in the virtual environment supposedly had a distraction effect due to which the effect of digital analgesia was observed. Overall, it was noted that the reduction in pain syndrome was stable throughout the study.

Key words: virtual reality バーチャルリアリティ、pain management 疼痛管理、
rehabilitation リハビリテーション、upper limb functions 上肢機能

e-1 *In situ* absorbed dose evaluation using gold nanoparticles in boron neutron capture therapy for malignant brain tumors

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Objective: Boron neutron capture therapy (BNCT) is an anticancer modality realized through ^{10}B accumulation in the tumor, its neutron irradiation, and decay of boron resulting in alpha-particle and lithium nuclei release damaging tumor cell DNA. Activation of golden foils is used to evaluate absorbed doses. We propose placing gold nanoparticles (AuNPs) inside tumor cells saturated with boron to more accurately measure the boron-related absorbed dose.

Materials and Methods: T98G cells accumulated AuNPs (50μg gold/ml) and boron-phenylalanine (BPA, 10, 20, 40μg ^{10}B/ml) and were irradiated with neutrons. Gamma-rays (411keV) emitted by AuNPs were measured and the absorbed dose was calculated using the formula $D=(k*N*n)/m$, where D was the absorbed dose (GyE), k – depth-related irradiation coefficient, N – number of activated gold atoms, n – boron concentration (ppm), and m – the mass of gold (g). Cell survival curves were fit to the linear-quadratic (LQ) model. AuNPs influence was verified by comparing the areas under curves (AUCs).

Results: BNCT caused exponential cell survival decrease, and the boron doses calculated using gamma-ray emission from AuNPs were 5.45 ± 0.73, 9.96 ± 2.67, and 18.56 ± 1.96 GyE in case of 10, 20, and 40μg ^{10}B/ml, respectively. AuNPs did not influence cell survival, as shown by AUCs comparison: 6.129 ± 1.271 (AuNPs+) versus 4.894 ± 0.528 (AuNPs-), p= 0.395.

Conclusions: Our method allows for safe dosimetry during BNCT and might lead to further development of combined boron-gold compounds, opening new perspectives for use in tumor treatment as well as adaptation of isotope scanning for future BNCT dosimetry.

Key words: boron neutron capture therapy, gold nanoparticles, dosimetry, absorbed dose, accelerator-based neutron source;
ホウ素中性子捕捉療法、金ナノ粒子、線量測定、吸収線量、加速器型中性子源。

e-2 A case of pituitary adenoma with aggressive progression: a rare but forgotten pathology escaping the current definition of pituitary carcinoma

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Background: Pituitary adenoma (PA) is a histologically benign tumor. Although residual tumor may exhibit slow growth, they usually do not require additional treatment immediately after surgery. We report a case of PA that showed extremely aggressive postoperative course after the initial resection.

Case despription: A 68-year-old man had headache, diplopia, and right ptosis lasting for one week. MR imaging demonstrated a typical PA invading the right cavernous sinus with intratumoral hemorrhage. Subtotal resection via endoscopic transsphenoidal approach was performed. Histological diagnosis was a PA. However, he started to have visual worsening three months after surgery. MR images revealed a massive recurrence of the tumor. On the reevaluation of the specimen obtained in the first surgery, the MIB-1 labeling rate was 10%, which was overlooked in the initial surgery. A redo craniotomy and subtotal resection was performed. MIB-1 labeling rate was 95% or more. Postoperative radiation therapy with a total dose of 50.4 Gy was conducted. However, abdominal CT scan obtained one and a half months after surgery for increased liver enzymes revealed multiple mass lesions with contrast enhancement in the liver. Liver biopsy confirmed that these are metastasis from pituitary tumor. Based on these clinical situations, the diagnosis of pituitary carcinoma was finally made. The patient died 7 months after his initial surgery.

Conclusion: Pituitary carcinoma is currently defined as having discontinuous intracranial metastases or systemic metastases. It has not been well established to detect patients with high risk of rapid and aggressive recurrence. This case reiterates the importance of detailed pathological examination for PAin the first surgery because it may be the only way to distinguish aggressive pituitary carcinomas from most benign ones.

Key words: discontinuous 非連続性の、immunohistological analysis 免疫組織学的解析、
liver enzyme 肝酵素、pituitary carcinoma 下垂体癌、postoperative radiation 術後放射線治療、
systemic metastasis 全身転移

e-3 Intravenously administered human Multilineage-Differentiating Stress-Enduring Cells afford neuronal repair and functional recovery in a mouse lacunar infarction model

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Department of Neurosurgical Engineering and Translational Neuroscience, Graduate School of Biomedical Engineering, Tohoku University, Sendai, Miyagi, Japan[2]

Objectives: Ischemic stroke is one of the most lethal diseases and is a leading cause of long-term disability. A treatment to regenerate stroke cells is an unmet need. Multilineage-differentiating stress-enduring (Muse) cells are endogenous stem cells that can self-renew, display pluripotency, and differentiate into cells representative of all three germ layers. Rat and mouse stroke models improved neuronal function with topically administered Muse cells. In this study, with the goal of translating human Muse cells for clinical use, we used clinical-grade multilineage-differentiating stress-enduring cell–based product CL2020 intravenously. And appropriate timing and dose were researched.

Methods: CL2020 was administered via cervical vein in different doses at subacute and chronic phase with immunodeficient mouse lacunar infarction model. Behavioral assessment, depletion of human cells with injection of diphtheria toxin, immunofluorescence, polymerase chain reaction (PCR) of human specific-genome detection and confirmation experiment of Muse cells homing were performed.

Results: In subacute and chronic-phase–treated animals, the high-dose group improved neuronal function significantly after 6 weeks and 8 weeks post-administration. Depletion of human cells abrogated the functional recovery in both groups. CL2020 was detected mainly in the peri-infarct area at 1, 10, and 22 weeks and expressed neuronal marker immunoreactivity. In surrogate imaging method using Muse cells tagged with Nano-lantern, intravenously injected Muse cells successfully migrated to the peri-infarct area too. No adverse effects including tumorigenesis were happened in all groups.

Conclusion: Intravenously administered CL2020 was safe, migrated to the peri-infarct area, and afforded functional recovery in experimental stroke. Intravenously administration of CL2020 will be a new treatment of cerebral infarction in subacute and chronic phase.

Key words: Cerebral infarction, Stem cells, Muse cells, intravenous administration, mice, cylinder test, lacunar infarction, Behavioral analysis, Immunofluorescence staining, Stroke
脳梗塞、幹細胞、Muse 細胞、静脈内投与、マウス、シリンダーテスト、ラクナ梗塞、行動評価、蛍光免疫染色、脳卒中

f-1 Neuropsychological and neurological deficits after insular cortex resection in pediatric epilepsy surgery

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Objective: Neuropsychological and neurological risks associated with insular cortex resection remains unclear. We reviewed neuropsychological and neurological outcomes in pediatric patients who underwent surgical resection of the epileptogenic zone involving the insula.

Methods: Review of 15 patients who underwent resective epilepsy surgery involving the insular cortex for focal cortical dysplasia, with a minimum follow up of 12 months. Median age at surgery was 6.5 years (range, 0.3–13.6 years). Outcome measures included postoperative neurological deficit and developmental/intelligence quotient (DQ/IQ) scores were examined before surgery, within 4 months after surgery, and at 12 months or more after surgery. The effects on outcomes of within-subject factor (time) and between-subject factors (resection side, anterior insular resection, seizure control, and antiepileptic drug [AED] reduction) were evaluated.

Results: Preoperative DQ/IQ score was 60.7 ± 22.8 (mean ± SD). Left-side resection and anterior insular resection were performed in nine patients each. Favorable seizure control (International League Against Epilepsy class 1 to 3) was achieved in eight patients. Preoperative Postoperative motor deficits were observed in nine patients (permanent, six; transient, three). Unexpected motor deficits were present in two patients who undergone the long insular gyri resection. Within-subject changes in DQ/IQ were not significantly affected by insular resection. Postoperative changes in DQ/IQ were not significantly affected by surgical side or anterior insular resection. Insufficient postoperative AED reduction did not improve neuropsychological outcome. Poor seizure outcome led to developmental stagnation in individual cases, but no significant effect was observed in group analysis.

Conclusions: Surgical resection involving the insula in children with impaired development or intelligence can be performed without significant reduction in DQ/IQ, but carries the risk of postoperative motor deficits.

Key words: neuropsychological sequela, postoperative motor deficit, insular cortex resection, pediatric epilepsy surgery
神経心理学的合併症、術後運動合併症、島皮質切除、小児てんかん外科手術

f-2 Microsurgery is an effective treatment for trigeminal neuralgia without vascular compression

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Department of Neurosurgical Engineering and Translational Neuroscience, Graduate School of Medicine, Tohoku University[2]

Introduction: Trigeminal neuralgia (TGN) is characterized by paroxysmal electric shock-like pain. Compression of the root entry zone (REZ) of the trigeminal nerve by the intracranial artery is a hallmark of the disease. However, in 10% of TGN, magnetic resonance imaging (MRI) cannot identify the compression. In such case, neurosurgeons may hesitate to perform the surgery. In this presentation, we demonstrated a case of TGN without vascular compression who achieved complete remission of the facial pain after the microsurgery. We discuss intraoperative findings of this case and surgical indications for TGN without vascular compression.

Case presentation: A 66-year-old woman has complained of right facial pain for 13 years. Although her symptoms were typical to those of the TGN, surgery was not indicated because of absence of the vascular compression to the trigeminal nerve. Since she suffered from intractable pain, we decided to perform microsurgery to inspect and decrease the tension around the trigeminal nerve. During the operation, we confirmed that the thickened arachnoid membrane surrounded the trigeminal nerve. The trigeminal nerve was deviated medially. No vessels were found to compress the trigeminal nerve. The resection of the arachnoid membrane along the trigeminal nerve relieved the tension to the trigeminal nerve. Postoperatively, the facial pain completely disappeared.

Conclusion: In some cases of TGN, preoperative MRI may not demonstrate a vascular compression of the trigeminal nerve. In such cases, microsurgery can dramatically improve the intractable facial pain by dissection of the arachnoid membranes and release the tension of the trigeminal nerve. We consider the microsurgery is an important treatment option for those who suffered TGN without a typical vascular compression.

Key words: trigeminal neuralgia 三叉神経痛、trigeminal nerve 三叉神経

f-3 Dynamic tractography-based localization of spike sources and animation of spike propagations in temporal lobe epilepsy patients

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Objective: To build and validate the novel dynamic tractography-based model for localizing interictal spike sources and visualizing mono-synaptic spike propagations through the white matter in temporal lobe epilepsy patients.

Methods: This cross-sectional study investigated 1,900 spike events recorded in 19 patients who had drug-resistant temporal lobe epilepsy (TLE) and underwent extraoperative intracranial electroencephalography (iEEG) followed by resective surgery. Twelve patients had mesial TLE (mTLE) without a visible mass lesion on magnetic resonance imaging. The remaining seven had a mass lesion in the temporal lobe neocortex. We identified the leading and lagging sites, defined as those initially and subsequently (but within ≤50 milliseconds) showing spike-related augmentation of broadband iEEG activity. In each patient, we estimated the sources of 100 spike discharges using the latencies at given electrode sites and streamline length measures based on diffusion-weighted imaging. We determined whether the spatial relationship between the estimated spike sources and resection was associated with postoperative seizure outcomes. We generated movies presenting the spatiotemporal change of spike-related fiber activation sites by estimating the propagation velocity using the streamline length and spike latency measures.

Results: The spike propagation velocity from the source was 1.03 mm/ms on average (95% confidence interval: 0.91-1.15) across 133 tracts noted in the 19 patients. The estimated spike sources in mTLE patients with International League Against Epilepsy (ILAE) class 1 outcome were more likely to be in the resected area than those associated with the class ≥2 outcomes (83.9% vs. 72.3%, $p<0.001$) and in the medial temporal lobe region (80.5% vs. 72.5%, $p=0.002$). The resulting movie successfully animated spike propagations, which were confined within the temporal lobe in mTLE but involved extratemporal lobe areas in lesional TLE.

Conclusions: We, for the first time, provided dynamic tractography visualizing the spatiotemporal profiles of rapid propagations of interictal spikes through the white matter in temporal lobe epilepsy patients. Dynamic tractography has the potential to serve as a unique epilepsy biomarker.

Key words: Dynamic tractography, pediatric epilepsy surgery, irritative zone, spike onset zone, interictal epileptiform activity, electrocorticography (ECoG), diffusion tensor imaging (DTI), epileptic network.

f-4 Accuracy of stereo-encephalography electrode implantation and the effect of temporal muscle

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Objective: Robotic placement of stereo-encephalography (SEEG) electrode for invasive work-up in drug-resistant epilepsy is becaming popular globally. In Japan, the procedure is approved for insurance-coverage since 2020. Many centers have started SEEG with the electrodes implanted and fixed using various techniques because it is difficult to introduce an expensive robot and the electrode fixation device is not yet approved. In SEEG electrode implantation, high accuracy is required to avoid inadvertent hemorrhage because the trajectories are planned to pass through gray matters and adjacent sulci as much as possible for efficient sampling. We assessed the accuracy and factors affecting the accuracy of the implantation technique at our center.

Methods: A total of 39 electrodes were implanted in six patients from May 2019 to April 2021 using a Leksell Stereotactic Frame and Salcman twist drill kit. Electrodes were fixed at the insertion point using mattress sutures with three additional sutures on the scalp. The post-implantation CT acquired on day-0 and the MRI at 2 weeks were co-registered to the implantation plan on BrainLAB workstation. The Euclidean distance between the planned target and the implanted electrode tip was then measured to assess the accuracy. Several factors including entry point, entry angle, trajectory length, and trajectory passing through temporal muscle were evaluated for their effect on accuracy.

Results: The mean error was 2.6 ± 1.7 mm using our technique. Two weeks after electrode implantation, the electrode tip position changed by 2.9 ± 1.9 mm. The error on day-0 did not correlate with entry point error, entry angle, or trajectory length (Spearman, $p>0.05$). Displacement of the electrode tip at 2 weeks was larger in trajectories passing through the temporal muscle ($p=0.005$, Wilcoxon test).

Conclusion: The accuracy of our technique was comparable to that of robot-assisted implantation (error 1.7-2.69 mm). Displacement was more common in trajectories passing through the temporal muscle, suggesting the influence of mastication.

Key words: SEEG, stereotactic, epilepsy,
定位的頭蓋内電極留置術

日本脳神経外科国際学会フォーラム　会則

第１章　総則

第１条　本会は、日本脳神経外科国際学会フォーラム（Japan Neurosurgery English Forum、略称 JNEF）とする

第２条　本会の事務局を、岡山大学医学部脳神経外科学教室に置く。事務局は、会員名簿・会費を管理し、会の運営に必要な事務手続きを行う。

第３条　事務局の移転・変更に関しては、事務局代表からの申し出、あるいは事務局代表が65歳となった時点で、運営委員による新事務局代表の推薦を募り、運営委員会で決定する。

第２章　目的及び事業

第４条　本会は、診断・治療・研究に関して世界的水準を維持し、国際的にも活躍できる脳神経外科医育成を目的とする。

第５条　本会は、研究発表を通じ、英語論文執筆・発表力・同時通訳等の医学英語レベル向上を目指す。

第６条　本会は、前条の目的を達するため、次の事業を行う。

１．学術集会の開催
　　原則として毎年１回
２．運営委員会の開催
３．学会ホームページの運営
４．その他の目的達成に必要な事項　等

第３章　会員

第７条　本会の目的に賛同し、且つその達成に協力する脳神経外科医及び神経科学に従事する科学者をもって構成する。

第８条　本会に入会を希望する者は、所定の用紙に必要事項を記入し、事務局に申し込むものとする。

第９条　学術集会における発表および参加は、会員ならびに会長が認めた者に限る。

第10条　会員から、年会費を徴収し、事務局でそれを管理・運営する。

第４章　役員

第11条　本会は次の役員を置く。
　　名誉会員　会長　運営委員

第12条　本会の会長は、運営委員会において運営委員より１名選出する。会長は、当該年度の学術集会を主催する。その任期は、当該事業年度とする。

第13条　本会の運営委員で65歳になったものを運営委員会の議を経て名誉会員とする。名誉会員は年会費・参会費を免除する。

第14条　新運営委員の選出にあたっては、現運営委員２名が推薦状を付けて事務局に推薦し、運営委員会で決定する。運営委員の年齢は65歳未満とする。

第５章　会議

第15条　運営委員会は、毎年１回学術集会の期間中に開催し、２分の１（委任状を含む）以上の出席をもって成立する。運営委員会の議決は出席会員（委任状を含む）の過半数をもって決する。

第６章　会計

第16条　本会の事業年度は、毎年１月１日より12月31日までとする。

第17条　本会の運営は、学術集会会費、協賛金、年会費、その他をもってあてる。

第18条　本会の事務局経費の監査は、運営委員の中から運営委員会において選出する。

第19条　学術集会の会計は、会長在任の期間において会長が会計責任者を兼務し、次年度の運営委員会においてその会計報告を行う。

第20条　学術集会の会計監査は、前回会長が行う。

第７章　会則

第21条　本会則ならびに細則は、運営委員会において改正することができる。

細則

１．年会費は、2,000円とする。

以上

作成日　平成15年７月18日
改定日　平成24年７月27日

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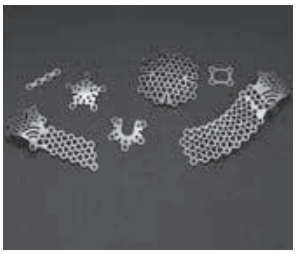

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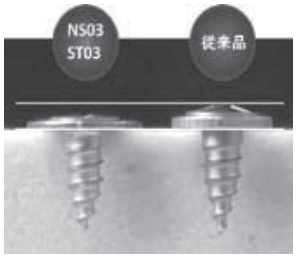
- ●豊富なサイズバリエーション
- ●滅菌済・未滅菌の選択が可能



※スクリュー

軟部組織等への刺激を考慮したスクリューヘッド形状

- ●スクリューヘッドのロープロファイル化
- ●スクリューの把持力、強度は従来品と同等
- ●従来品プレートとの併用が可能

■マイクロ針付縫合糸（8-0 ～ 12-0）

各種症例に合わせた豊富なバリエーション（200 種類以上）をご準備しております。
先端の針形状も 2 種類（マイクロテーパー・マイクロカット）からお選び頂けます。糸の長さを 1cm 単位で自在にカットできるメジャー付もございます。

針太み：80μ～ 250μ　長さ：3mm ～ 6mm　針先：マイクロテーパー・マイクロカット
USP：11-0 ～ 8-0

カタログのご希望は下記にご請求ください。

株式会社ベアーメディック
東京営業所　〒113-0034　東京都文京区湯島2-31-24 湯島ベアービル
TEL:03-3818-4041　FAX:03-3818-4042　http://www.bearmedic.co.jp

Muranaka

BONIMED バイポーラ凝固止血器

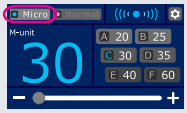
SuperGenerator

▶ 2種類の表示単位を選択可能

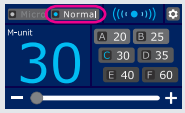
M-unit表示

maxW表示

▶ 2種類の出力モードを選択可能



Microモード



Normalモード

※初期設定時はMicroモードに設定されています。

管理医療機器
特定保守管理医療機器
認証番号：231AGBZX00013000
販 売 名：BONIMED バイポーラ凝固止血器 SuperGenerator

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総合センター　〒594-1157　大阪府和泉市あゆみ野 2-8-2　☎0725-53-5541（代）
http://www.muranaka.co.jp/

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仙台営業所 ☎022-274-7780（代）　埼玉営業所 ☎048-844-3500（代）
金沢営業所 ☎076-286-4531（代）　名古屋営業所 ☎052-709-7111（代）
村中船越ビル ☎06-6943-1431（代）　米子営業所 ☎0859-33-6231（代）
広島営業所 ☎082-532-1800（代）　福岡営業所 ☎092-473-0123（代）