Neuroendocrine Tumor Update: Imaging with ⁶⁸Ga-DOTATATE PET and Treatment with ¹⁷⁷Lu-DOTATATE Peptide Receptor Radionuclide Therapy

Michael Clark, MD and Tuba Kendi, MD
Mayo Clinic, Rochester, MN, US

Introduction
Neuroendocrine tumors are a rare group of tumors that are known to express somatostatin receptor 2 (SSR2). These tumors are often hormonally active with clinical symptoms related to the hormone produced. More common examples include carcinoid, often occurring in the small bowel and lungs; and insulinomas, VIPomas and gastrinomas most frequently occurring in the pancreas. While conventional imaging modalities like CT and MRI can detect many of these lesions, they often miss small lesions, especially when the diagnosis is not suspected, and often underestimate disease burden as these tumors are commonly multifocal or metastatic upon presentation. ⁶⁸Ga-DOTATATE is one of several relatively novel somatostin-analogue radiopharmaceuticals which bind with high affinity and specificity to SSR2. Somatostatin receptor PET therefore allows visualization and localization of neuroendocrine tumors with a sensitivity of 90% and specificity of 92–98%. At our institution ⁶⁸Ga-DOTATATE PET has replaced the more well-known ¹¹¹In-Octreotide scintigraphy exam, which has been rendered obsolete.

Description
⁶⁸Ga-DOTATATE PET provides a map for active disease sites and overall tumor burden which can subsequently be targeted by the fairly novel therapeutic analogue ¹⁷⁷Lu-DOTATATE. ¹⁷⁷Lutetium (Lu) is a beta-emitting therapeutic radionuclide that can be chemically tagged to DOTATATE, which serves to localize ¹⁷⁷Lu to the same SSR2 receptors. Unlike chemotherapy which is distributed throughout the entire body and radiotherapy which causes cellular damage to all tissues in the radiotherapy treatment field, ¹⁷⁷Lu-DOTATATE delivers its therapeutic radiation dose directly to the tumor, wherever it is located, while minimizing radiation to healthy normal tissues.

The Figure shows a typical ⁶⁸Ga-DOTATATE PET case of well-differentiated pancreatic neuroendocrine tumor metastatic to the liver and regional lymph nodes in this patient who is status post distal pancreatectomy for resection of the primary pancreatic lesion (A). Follow-up ⁶⁸Ga-DOTATATE PET after therapy with ¹⁷⁷Lu-DOTATATE shows significant response to therapy, albeit with sites of residual disease in the liver and regional nodes. The full disease burden is perhaps better demonstrated by maximum intensity projection (MIP) images before (C) and after (D) therapy. Such a response is common; the randomized-controlled NETTER-1 trial demonstrated a significantly improved progression-free survival and treatment response rate with ¹⁷⁷Lu-DOTATATE as compared to standard octreotide therapy.

Conclusions
It is important for clinicians, especially oncologists, surgical oncologists and gastroenterologists to be familiar with ⁶⁸Ga-DOTATATE PET and ¹⁷⁷Lu-DOTATATE therapy as the combination is an effective emerging diagnostic and therapeutic option for the treatment of neuroendocrine tumors. This educational exhibit reviews the typical PET findings of various neuroendocrine tumors with conventional imaging correlation, PET interpretation pearls and pitfalls and an introduction to ¹⁷⁷Lu-DOTATATE therapy.
Rare multifocal extramedullary presentation of acute leukemia in a young healthy adult without bone marrow involvement; case report of myeloid sarcoma

Jamie Crist, MD¹, P. Andrew Allred, PA-C², Mrinal Patnaik, MD², Kebede Begna, MD², Matthew Frick, MD¹ and Katrina Glazebrook, MD¹

¹ Department of Radiology, Mayo Clinic, Rochester, Minnesota, US
² Department of Hematology, Mayo Clinic, Rochester, Minnesota, US

Introduction
A 23-year-old female presented with a four-month history of a right leg nodule with ulceration and subsequent development of a right inguinal mass. She noted right leg paresthesias, otherwise denied constitutional symptoms. She was initially treated with antibiotics for presumed infection. Due to lack of improvement on antibiotics, a biopsy was performed showing morphological and immunohistochemical features of a myeloid sarcoma (CD13+, CD33+, CD117+, WT1+ and CD99+). FISH studies on the specimen were positive for trisomy 8. Blood counts and bone marrow biopsy were normal. Diagnostic imaging including FDG PET and MRI of the right lower extremity was then obtained.

Description
Myeloid sarcoma, also known as granulocytic sarcoma or chloroma, is a rare extramedullary manifestation of acute myeloid leukemia (AML), most commonly found in conjunction with bone marrow involvement. It can also occur as solely an extramedullary disease, as in this case, and when present most commonly involves the skin. Tissue sampling with immunohistochemistry and immunophenotyping is necessary for diagnosis. Current treatment is with systemic AML-like induction chemotherapy, with a role for radiation and allogenic stem cell transplant to achieve long term disease control. Prognosis in isolated myeloid sarcoma is thought to be better than those patients with concurrent AML.

Results
FDG PET demonstrates FDG avid disease above and below the diaphragm including soft tissue, skeletal, and lung involvement. MRI demonstrates multiple large masses in the right lower extremity, including an exophytic right lower leg mass presumably arising from the skin (Figure 1c). MRI signal findings are non-specific; the peripheral enhancement pattern suggests central necrosis, and no macroscopic fat was noted. Differential would include dermatofibroma protuberans, squamous cell carcinoma, melanoma, or other sarcoma. The peripheral pattern of contrast enhancement with surrounding edema can also mimic an abscess, though the additional imaging findings in this case point towards malignancy.

Conclusions
Standard imaging algorithm for myeloid sarcoma has not been established and imaging findings are non-specific. Suspicion should be high in those patients with known hematologic disorders. FDG PET can help demonstrate scope of disease, as in this case when unknown osseous, soft tissue, and lung metastases were identified. FDG PET also helps in ascertaining optimal disease response. MRI can assess for local complications, including infectious sequelae, extension into the bone, and to assess for neurovascular compromise. In conclusion, FDG PET and MRI scans serve as useful adjunct diagnostic modalities in the management of patients with myeloid sarcomas.
Automated Diagnosis of Pulmonary Fibrosis Using Deep Learning and CT Images

Andreas Christe and Lukas Ebner
Department of Diagnostic, Interventional and Pediatric Radiology, Inselspital, Bern University Hospital, University of Bern, CH

Introduction
The purpose of this study was to assess the performance of a computer-aided diagnosis system (CAD) for the classification of usual interstitial pneumonia pattern (UIP) using high-resolution chest-CT images.

Description
105 cases of pulmonary fibrosis (54 nonspecific interstitial pneumonia (NSIP) and 51 UIP cases) with histologically and Interstitial Lung Disease (ILD) board proven diagnoses were retrospectively selected from our local database. Two subspecialized chest radiologists set the ground truth, according to the Fleischner society recommendations (FS), through consensus: 1) typical, 2) probable UIP pattern, 3) CT pattern indeterminate for UIP and 4) non-IPF diagnosis (idiopathic pulmonary fibrosis). Two different radiologists and our ILD-CAD then classified the cases into the 4 categories again. The in house ILD-CAD was trained to localize and quantify CT patterns of fibrosis (honeycombing, reticulation, ground-glass-opacity) using deep learning and was programmed to classify the patients according to the FS recommendations (4 categories).

Results
Reader 1, Reader 2 and CAD achieved the same accuracy for classifying pulmonary fibrosis into the original 4 categories: 0.6, 0.54 and 0.56, respectively, with p-values >0.45. The CAD system achieved an F-score (harmonic mean for precision and recall) of 0.56, while the two readers, on average, achieved 0.57 (p-value = 0.991). For the pooled classification (2 groups, with and without the need for biopsy), Reader 1, Reader 2 and CAD had similar accuracies of 0.81, 0.70 and 0.81, respectively. The F-score was again similar between the CAD system and the radiologists. The CAD system and the average reader reached F-scores of 0.80 and 0.79 (p-value = 0.898).

Take Home Message/Conclusions
CAD classified pulmonary fibrosis with the same accuracy as radiologists using the 4 UIP patterns of the latest Fleischner Society recommendations. The implementation of a CAD could be beneficial, as dedicated chest radiologists and interstitial pulmonary fibrosis are scarce. It is difficult to build the required expertise in this field.
PLAVAC – Retrospective study on the evaluation of a “Platzbauch” (acute fasical dehiscence) and V.A.C. Therapy

Nora Burkert
Technische Universität Klinikum Rechts der Isar, Chirurgie, Munich, DE

Background
Acute fascial dehiscence (FD) is a feared complication after laparotomy. The incidence of FD is about 3.5%, 14–67% of Patients (Pat) with FD died. Known causes for FD include: wound infection, premature mobilization, increased intraabdominal pressure. However, all studies in this field are outdated. Also, we do not know the context between Vakuum Assisted Closure (VAC)-Therapy and FD.

Aim
We aim to update the database about FD and to investigate a possible therapeutic effect of VAC Therapy on FD.

Methodology
We analyzed all patients who were diagnosed with FD within the first 30 days after a laparotomy between July 2007 and August 2016, retrospectively. We analyzed 180 patients with a FD. We excluded 67 patients with a laparotomy previously within one year.

Results
113 patients (73.5% male) occurred a FD on the 10th [2;30] day after laparotomy. The main reason for FD was a wound infection (38.9%) or a high intraabdominal pressure because of an intestinal paralysis, ileus or ascites (20.3%). A lot of Pat with a FD were operated in the primary operation with an emergency indication (38.9%). They got mostly a median laparotomy (77.9%) and were closed by continuous fascia suturing (61.1%). The Pat stayed extended 33 [9;120] days at hospital. 18 patients (15.9%) died during hospitalization. 20 patients (17.7%) had a second FD. We saw that Pat with a VAC-Therapy after first FD had a significant higher risk to get a second FD (p = 0.041).

Summary
FD is serious complication and we show that VAC-Therapy has a negative influence to get a second FD, but it is to discuss whether the VAC-Therapy is the problem or the associated wound infections. It has to be investigated in future prospective studies.

Broadening the spectrum of clinical assessment from visual to infrared: exploring the role of thermal mapping as a ‘prodromal’ biomarker of illness and disease

Professor Charmaine Childs
Faculty of Health and Wellbeing, Sheffield Hallam University, Sheffield, UK

In clinical medicine, it is customary practice to assess patients in the visible spectrum; in other words, we look at patients carefully to make a decision about the appearance of the external features and characteristics of the body before going on to explore further for signs and symptoms of disease. What we see is often determined by experience as well as subjective opinion. However, in recent years, advances in diagnostic imaging systems have allowed us to produce high quality images of the living body, specifically abnormalities of internal structures and viscera. Real improvements in outcome are due to screening and early diagnosis consequent upon the delivery of ionising radiation (IR) as employed by x-rays, mammography, CT scans. The benefits however must be justified and balanced against potential future risk, especially the need for repeat imaging in children. Alternative imaging solutions, provided by magnetic resonance imaging (MRI) and ultrasound imaging (sonography) is that ionising radiation is not required to produce images but costs are high in terms of equipment and staff time.

Long wave infrared thermography (LWIR) is another imaging technology which is non-ionising, non-contact,
rapid and relatively inexpensive. It also provides an objective assessment alternative, but has not been used in routine healthcare. In the past, image resolution was sub-optimal but today infrared technology systems provide high-resolution images with analysis tools to detect underlying pathology providing standardised procedures for thermographic imaging and evaluation meet criteria for accuracy (validity) and precision (reliability). LWIR does not supply energy to the body; rather it is ‘passive’. Thermography detects radiant energy emitted from the surface (skin) to produce a temperature (heat) map.

Human skin provides a rich source of diagnostic information by body heat ‘mapping’ to aid diagnosis of a variety of conditions and diseases. For example, pathological processes of neoplasia, inflammation and infection changes blood vessel reactivity to disturb the ‘normal’ distribution of blood flow to skin. The resolved temperature or ‘heat map’ allows us to see more; to see in infrared; a spectrum of light energy invisible to the human eye. In this lecture, the underpinning science of thermography, methodology and clinical research applications will be explored in two discrete populations where thermal signatures reveal signs of pathological processes not visible by eye to provide a) prodromal stages of thermal discomfort in frail and older-old people with and without dementia and b) the ‘prodromal’ stage and signature of surgical site infection in incisional wounds.

Appendiceal mucinous adenocarcinoma with concurrent tuberculous appendix: An unusual overlap of two rare diseases

Manuel T. Roxas, MD FPCS FPSCRS, Vlu Jean Zara, MD and Khei Jazzle M. Lim, MD MBA
The Medical City, PH

Introduction
Primary tumors of the appendix are rare and present with symptoms of acute appendicitis or a palpable right lower quadrant mass. The appendix is also an uncommon site of granulomatous tuberculosis infection for gastrointestinal extra pulmonary disease. This case report highlights an unusual overlap of the two diseases and a brief review of literature.

Description
Case Presentation: A 52-year-old woman presented with right lower quadrant pain and a palpable mass, and was surgically managed with right hemicolec- tomy, right en bloc salpingo-oophorectomy, and total omentectomy. Medical treatment with standard quadruple antimycobacterial regimen was also initiated. Histopathologic report showed appendiceal mucinous adenocarcinoma with concurrent tuberculous appendix.

Results
After surgery, the patient continued antimycobacterial medication and no chemotherapy was given. At present, the patient has no recurrence for 10 months.

Conclusions
To the best of our knowledge, surgical tumor resection followed by antimycobacterial regimens is the preferred management for this case, an overlap of two rare diseases in the appendix. Moreover, it is unknown if either pathology contributed to the pathogenesis of the other. This controversy currently remains unsolved and it is possible that the overlap between the two pathologies was coincidental. The question of causality remains to be answered. Furthermore, the rarity of the disease and overlap makes this highly difficult to study. More research into the pathogenesis and interplay between each pathology is needed.

Diffuse aneurysms in a patient affected by Marfan syndrome treated with FK506 after heart transplantation

Matteo Azzu1,2 and David H. Liang2
1 San Raffaele University, Milan, IT
2 Stanford Hospital, Stanford, US

Introduction
We present the case of a 46-year-old woman with a history of heart transplant and Marfan syndrome with documented FBN1 mutation who developed accelerated diffuse arterial aneurysms following transplantation. Immunosuppression included tacrolimus, mycophenolate and corticosteroids. Imaging after the transplantation showed diffuse aneurysms in splenic, common hepatic, renal, common iliac and subclavian arteries. The mecha-
nism of arteriopathy in the Marfan syndrome is thought to relate to TGF-beta signaling dysregulation. The impact of calcineurin antagonists on TGF-beta signaling may be the mechanism for the accelerated aneurysm formation.

**Case Description**

The patient came to our attention in 2014 at the age of 42 presenting with a history of an anterior myocardial infarction for which she had heart failure with low output syndrome. She underwent orthotopic heart transplantation due to refractory heart failure. Pre-transplant evaluation confirmed the diagnosis of Marfan syndrome. She was positive for FBN1 mutation and had positive family history for coronary artery disease. Preoperative imaging confirmed the absence vascular abnormality except for a small focal splenic artery aneurysm. Surveillance imaging 3 months after transplantation showed rapid development of new aneurysms. New aneurysms involving the common hepatic artery, renal artery, right subclavian and a second splenic artery developed.

The aneurysms have stabilized with reduction in immunosuppressive regimen. At last imaging on May 2018, the subclavian measured $15 \times 13 \times 22$ mm, the splenic $11 \times 10$ mm, the renal artery $12 \times 12$ mm, the common hepatic artery $18 \times 19$ mm and the common iliac artery $13 \times 12$ mm. The vascular anomalies are at the moment not life-threatening but need close follow-up with the next MRI planned for May 2019.

**Take Home Messages/Conclusions**

The cause of rapid aneurysm formation in our transplanted patient with Marfan is uncertain. Evidence suggests that increased TGF-$\beta$ signaling contributes to the pathogenesis of Marfan syndrome. Tacrolimus has been shown to upregulate TGF-$\beta$ signaling. This effect of the should be investigated and taken into consideration in the management of patients with Marfan syndrome following transplantation.

---

**Pancreatic tail tumour causing colonic obstruction: a case report**

Mohammad Hasan$^1$, Joshua Agilinko$^1$, Resham Mansoor$^2$, Mohamed Bekheit$^1$ and Muhammad Habib$^1$

$^1$ Department of General Surgery, Aberdeen Royal Infirmary, Aberdeen, UK

$^2$ Department of Diabetes & Endocrinology, Aberdeen Royal Infirmary, Aberdeen, UK

**Introduction**

Pancreatic adenocarcinoma is an aggressive form of cancer with a five-year survival rate of 3%.

Due to its late diagnosis, only 8% of people with pancreatic cancer have potentially curative surgery.$^1$

This is because of the location of the pancreas and the vague presentation of cancer in the early stage. The literature describes the presentation of pancreatic tail tumors when they have reached a considerable size.

In the majority of cases, this is prior to the patient being symptomatic.

Effective therapeutic options are limited and surgery with a curative intent is the most effective treatment despite the limited long-term survival.

**Description**

A previously fit and well 73-year-old man presented with a 2-week history of constipation, abdominal distension and vomiting.

CT abdomen and pelvis with contrast showed large bowel obstruction with a transition point at the splenic flexure and adjacent focal changes in the pancreatic tail. Laparotomy revealed locally invasive tumor of the tail of pancreas involving left colon, left renal hilum, greater curvature of the stomach and duodeno-jejunal junction. He underwent a distal pancreatectomy with splenectomy, left hemicolectomy, left nephrectomy, partial gastrectomy and wedge resection of duodenojejunal flexure. He was

---

**Figure 1:** Vascular anomalies before (top) and after (bottom) heart transplantation. Left images show aneurysms in common hepatic and splenic arteries, right images show formation of a dissection and aneurysms in the right subclavian artery.
Shahzad and Cohrs: Selected Congress Abstracts

28

commenced on Gemcitabine and Capecitabine adjuvant chemotherapy.

Results
Histology showed pancreatic ductal adenocarcinoma pT4 pN1 with clear resection margins but proven micro- and macrovascular invasion. No recurrence was seen at three months but at eight months; recurrence in para-aortic space was detected. Patient remained asymptomatic for 14 months following surgery.

Conclusions
Colonic obstruction can be the only presentation of a pancreatic tail tumour. With a negative margin obtained, the patient had over a year of survival with good quality of life. Aggressive surgery can achieve reasonable outcome in selected cases.

Figure 1.

Broncho-pleuro-cutaneous fistula secondary to fine needle aspiration biopsy of mucoepidermoid carcinoma of the right lung, resulting to pneumomastia of the right breast

Maria Christina Tabitha P. Balaccua, MD

Introduction
Pneumomastia is a rare cause of breast enlargement with only three other published cases from 1985 to 2013. The previous causes include interventional procedures on the breast and repeat thoracotomy. Currently conservative management with O₂ support could still be successful in treating pneumomastias despite the presence of bronchopleural fistula. Mucoepidermoid carcinomas are very rare lung tumors accounting for 0.1 to 0.2 percent of all lung tumors with a slight predilection for men and mostly occurs at the third of fourth decade of life.

Description
The author presents a case of a 37 year old female with biopsy proven mucoepidermoid carcinoma of the right lung, who developed gradual enlargement of the right breast after fine needle aspiration biopsy of the right lung mass.

Results
Contrast enhanced chest CT scan demonstrated a minimally enhancing round mass with calcifications measuring 5.2 × 5.7 × 5.3 cm (AP × T × CC) occupying a cavitary lesion in the anterior segment of the right upper lobe intimately related to and disrupting the anterior chest wall. A fistulous tract is detected from the aforementioned cavity traversing the anterior chest wall to the subcutaneous layer forming a large focal air collection in the right breast with a volume of 122 cm³.

Take home message/Conclusion
Lung biopsies that would traverse the breast tissue may create a broncho-pleuro-cutaneous fistula and leak air into the breast parenchyma causing pneumomastia, hence patients should be informed of this possible complication. Careful clinical examination and imaging is recommended before doing any interventions on an enlarging breast, because needle centesis or drainage attempts could lead to pneumothorax in patients with broncho-pleuro-cutaneous fistulas.

The Clinicopathological Characteristics of Kimura Disease in Chinese Patients

Xuehan Zhang MD¹ and Yang Jiao MD MPH²
1 Department of Health Care
2 Department of General Internal Medicine, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College, Beijing, CN
Introduction
Kimura disease (KD) is a rare idiopathic inflammatory disorder of unknown etiology, usually seen in young adult Asian males. KD is characterized by subcutaneous mass lesions occurring predominantly in the head and neck region, frequently with regional lymphadenopathy or salivary gland involvement. However, as more cases have been reported, it is becoming clear that KD may present with many different clinical manifestations, especially visceral involvement. Unusual presentations of KD might cause diagnostic difficulty or be misdiagnosed as malignancy if clinical suspicion is insufficiently high. Here we aimed to determine the clinicopathological features of Chinese KD patients to reveal further insights into the natural history and treatment of this disease.

Method
The clinical and laboratory data of 46 cases of KD diagnosed at Peking Union Medical College Hospital from January 1980 to June 2017 were analyzed retrospectively through case record review.

Results
Of 46 cases, 40 were male and six were female (sex ratio 6.7:1). The age at onset ranged from 2 to 56 years (median 27 years). All patients presented with either single (26.1%) or multi-focal (73.9%) subcutaneous masses. Twenty-seven (58.7%) cases presented with head and neck subcutaneous masses, and 11 cases (23.9%) involved different parts of the body. Parotid, submandibular, and lacrimal gland involvement occurred in 17 (37.0%), 3 (6.5%), and 2 cases (4.3%), respectively. Forty-four cases (44/45, 97.8%) had typical peripheral eosinophilia and 18 cases (18/19, 94.7%) had increased serum immunoglobulin E titers. Liver and kidney function tests, as well as erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) tested were within the reference ranges. Nephrotic syndrome was present in three cases (6.5%), and thromboembolism was present in five cases (10.9%). During follow-up, thirteen patients (13/28, 46.4%) relapsed over 1–13 years (median 8.5 years). The recurrence rate in patients receiving corticosteroids, surgery, and combined surgery and radiotherapy was 30.8%, 66.7%, and 50.0%, respectively; these rates were not significantly different ($\chi^2 = 2.794$, $p = 0.247$). All three patients with recurrences in the surgery combined with radiotherapy group relapsed at other sites. All four patients in the corticosteroid group relapsed after the drug had been withdrawn. One patient was diagnosed with T-cell lymphoma one year after diagnosis.

Conclusions
KD is characterized by subcutaneous masses occurring predominantly in the head and neck region, but it is also a systemic disease. Given the high rate of recurrence and potential to transform into malignant disease, patients require careful long-term follow-up.

Paediatric extraspinal Myxopapillary Ependymoma: A literature review
Vikesh Patel
Lister Hospital, Stevenage, UK

Introduction
Paediatric myxopapillary extraspinal Ependymomas are extremely rare and have been reported in only 22 children under the age of 18 over the last 50 years. Typically found intracranially in the posterior fossa in children, the pathogenesis of how Ependymomas can arise outside of the neuraxis on very rare occasions, usually in a sacrococcygeal location, is poorly understood. One theory is that these tumors arise from ectopic ependymal remnants.
in the natal cleft, although what causes ependymal cells
to be located extraspinally is unclear. We report on our
experience of managing the 23rd confirmed case of this
extremely rare tumour.

Description
A nine-year old male presented to general surgical clinic
with a three-year history of persistent swelling in the
natal cleft which had been previously treated as pilonidal
disease in the community. In clinic, a 50 × 30 mm soft
tissue swelling was found in the natal cleft and a clinical
diagnosis of a pilonidal cyst was made. The patient pro-
ceeded directly to surgery where a cream coloured, solid,
haemorrhagic mass measuring 50 × 35 × 30 mm was
subsequently excised en bloc under general anaesthetic.
Specialist post-resectional histology and immunostaining
confirmed an unexpected diagnosis of a subcutaneous
extraspinal myxopapillary Ependymoma (Figure 1).

Results
The patient proceeded to have an MRI of the neuraxis
which was reported as normal, confirming that the tumor
extended to the resected margins and hence a second
operation was undertaken to include wide local excision of
the previous operative scar. The parents declined adjuvant
radiotherapy due to concerns about it’s longer term side
effects. The child recovered well post-operatively without
neurological deficit and further histological examination
failed to reveal any residual disease. He remains under
close follow up with quarterly neuraxial MRI scans, and is
disease-free at one-year post resection.

Conclusions
This case describes an unexpected diagnosis of
myxopapillary Ependymoma located completely outside
of the brain or spinal column, discovered after treatment
for suspected pilonidal disease. The patient was man-
aged effectively with surgery alone without the need for
adjuvant radiotherapy as described elsewhere in the liter-
ature, with good results at one year post-operation. The
case demonstrates that standalone surgical management
of this tumor is possible in specific cases without neuro-
logic deficits or residual microscopic disease and aims to
contribute to the few existing reports in the literature
describing this rare tumor.

Figure 1.

How to cite this article: Shahzad, A and Cohrs, RJ. 2019. Selected Congress Abstracts: 2019-European Clinical Congress (ECC-
doi.org/10.5334/ejmcm.263

Accepted: 11 November 2019 Published: 27 November 2019

Copyright: © 2019 The Author(s). This is an open-access article distributed under the terms of the Creative Commons
Attribution 4.0 International License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium,
provided the original author and source are credited. See http://creativecommons.org/licenses/by/4.0/.

European Journal of Molecular & Clinical Medicine, is a peer-reviewed open access journal
published by Ubiquity Press on behalf of The European Society for Translational Medicine.