제12차

대한뇌종양학회 동계학술대회

2018. 2. 2(금)~ 3(토)

무주덕유산리조트

대한뇌종양학회

주관 : 대한신경외과학연구재단

제12차 대한뇌종양학회 동계학술대회

2018. 2. 2(금)~ 3(토) 무주덕유산리조트

2월 2일(금) 카니발컬쳐팰리스 2F, 심포니홀

12:40-12:55	Registration	
12:55-13:00	Opening Remark	정 신 (대한뇌종양학회 회장)
13:00-14:10	**Scientific Session I**	좌장: 홍용길 (서울성모병원), 이창훈 (한국원자력의학원)
13:00-13:11	Unusual mass in petrous apex	이정근 (분당차병원) •6
13:11-13:22	Primary pituitary lymphoma with involvement of cavernous sinus and pituitary stalk	박선호 (화순전남대병원) •7
13:22-13:33	A case of multiple meningeal mass with brain invasion	도윤식 (서울대병원) •8
13:33-13:44	Supratentorial anaplastic pilocytic astrocytoma	박기수 (경북대병원) •9
13:44-13:55	Primary intracranial mesenchymal tumor found in pituitary fossa-case report	김태신 (고려대 안암병원) •10
13:55-14:06	Surgical approach to giant trigeminal schwannoma	토마스 보갈레 메게르사 (분당차병원) •12
14:10-14:25	*Coffee Break*	
14:25-15:10	**특강 I**	좌장: 정 신 (대한뇌종양학회 회장)
	축복의 내리막 길	이장호 (영화감독) •15
15:10-15:50	**특강 II**	좌장: 김정훈 (서울아산병원)
	뇌와 인공지능	이민호 (경북대 전자공학과) •19
15:50-16:05	*Coffee Break*	
16:05-17:25	**Scientific Session II**	좌장: 김오룡 (영남대병원), 김충현 (한양대 구리병원)
16:05-16:16	Short term response of intracranial metastases to fractionated stereotactic radiosurgery and significance of adaptive planning	이민호 (삼성서울병원) •22
16:16-16:27	Primary intraosseous osteolytic meningioma: A case report and review of literatures	권세민 (한양대병원) •23
16:27-16:38	Longterm survival of patient with metastatic brain tumor from renal cell cancer	조성진 (순천향대 서울병원) •24
16:38-16:49	Unusual pituitary etiologies in beginner surgeon's experience	주진덕 (분당서울대병원) •25
16:49-17:00	A case report of solitary osteolytic skull metastasis as the only recurrence of gastric cancer	김병섭 (고신대 복음병원) •26
17:00-17:11	Temozolomide treatment of aggressive pituitary tumors and pituitary carcinomas	문주형 (세브란스병원) •27
17:11-17:22	Extra-articular tenosynovial giant cell tumor of diffuse type in the temporal area with brain parenchymal invasion: A case report	박영석 (충북대병원) •29
17:25-17:30	Closing Remark	
18:00	Dinner	

발표자 준수사항

1. 한 연제당 증례발표 7분, 토론 4분입니다. 활발한 토론을 위하여 시간을 엄수해 주시기 바랍니다.
2. 사전에(최소한 발표 1시간 이전에 회의장으로) 발표하실 자료를 제출바랍니다.
3. Computer projection은 single projection만 가능합니다.
4. 발표시 개인 노트북은 사용할 수 없습니다.

좌장 준수사항

1. 시간을 엄격히 지켜 주십시오.
2. 한두 사람에 의해 토론이 독점되지 않도록 진행하여 주십시오
3. 토론이 없을 경우를 대비하여 좋은 토론 내용을 미리 준비하시기 바랍니다.
4. 주제를 벗어난 부적절한 발언이나 토론 내용은 즉시 제지하여 주시기 바랍니다.

Scientific Session I

좌장: 홍용길 (서울성모병원), 이창훈 (한국원자력의학원)

Unusual mass in petrous apex
이정근 (분당차병원)

Primary pituitary lymphoma with involvement of cavernous sinus and pituitary stalk
박선호 (화순전남대병원)

A case of multiple meningeal mass with brain invasion
도윤식 (서울대병원)

Supratentorial anaplastic pilocytic astrocytoma
박기수 (경북대병원)

Primary intracranial mesenchymal tumor found in pituitary fossa-case report
김태신 (고려대 안암병원)

Surgical approach to giant trigeminal schwannoma
토마스 보갈레 메게르사 (분당차병원)

Unusual Mass in Petrous Apex

Jungkeun Lee, Jaejoon Lim, Jebeom Hong, Hankyu Kim, Kyunggi Cho

Department of Neurosurgery, Bundang CHA Medical Center

Objective: Cholesterol granuloma (CG) of the petrous apex is an inflammatory reaction to the by-products of eroded marrow cavities secondary to chronic obstruction of air cells within the petrous pyramid.

Methods: We report a case of mis-diagnosed cholesterol granuloma in the left petrous bone occurring in a 23-year-old woman with an unusual presentation. The woman presented with a 6-month history of intermittent left hemicranial headache and diplopia. CT scan of petrous bone and skull base showed an expansile mass of the left petrous apex.

Results: For surgical removal we used the modified lateral supraorbital approach. After surgery, all the symptoms and signs of the patient completely recovered.

Conclusion: In this report, the indications and merits of the MLSO procedure are illustrated through a case presentation.

Key words: Cholesterol granuloma, petrous bone, modified lateral supraorbital approach

Primary Pituitary Lymphoma with Involvement of Cavernous Sinus and Pituitary Stalk

Seon-Ho Park, Seul-Kee Lee, Tae-Young Jung, In-Young Kim, Kyung-Sub Moon, Shin Jung

Department of Neurosurgery, Chonnam National University Hwasun Hospital & Medical School

Objective: Pituitary tumors account for 15% of intracranial tumors. Among them, 90% of cases are pathologically confirmed as pituitary adenoma. With the gradual increase of the incidence of CNS lymphoma, primary CNS lymphomas are limited to the cranio-spinal axis, leptomeninges, and eye without a systemic involvement. The pituitary lymphoma remains a rare entity and diagnosis is often challenging. We report a rare case of primary pituitary lymphoma.

Methods: A 75-year-old female represented with ptosis, dilated pupil and gaze limitation of the left eye. Also the patient had severe general weakness. On medical history, the patient noticed the 2 times sarcoma excision on the left heel sarcoma. Brain MRI showed a 4.1x1.7cm homogeneously T1 enhancing mass involving sella, cavernous sinuses, pituitary stalk, and sphenoid sinus. The basal hormone test revealed low cortisol level (1.0ug/dl).

Results: A biopsy through transphenoidal approach was performed. The pathologic result was diffuse large B-cell lymphoma. After biopsy, the patient complained VII & VI cranial nerves deficits on the right eye. The patient was transferred to hematooncology department for MTX chemotherapy.

Conclusion: Primary pituitary lymphoma in immunocompetent patients remains a rare entity. The diagnosis is challenging due to similarities in clinical presentation and radiologic features with other more common pituitary lesions. Careful work-up, imaging, and pathologic confirmation are very important.

Key words: CNS, Lymphoma, Pituitary gland

A Case of Multiple Meningeal Mass with Brain Invasion

Yun-Sik Dho, Jin Wook Kim, Yong Hwy Kim, Chul-Kee Park, Dong Gyu Kim

Department of Neurosurgery, Seoul National University Hospital

Objective: Rosai-Dorfman disease is a rare, benign and self-limiting disease of phagocytic histiocytosis. Usually, the disease shows the clinical features of sinus histiocytosis with massive lymphadenopathy. An isolated Central nervous system (CNS) involvement (dural based mass) is extremely rare.

Methods: A 68-year old woman visited outpatient clinic with an extra-axial mass of the left parietal lobe that was found incidentally. Magnetic resonance image showed a 1.1x2.4x4cm extent extra-axial mass and smaller masses in the left parietal convexity with a wide dural attachment and abutting at the left side of posterior superior sagittal sinus (SSS). The mass had low SI on both T1 and T2 weighted image and homogenous enhancement on T1 weighted enhancement image.

Results: We diagnosed the tumor as an en plaque meningioma. Differential diagnoses were en plaque meningioma, metastatic carcinoma and Hodgkin's disease. The patient underwent craniotomy and tumor removal. The mass was firm and there was no dissection plane (arachnoid plane) due to brain parenchyme invasion of tumor. We dissected brain parenchyme invaded by mass and mass together and the mass was removed en bloc with dura. A residual mass attached to the SSS was trimmed with ultrasonic aspirator and then coagulated (Simpson grade 2). Histologically, Rosai-Dorfman disease in meninges with massive mixed inflammatory cells infiltration was diagnosed. CD68 and S-100 were positive.

Conclusion: We report a rare case of Rosai-Dorfman disease in meninges.

Key words: Rosai-Dorfman disease, Isolated CNS involvement, Dura, CD68 and S-100

Supratentorial Anaplastic Pilocytic Astrocytoma

Ki-Su Park, Jeong-Hyun Hwang

Department of Neurosurgery, School of Medicine, Kyungpook National University

Objective: Most pilocytic astrocytoma (PA) show benign growths (WHO grade I) in children and young adults, and usually arise in the infratentorial region. However, there is a small subset as anaplastic PA (WHO grade III). We report the case of a 30-year-old female with a supratentorial anaplastic pilocytic astrocytoma.

Methods: Two years ago, the patient presented mild headache and brain magnetic resonance imaging (MRI) showed a 2.3cm-diameter intraaxial tumor without enhancement in the right parahippocampal gyrus. MR spectrocopy and brain positron emission tomography suggested that the lesion may be a low-grade tumor. The stereotactic biopsy was planned, but the patient refused.

Two years later, the patient presented severe headache and left hemiparesis. MRI appeared that the tumor has increased from 2.3cm to 6.6cm, and implied that the tumor may be a high-grade tumor because of rim enhancement, central necrosis, and severe peritumoral edema. A gross-total resection was performed.

Results: Histopathological finding demonstrated a moderately cellular tumor with low-grade areas consisting of microcystic neuropil, well-developed fibrillary processes, scattered eosinophilic granular bodies and Rosenthal fibers. This was continuous with areas of cellular and nuclear pleomorphism and foci of palisading necrosis and microvascular proliferation and was consistent with anaplastic features within a pilocytic astrocytoma. Adjuvant treatment with fractionated radiotherapy (60Gy) was administered.

Conclusion: This case demonstrates that an anaplastic pilocytic astrocytoma should be considered in the differential diagnosis of a supratentorial high-grade tumor in the children and young adults.

Key words: Supratentoiral, Anaplastic, Pilocytic, Astrocytoma

Primary Intracranial Mesenchymal Tumor Found in Pituitary Fossa: Case Report

Tae-shin Kim, Shin-Hyuk Kang

Department of Neurosurgery, Korea University Anam Hospital

Objective: Primary intracranial mesenchymal tumor found in pituitary fossa-case report primary intracranial mesenchymal tumor is a rare neoplasm. Primary intracranial mesenchymal tumor is extremely rare and not many cases are reported. We report mesenchymal tumor found in pituitary fossa with radiological feature and pathologic feature mimicking pituitary adenoma.

Methods: A 63-year-old male patient admitted and complained of visual field defect of both eyes, and headache from 2 days before admission. In addition, he also complained of fever and weight loss. Before admission to current hospital, he underwent lumbar tapping test from local hospital, and the result accorded to meningitis. He was in alert mentality and had no other neurologic deficits. The MRI showed rim enhancing intrasellar and suprasellar mass with cystic foci which compressing optic chiasm, and the size was measured about 2.8cm in height. No calcification was seen on CT scan.

Results: Tumor removal operation was done by trans-sphenoidal approach. Tumor was grayish, friable and easily suckable, and had necrotic portion in the operation field. The tumor included hematoma inside. After the operation, the pathologic result was reported as 'pituitary adenoma'. The patient's visual symptoms have improved. On the one-year-follow-up MRI, the tumor had disappeared. But on the two-year-follow-up MRI, the remnant tumor was notified and the size had been increased. The patient underwent radiation therapy. After radiation therapy, the tumor size decreased in two-year time interval. After three years after radiation therapy, the tumor size increased and intruded sphenoidal sinus cavity and expanded to clivus. So the patient underwent reoperation, and the pathologic result was reported as malignant mesenchymal tumor such as rhabdomyosarcoma. After reoperation, the patient underwent whole brain radiation therapy.

Conclusion: Mesenchymal tumor is known as connective tissue tumor, which includes rhabdomyosarcomas, fibrosarcomas, angiosarcomas etc. The tumors may be located in all organs, and incidence in individual organs are all different. Rhabdomyosarcoma is a soft tissue malignancy of skeletal muscle origin. Until 2007, less than 40 previously reported cases were published in literatures. These patients ranged in age from age 1 year to 6th decades, the majority of which were children. The radiologic feature of this tumor is not well defined also. Adjacent bony structure may be destroyed, and calcification are not identified. Usually the tumor is heterogeneously enhanced by gadolinium. There is no definitive standard therapy for these tumors. Most cases are managed with surgical excision, and radiation therapy. In this patient, the tumor was diagnosed as pituitary adenoma after first operation. Findings on this patient shows that rhabdomyosarcoma should be considered in the differential diagnosis of a primary intrasellar neoplasm.
Key words: Mesenchymal, Rhabdomyosarcoma, Pituitary

Surgical Approach to Giant Trigeminal Schwannoma

Thomas Bogale Megerssa, Je Beom Hong, Jae Joon Lim, Kyung Gi Cho, Han Kyu Kim

Department of Neurosurgery, CHA Bundang Medical Center

Objective: The giant trigeminal schwannomas are rare tumors and they are still surgical challenge to neurosurgeons. However, the goal of surgery is complete removal. We report a case of schwannoma of Meckel's cave and interpeduncular fossa extending to posterior fossa compressing the brainstem.

Methods: Various surgical approaches and microsurgical techniques can be planned for the complete resection of the tumors depending on their size and location with the aim to preserve the cranial nerve function. The patient was 58–year–old female who presented with a few months' history of progressive gait disturbance, dizziness and hearing impairment. MRI revealed a giant trigeminal schwannoma around the right Meckel's cave and extending into posterior fossa with enlarged ventricle. In this case, we approached the tumor using petrosal approach – transcrusal approach, cutting the tentorium.

Results: We removed the tumor gross totally. She experienced CN VI, VII palsy and decreased hearing function on the right side after the surgery. However, her gait impairment was improved.

Conclusion: Using the skull base approach, we can approach and exposure the giant trigeminal schwannoma efficiently and have chance of total resection of tumor.

Key words: trigeminal schwannoma, Meckel's cave, skull base, surgical approach

특강 I

좌장: 정　신 (대한뇌종양학회 회장)

축복의 내리막 길
이장호 (영화감독)

이장호 (영화감독)

현 서울영상위원회 위원장
홍익대학교 미술대학 건축미술 전공

2012.3–2012.6	한국예술종합학교 마스터클래스특강
2011.3–2013.2	서울예술대학교 영화 전공 석좌초빙교수
2000.9–2010.8	전주대학교 영상콘텐츠학부 영화영상전공 전임교수
1996.3–2000.8	중부대학교 예술학부 연극영화학전공 부교수
1995	부천시 영상도시화 PROJECT 연구위원
1996	부천국제판타스틱영화제 집행위원장
2001	전주영상위원회 위원장
2005	부천국제판타스틱영화제 집행위원장
2008	사단법인 신상옥기념사업회 이사회 이사장 선출
2010	제3대 서울영상위원회 위원장
2013	한국방송예술교육진흥원 부학장

축복의 내리막 길

이장호 (영화감독)

특강 II

좌장: 김정훈 (울산대 서울아산병원)

뇌와 인공지능

이민호 (경북대 전자공학과)

이민호 (경북대 전자공학과)

*** 연구분야**

인공신경망, 신호처리, 딥러닝

*** 최종학력**

1995	KAIST 박사

*** 경력**

2006	모바일단말상용화센터 실장(겸임)
2006–2007	MIT 방문교수
2013–2014	경북대학교 IT대학 부학장
2014–2015	경북대학교 본부 기획부처장
2016–	KNU–LG 전자 융합 연구센터장

*** 학술활동**

2013	APNNA(Asia–Pacific Neural Network Assembly) 회장
2017–	APNNS 부회장
2018	INNS(International Neural Networks Society) Governing board member
2013	ICONIP(International Conference On Neural Information Processing) 학회장
2015	HAI(Human–Agent Interaction) 학회장
2013–	대한전자공학회 컴퓨터소사이어티 부회장
2017–	한국뇌공학회 부회장

Brain and AI

Minho Lee

School of Electronics Engineering, Kyungpook National University

For recent years, the most prominent subfield of machine learning for artificial intelligence has been deep learning, which is a kind of machine learning algorithm to train an artificial neural network with many hidden layers. The artificial neural networks simply mimic the functions and structures of neurons in our brain. Based on understanding of the brain, connectionist have been tried to get an insight to build a new deep neural network, and the current big success of deep learning highly depends on the research of the brain. Currently, deep learning methods have taken a place not only in many professional academic areas such as computer vision and language processing, but also in industrial arena. World's leading companies like Google, Microsoft and Facebook have teams of specialists working on deep learning, and publish their research in reputed journals. Recent breakthroughs have been introducing and adapting, deep learning methods eventually defeating many classical state–of–art algorithms in many engineering application fields. Moreover, they have shed light to the brain–like artificial intelligence. In this talk, I will briefly explain main characteristics of deep learning methods. Then, I will introduce an intelligent cognitive system based on newly developed deep learning methods in my lab., which includes intelligent personal assistant services and some preliminary studies in medical applications.

Scientific Session II

좌장: 김오룡 (영남대병원), 김충현 (한양대 구리병원)

Short term response of intracranial metastases to fractionated stereotactic radiosurgery and significance of adaptive planning
이민호 (삼성서울병원)

Primary intraosseous osteolytic meningioma: A case report and review of literatures
권세민 (한양대병원)

Longterm survival of patient with metastatic brain tumor from renal cell cancer
조성진 (순천향대 서울병원)

Unusual pituitary etiologies in beginner surgeon's experience
주진덕 (분당서울대병원)

A case report of solitary osteolytic skull metastasis as the only recurrence of gastric cancer
김병섭 (고신대 복음병원)

Temozolomide treatment of aggressive pituitary tumors and pituitary carcinomas
문주형 (세브란스병원)

Extra-articular tenosynovial giant cell tumor of diffuse type in the temporal area with brain parenchymal invasion: A case report
박영석 (충북대병원)

Short Term Response of Intracranial Metastases to Fractionated Stereotactic Radiosurgery and Significance of Adaptive Planning

Min Ho Lee, Jung-Il Lee

Department of Neurosurgery, Samsung Medical Center, Sungkyunkwan University School of Medicine

Objective: Recently hypofractionated stereotactic radiotherapy or fractionated radiosurgery have been tried more commonly for large brain metastases. However, there is a lack of information about the change in the volume of the metastatic lesions over a short period of treatment. This study was designed to investigate structural changes of metastatic brain lesions in MRI scan after short interval during fractionated gamma knife radiosurgery (FGKS)

Methods: Thirty-five patients who underwent FGKS from November to December 2017 were analyzed. A total of 52 lesions were treated with a Leksell Gamma Knife model ICON. GKS was performed in 3 to 4 fractions in consecutive days with immobilization using the thermoplastic mask.

Results: After two fractions of GKS, 28 lesions among the 52 lesions showed no change in volume. Twenty-three lesions showed volume reduction and 1 lesion showed expansion. It was a cystic lesion which had to be aspirated and irradiated. Among the 23 reduced cases, 7 cases were treated lesions. (6 cases were irradiated at tumor removed sites, and one case was irradiated after cystic aspiration)

Conclusion: Repeat imaging and adaptive planning during the course of FGKS for selected patients is essential to ensure adequate doses to target volumes and safe doses to normal tissues.

Key words: stereotactic radiosurgery; metastasis

Primary Intraosseous Osteolytic Meningioma: A Case Report and Review of Literatures

Sae Min Kwon, Yong Ko

Department of Neurosurgery, Hanyang University Seoul Hospital

Background: Primary intraosseous meningioma is a subset of extradural meningioma which arise in bone, and only a few cases have been reported.

Case presentation: An 80–year–old man presented decrease in hearing on the right side accompanied by disturbance of balance 10 months prior to admission. Magnetic resonance imaging revealed 8 x 7 cm sized osteolytic mass at right posterior fossa related to petrous bone, with extended to cervical region. At surgery, the tumor was extradural located with no invasion of dura. The tumor was totally removed except small portion around jugular foramen to avoid lower cranial nerves injury.

Conclusion: The final diagnosis was primary intraosseous osteolytic meningioma with atypical pathology. Here we report a rare case of osteolytic skull lesion in skull base not invading the dura with extensive bone destruction.

Key words: Atypical, Intraosseous, Meningioma, Osteolysis

Longterm Survival of Patient with Metastatic Brain Tumor from Renal Cell Cancer

Sung Jin Cho

Department of Neurosurgery, Soonchunhyang University Seoul Hospital

Renal cell carcinoma (RCC) accounts for about 2% of all cancer and it is frequent source of brain metastasis. The median survival of patient with untreated brain metastases from primary RCC is reported to be approximately 1 to 2 months whereas the median survival time after radiotherapy and corticosteroid treatment for patients with this type of malignancy was reported to be 2 ~ 8 months.

This 47 years' male was diagnosis with RCC in 2003. And Lt. total nephrectomy was performed. Ten years later, cancer was found to have metastasized to the lungs and brain. The patient underwent craniotomy for metastatic brain cancer, but bleeding from the tumor was so severe that he could not completely remove the tumor. Cyberknife radiosurgery was performed for residual tumor. Since then, several cyber knife radiosurgeries have been performed for newly developing multiple metastatic brain tumors. The patient is currently in a state of no neurological abnormality. RCC is known to be resistant to radiation therapy, but radiosurgery seems to be more effective than radiation therapy.

Multiple brain metastases from RCC was well controlled by surgery and radiation surgery.

Key words: Renal cell carcinoma, Metastatic brain tumor, Radiosurgery

Unusual Pituitary Etiologies in Beginner Surgeon's Experience

Jin-Deok Joo, Chae-Yong Kim

Department of Neurosurgery, Seoul National University Bundang Hospital

Objective: Pituitary adenoma comprises most of the pathology of sellar region. But this relative monotonicity of pathology restricts beginner surgeons to pass through the advanced endoscopic surgical field.

Methods: The cases below illustrate the impact of unusual parasellar etiologies mimicking pituitary adenoma during beginner's experience with 150 endoscopic pituitary surgeries.

Results: Case 1. A 69-years old woman presented with acute mental deterioration, her neurological examination was normal except mental state of severe confusion. MRI demonstrated a mass growing inferior to pituitary gland obliterating sphenoid sinus. Hormonal analysis revealed an elevated prolactin level of 1045ng/ml. After trans-sphenoidal resection of the tumor, the patient immediately recovered from mental deterioration. Histologic examination revealed an adenoma with spheroid amyloid deposits adjacent to prolactin-staining adenoma cells. Case 2. A 56-years old woman presented with 3cm sized suprasellar mass with its epicenter at suprasella suggesting meningioma or craniopharyngioma. After extended trans-sphenoidal resection of the tumor, the histologic examination revealed usual pituitary adenoma with low proliferation index. Case 3. A 49 years old woman presented with bitemporal hemianopsia. MRI showed a solid and cystic mass growing into third ventricle which showed no fat signal. After trans-sphenoidal resection of the tumor, histologic examination revealed dermoid cyst containing hair follicle.

Conclusion: Considering pathologic monotonicity and fair learning curve of endoscopic skull base surgery, the early encounter of unexpected parasellar etiology may deserve special emphasis for beginner surgeon's experience.

Key words: Pituitary adenoma, Endoscopic skull base surgery

A Case Report of Solitary Osteolytic Skull Metastasis as the Only Recurrence of Gastric Cancer

Sungmin Cho[1], Hee Kyung Chang[2], **Byung Sup Kim[1]**

Departments of [1]Neurosurgery and [2]Pathology, Kosin University Gospel Hospital, Kosin University College of Medicine

Objective: Gastric cancer most frequently metastasizes to lymph nodes, liver, and lung, while bone metastases are uncommon. Skeletal metastases are commonly multiple, and most frequently occur in the spine. The purpose of this case report is to increase the knowledge of the pattern of bone metastases from gastric cancer by reporting a patient in whom the only manifestation of adenocarcinoma recurrence had been headache and right-sided weakness from solitary osteolytic skull metastasis.

Methods: A 67-year-old man was admitted to our institution with a two-month history of headache and abrupt growing scalp mass in left parietal region. Right-sided weakness was developed from a week before admission. One year before, he had undergone radical total gastrectomy with roux-en-y reconstruction. Postoperative pathological analysis indicated well-differentiated adenocarcinoma of the stomach upper third, center at cardia, and tumor invasion into the subserosa (stage: G3-T3-N2-M0). Postoperatively, eight chemotherapy courses were administered with complete remission.

Results: Brain computed tomography and magnetic resonance imaging showed a large mixed solid enhancing and partially cystic extra-axial mass in left parietal region (about 65 x 54 mm), which was involved in diploic space and skull. An extensive search did not reveal any other tumor. Gross total resection of tumor and cranioplasty were performed and biopsy showed adenocarcinoma, suggesting metastasis of the primitive gastric cancer.

Conclusion: In gastric cancer, bone metastases are generally associated with metastases in lymph nodes, liver, and lung, and have a higher frequency in the thoracolumbar spine. However, skull metastasis presenting with headache may be the only manifestation of gastric cancer recurrence.

Key words: Gastic cancer; Adenocarcinoma; Skull metastasis; Osteolytic metastasis

Temozolomide Treatment of Aggressive Pituitary Tumors and Pituitary Carcinomas

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Objective: Pituitary tumors are common and easily treated by surgery or medical treatment in most cases. However, a small subset of pituitary tumors can be rapidly progressive and presents with multiple local recurrences (aggressive pituitary tumor) and in rare occasion with metastases (pituitary carcinoma). Traditionally, the treatment of aggressive pituitary tumors and pituitary carcinomas includes surgery, adjuvant medical treatment, external beam radiotherapy and chemotherapy. However, aggressive pituitary tumors and pituitary carcinomas are largely unresponsive to current combination treatment, and consequently associated with poor prognosis. Temozolomide is an alkylating agent and a first–line chemotherapeutic agent for malignant gliomas. Recently, temozolomide has shown promise in treating aggressive pituitary tumors and pituitary carcinomas that are resistant to other therapies

Methods: We report a case of a prolactin–secreting adenoma in a young woman, which became progressively aggressive with cerebrospinal and systemic metastasis, and refractory to usual treatment modalities but responded to treatment with temozolomide. In addition, we review the literature for treatment of aggressive pituitary tumors and pituitary carcinomas with temozolomide. The clinical and pathologic characteristics of aggressive adenomas are reviewed, as well as their response to temozolomide.

Results: The patient with pituitary carcinoma was treated successfully with long–term chemotheraphy with temozolomide.

Conclusion: In conclusion, temozolomide can be an additional effective therapeutic option for the treatment of highly aggressive pituitary tumors and carcinomas, as demonstrated by tumor shrinkage or complete response and normalization of hormone hypersecretion, and exhibits good tolerability and few side effects. Many aspects of optimal temozolomide therapy remain unknown, and future studies should examine the timing of start and

cessation of temozolomide treatment and potential treatment modalities after failure of temozolomide treatment.
Key words: Aggresive pituitary adenoma, Pituitary carcinoma, Temozolomide

Extra-articular Tenosynovial Giant Cell Tumor of Diffuse Type in the Temporal Area with Brain Parenchymal Invasion: A Case Report

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Objective: Tenosynovial giant cell tumor of diffuse type is a locally aggressive neoplasm that most commonly arises in the lower extremities. Herein, we report for the first time a case of an extra-articular tenosynovial giant cell tumor of diffuse type in the temporal region with brain parenchymal invasion.

Methods: With the diagnosis of diffuse type of extra-articular TGCT, the patient was treated with adjuvant radiotherapy and remained symptom-free without local recurrence at 3 months after surgery and radiotherapy. Microscopically, the tumor showed densely cellular sheets of mononuclear cells, irregularly distributed osteoclast-like giant cells, and hemosiderin pigments. Specifically, the mononuclear cell population was composed of small polygonal or spindle cells with pale eosinophilic cytoplasm and large mononuclear cells with ovoid or kidney-shaped nuclei displaying prominent nucleoli and vesicular chromatin, which exhibited little pleomorphism. The cytoplasm often contained hemosiderin granules

Results: The tumor infiltrated the adjacent soft tissue and had no sarcomatous components. The tumor cells were positive for CD68 on immunohistochemical staining . The stroma showed a variable degree of fibrosis. The tumor was described as an entirely extra-articular lesion. The final pathological diagnosis was an extra-articular TGCT, diffuse type.

Conclusion: We report for the first time a case of extra-articular TGCT of diffuse type in the temporal area with brain parenchymal invasion.

Key words: Tenosynovial giant cell tumor, diffuse type in the temporal area

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