

## Discharge Summary

Date of Admission: 06/11/2007

Date of Discharge: 06/23/2007

Reason for Admission: Seizure

History of Present Illness: This is a 59-year-old white male, who presented to the Emergency Room with a seizure and eventually he was found to have a brain tumor.

Hospital Course: Neurosurgeon was consulted and evacuated and resected the brain tumor, which is at right frontoparietal lobe, and he did reasonably well after this surgery, and the cancer was found to be squamous cell carcinoma. Do not know for sure the primary. However, he did have another sinus mass, which probably is where the primary was about. He has history of COPD, long time smoking, and so could be metastasized lung cancer. There is small noncalcified nodular density on the left lung. CT of abdomen did not show any abnormal lesions. The neurologist put him on Dilantin for seizure. He has no recurrent seizure. Oncologist is also seeing him. Initially, GI was consulted. This is clearly not a case of infection. So, he will certainly need a chemotherapy and radiation therapy. Since his family is in Iowa, he is going to go to Iowa for continuation of the treatment and the radiation therapy.

### Final Diagnoses:

1. Brain cancer with squamous cell carcinoma
2. Sinus mass
3. COPD
4. Seizure, secondary to brain cancer

Discharge Instructions: The patient is going to be discharged to home

### Discharge Medications: Includes:

1. Vicodin one to two p.o. q. 4 to 6 hours p.r.n.
2. Pepcid 20 mg p.o. b.i.d.
3. Dilantin 300 mg p.o. q. h.s.
4. Decadron 4 mg p.o. q. 6 hours

He is going to follow up with Radiology and oncologist in Iowa. Social worker is setting up everything and faxed over all of the documentation during this admission.

Signed: Family Practice Doctor

History & Physical  
06/11/2007

Reason for Admission: Seizure

History of Present Illness: Patient is a 59-year-old gentleman who evidently presented to the Emergency Department last night after having had a seizure. This was evidently observed and he had been observed to fall over a porch in the midst of his seizure activity. There is no prior history of any seizure disorder. He does state that he has been having headaches that have been going on for several weeks and that he has been having fevers at home. He states he has been having fevers since January or February; however I am unsure if this is correct, as the patient seems to be a little bit confused and his responses do not seem quite right. He is however oriented to person, place and time. In the Emergency Department last night a CT scan of the head was done, which shows a partially necrotic right frontal mass that extends across the corpus callosum. Neoplasm and abscess are certainly in the differential, however radiology feels this is worrisome for a glioblastoma. He has a temperature of 100.2 and an elevated white blood count of 19,000.

Past Medical History:

1. Chronic obstructive pulmonary disease
2. Peripheral vascular disease
3. High-grade stenosis of the right external iliac artery
4. Chronic tobacco use

Past Surgical History: Fem/fem cross over bypass surgery in 2004

Social History: The patient has a greater than 50 pack year of tobacco use and smoked one pack of cigarettes per day. He does not use alcohol.

Family History: He states his father died age 90 of uncertain causes. He is unable to answer when and how his mother died. The patient's level of consciousness fades in and out and he was unable to answer those questions for me.

Allergies: No known drug allergies

Medications: Aspirin 81 mg p.o. q. day

Review of Systems: Essentially unobtainable at this time

Physical Examination:

Vital Signs: T: 100.2. P: 90. R: 19. BP: 153/78. Oxygen saturation 96% on room air.

General: The patient is awake, alert to person, place and time. His answers to other questions do not seem quite appropriate. He knows he is at this hospital. He knows the date however his other answers are very vague.

HEENT: Pupils equally round and reactive to light. Cranial nerves II through XII are intact. Oropharynx is clear.

Neck: Supple

Lungs: Clear to auscultation bilaterally

Heart: Regular rate and rhythm without appreciated murmurs

Abdomen: Soft, nontender, nondistended

Extremities: No clubbing, cyanosis or edema

Neurologic: Motor strength is 5/5 and equal bilaterally. Deep tendon reflexes are intact and equal bilaterally. Gait is not assessed at this time.

Assessment:

1. New onset seizure
2. Right frontal mass suspicious for a glioblastoma, however other etiologies such as abscess cannot be excluded at this time.

Plan: The patient was started on Rocephin in the Emergency Department. I have spoken with Infectious Disease Doctor and we will change his regimen at this time to Rocephin 2 grams IV q. 12, Flagyl 500 mg IV q. 8 and vancomycin 15 mg per kilogram IV q. 12 hours. Neurology has been consulted and the patient has been started on Cerebyx. He has had no further seizure activity since being observed in the ICU. Neurosurgery has been consulted and MRI of the brain is pending. He is certainly going to need a biopsy of this mass. Will continue to monitor the patient in the Intensive Care Unit.

Signed: Family Practice Doctor

Radiology Report  
06/11/2007

CT Brain without Contrast

Reason for Exam: ER 5, Seizure

Clinical indication: Seizure

There is a focal area of diminished attenuation value with mass effect in the right frontal lobe which extends to and crosses the corpus callosum. The appearance would suggest that there are areas of central necrosis. The appearance is worrisome for glioblastoma. Metastatic disease or abscess would enter the differential but would seem less likely. Followup MRI is suggested. There is no area of acute hemorrhage seen. No extracerebral fluid collection.

Partially necrotic right frontal mass which crosses the corpus callosum, glioblastoma needs to be excluded. Followup MRI with and without contrast is suggested.

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Radiology Report  
06/11/2007

Portable Chest

Clinical Indication: Seizure

AP view of the chest 2255 hours is compared to the exam 5-28-2007. Heart size is stable. Lungs are clear. Granuloma left lung apex.

Clear lungs. No evidence of acute pulmonary process.

Neurology Consultation  
06/12/2007

This 59-year-old male patient is admitted after he was observed to have a generalized tonic clonic seizure. He, apparently, fell over a porch in the midst of his seizure activity. The patient has no prior history of seizure disorder, apparently. He does state that he has been having frequent headaches. These have been going on for several weeks, apparently. He was not feeling that well yesterday and was in and out of bed. He states that he has had some fever recently and this is documented with a temperature of 100.2. Upon arrival, the patient was loaded with Cerebyx. A CT scan of the head was performed, which demonstrates a mass lesion in the right frontal lobe with extension into the corpus callosum. This is associated with marked edema throughout the right frontal lobe. There is enhancement of what appears to be a multilobular or multicystic mass lesion. The patient is unaware of any diagnosis of brain tumor in the past. There is some history of possible tick exposure. He has been started on Rocephin and doxycycline, in addition to the Cerebyx.

Home Medications: Aspirin, 1 b.i.d.

Past Medical History: Remarkable for peripheral vascular disease and chronic obstructive pulmonary disease. He has also coronary artery disease and has had previous cardiac stent. He has had a fem-fem crossover bypass. He has had right knee surgery.

Social History: The patient smokes about one pack of cigarettes per day. He denies the use of alcohol significantly. He is not married. He is retired.

Family History: Noncontributory

Allergies: No known allergies

Review of Systems: Positive for headache, as noted above. He states that he has had difficulty with his vision. He has had problems with short-term memory. He has had some fever, as noted above. He denies any chest pain at this time. He does have shortness of breath at times. There is no nausea or vomiting. He does not have any abdominal pain. He denies any focal weakness or numbness in the extremities.

Physical Examination: The patient is alert.

Vital Signs: BP: 156/84. T: 100.3. The patient is oriented to place. He gives the date as June 20, 2006. He has some impairment of short-term memory. His speech is fluent.

HEENT: Pupils are 3 mm and reactive. Optic discs are sharp. Cranial nerves are intact. There is no carotid bruit.

Heart: Regular rate and rhythm without murmur. Motor examination reveals no pronator drift of the upper extremities. Strength is 5/5. Deep tendon reflexes are 2/4 on the right and 2+/4 on the left. There is a positive Babinski sign on the left. Sensory examination is intact to light touch and pinprick. There is no finger-nose-finger or heel to shin ataxia. Gait is not examined at this time.

Laboratory Data: Elevation of blood glucose to 187 and white blood cell count of 19,000. Drug screen is negative.

Impression: New onset seizure with large multilobular or multicystic enhancing lesion in the right frontal lobe and corpus callosum. I suspect that this is a malignant primary brain tumor, although the possibility of abscess could also be considered in view of the patient's leukocytosis and fever.

Recommendations Continue with Cerebyx and begin maintenance dosage of 100 mg IV q8h. Check a Dilantin level in the morning. MRI is pending. We will also order an EEG. Neurosurgical consultation is also pending at this time. I would suggest infectious disease also be consulted.

Thank you for allowing me to participate in the care of this patient.

Signed: Neurology Doctor

Neurosurgery Consultation  
06/12/2007

Chief Complaint: Brain lesion

History of Present Illness: Patient is a 59-year-old white male who reportedly experienced a new onset of seizure activity yesterday. He was transported to the Emergency Room. He has been admitted to the Intensive Care Unit and neurosurgery consultation has been placed. CT examination of the head demonstrates a prominent right frontal lesion which appears to have a polycystic component. There is significant mass effect associated with this and also seems to approach the expected region of the corpus callosum. When I arrived to see the patient he was just being transported off the unit to have a MRI examination of the brain. He has been seen by the neurology service and the infectious disease service. He has been started on broad spectrum antibiotic coverage in case this represented an infectious process. He has also been started on anticonvulsive medication. The patient is awake but quite lethargic. He is unable to provide a history at this time. I have reviewed some of his records. He has a history of chronic obstructive pulmonary disease and peripheral vascular disease. He was in the hospital in May for treatment of pneumonia. There is a notation that he also has coronary artery disease. He may have had the revascular procedure for the lower extremities. Review of his laboratory panel indicates an elevated white blood cell count at 19,000. Coagulation studies are pending.

Physical Examination:

The patient is awake but quite lethargic. He will open his eyes to voice and answer just a few simple questions. He is oriented to name. His pupils are 3 mm and equal. He has positive facial symmetry. He does not appear to have significant focal deficits or lateralizing weakness on his motor examination.

Impression: Prominent right frontal lesion with CT findings as noted. MRI examination of the brain is pending.

Recommendations:

1. Agree with continued observation in the Intensive Care Unit
2. We will place the patient on Decadron 10 mg IV now and to get 4 mg IV q6h
3. Continue with anticonvulsant regimen as noted

We will make further recommendations pending the further medical evaluation and also further radiographic evaluation.

Signed: Neurosurgeon Doctor

Radiology Report  
06/12/2007

MR Brain without and with Contrast

Reason for Exam: Brain mass with fever and seizures

Magnetic resonance imaging was performed through the brain in sagittal, axial and coronal imaging planes with images obtained prior to and following Omniscan intravenous contrast. Images demonstrate a large right frontal multiloculated mass identified as seen on prior CT examination. This mass measures 7 cm in AP diameter, 4 cm in width and 4.2 cm in height. This mass is comprised of a large number of multiloculated appearing components; all of which demonstrate rim enhancement. Central portions of this lesion are T2 increased, mildly T1 diminished and FLAIR isointense. There is very extensive surrounding edema and significant mass effect. This appears to displace the frontal falx to the left rather than cross the falx. No other focal lesion is identified. No other area of abnormal contrast is present.

Large right frontal lesion with significant mass effect and surrounding edema with an unusual multiloculated rim enhancing component. Differential diagnosis would include abscess and an unusual glioblastoma.

Operative Report  
06/15/2007

Preoperative Diagnosis: Right frontal brain lesion

Postoperative Diagnosis: Right frontal brain lesion

Procedure Performed: Right frontal craniotomy for resection of right frontal tumor using Stealth navigation system.

Anesthesia: General endotracheal

Clinical Summary: Patient has presented with new onset of seizure activity, headache and change in level of consciousness. His preoperative radiographic studies demonstrated a multicystic right frontal lesion with significant edema and a mass effect. The risks and possible complications of the procedure were carefully reviewed with the patient. These include anesthesia, bleeding, infection, failure to improve symptoms, recurrence of symptoms, failure to resect the lesion, recurrence of the lesion, hemiparesis, visual field deficit, loss of smell and taste, and death. He expresses understanding and wishes to proceed. He had preoperative medical clearance by the internal medicine service.

Description: The patient was taken to the operating room and was placed under general endotracheal anesthesia. He is already on intravenous antibiotics. The stealth navigation system was used to plan the craniotomy flap. The patient's right frontal scalp was shaved, prepped and draped in sterile fashion. The patient's head was secured to the operating table by the Mayfield head holder. The incision was infiltrated with 1% lidocaine with epinephrine, it was carried down through the periosteum and reflected. The temporalis fascia was incised and the temporalis was reflected inferiorly. Four bur holes were placed and after carefully stripping the dura, the craniotomy was completed without difficulty. This was a standard right frontal craniotomy. The dura was opened along the superior aspect of the exposure with a 15 blade knife. The dural opening was then continued with Metzenbaum scissors. The navigational system was used to plan the cortical incision. The bipolar cautery was used to coagulate the pial surface. The suction and bipolar cautery were used to remove the inferomedial portion of the right frontal lobe. Approximately 2 cm deep to the cortical incision, there was encountered a friable, somewhat firm mass. As this was opened, there was egress of a yellow mucoid material. Multiple specimens of this were taken for culture, according to the guidelines recommended by the infectious disease consultants. A STAT gram stain showed no organisms. The plane around this very irregular thick walled capsule was developed. It extended deep near to the region about the cribriform plate along the inferomedial exposure. We were able to continue to work a plane around the entire aspect of the lesion. On several occasions, we did open the capsule and let more of the necrotic material withdrawn, which allowed the tumor to collapse on itself. The large bulk of the tumor was removed in one specimen. It was all sent fresh so that the pathologist could process the material. In the initial assessment, he felt that there was inflammatory tissue present. Upon further investigation, he phoned the operating room and stated that he thought that the tissue most likely represented metastatic carcinoma. After

resection of the bulk of the lesion, the small peripheral attachments were coagulated with bipolar cautery. This left a prominent tumor cavity in the right frontal region. The wound was copiously irrigated. Hemostasis was achieved with bipolar cautery. The margin of brain was covered with fibrillary. The dura was then reapproximated using an interrupted suture of 4-0 Neurelan. The bone flap was replaced with the microplating system. The wound was copiously irrigated with antibiotic irrigation. The temporalis fascia was reapproximated using an interrupted suture of 0 Vicryl. The galea was reapproximated using an interrupted suture of 3-0 Vicryl. The skin edges were reapproximated using a running interlocking stitch of 3-0 nylon. Sterile dressing was applied. The patient was extubated in the operating room and delivered back to the recovery room with stable vital signs, still clearing the effects of general anesthesia. Sponge and needle counts were correct.

Estimated Blood Loss: 150 cc, none was replaced

The patient was awake and following commands at the completion of the case.

Signed: Neurosurgeon

Pathology Report  
06/15/2007

Clinical Information: Right frontal tumor, abscess vs brain tumor

Specimen:

1. Right frontal lobe lesion
2. Right frontal brain lesion

Intraoperative Consult:

Frozen Section and squash prep: 1FS) Favor an inflammatory process, no clear cut tumor seen.  
Frozen Section: 2FS) Metastatic carcinoma, favor squamous possibly from lung.

Gross Description:

Specimen #1 consists of five gray-white to yellow-tan fragments of soft tissue measuring 0.6 up to 1 cm in greatest dimension. The specimen is submitted for frozen sectioning and is then placed in Cassette 1FS for permanent sections.

Specimen #2 consists of two gray-white to yellow-tan fragments of soft tissue measuring 4.5 x 3 x 1.7 and 5.5 x 5 x 1 cm. Sectioning through the tissue reveals a pinkish-tan firm area measuring 2.5 cm in greatest dimension. A section of this area is submitted for frozen sectioning and is then placed in Cassette 2FS for permanent sections. Additional representative sections are submitted in Cassettes 2A and 2B. A section through the soft tan tissue is submitted in Cassette 2C.

Final Diagnosis:

1. Right frontal lobe lesion: Brain tissue with acute and chronic inflammation; no neoplasia is identified.
2. Right frontal brain lesion: Metastatic squamous cell carcinoma, moderately differentiated, see comment.

Comment: 2) Lung and aerodigestive system are the most likely origins for the tumor. Another pathologist has reviewed this case and concurs in the above interpretation.

Radiology Report  
06/16/2007

CT Scan of the Head

Clinical Indication: Post op brain mass

Multiple helical images are obtained from the skull base to the vertex without the administration of contrast, compared to the exam 6-11-07. Post op defect in the right frontal lobe is evident with pneumocephalus evident. Subcutaneous gas noted in the right scalp status post craniotomy. There is no evident hemorrhage or other complicating feature. There is a small amount of fluid density in the right frontal region. Low density in the right frontoparietal lobe is characteristic of gliosis and/or edema. Residual tumor is not excluded. Small amount of mass effect persists.

Post operative change with no complicating features.

Radiology Report  
06/17/2007

CT Chest, Abdomen and Pelvis with Contrast

Clinical Indication: Brain tumor

Technique: Axial images of the chest, abdomen and pelvis are obtained following administration of 125 cc of Omnipaque 300 contrast material IV.

Findings: No prior examinations are available for comparison

Chest: The visualized thyroid appears unremarkable. There is no significant axillary, hilar or mediastinal adenopathy. The heart size is normal. There is no pericardial or pleural effusion. There are emphysematous changes most marked in the upper lungs bilaterally. Densely calcified left lung granuloma is noted. Adjacent to this, there is a 3 mm noncalcified soft tissue nodule, image 25. There is basilar atelectasis or scarring.

Abdomen: The liver is normal in size without focal lesion. The spleen is normal in size. Gallbladder is present. Pancreas appears unremarkable. No adrenal mass. The kidneys appear unremarkable and excrete contrast symmetrically. No significant retroperitoneal, iliac or inguinal adenopathy is seen. There is an infrarenal abdominal aortic aneurysm with mural thrombus. This measures a maximum AP diameter of 3.4 and a maximum transverse diameter of 3.5. There is a right common iliac artery stent in place. No contrast enhancement is noted in the left common and external iliac artery. There appears to be a femoral artery to femoral artery bypass graft in place. No free fluid. The bladder is fairly distended. Prostatic calcifications are present.

Infrarenal abdominal aortic aneurysm, maximum AP diameter of 3.4 cm.

COPD. Antecedent granulomatous disease. Tiny noncalcified nodular density in the left lung adjacent to a larger calcified granuloma. This likely reflects a noncalcified component of granulomatous involvement, cannot exclude tiny noncalcified tumor. Follow up CT advised in 4-6 months.

Medical Oncology Consultation  
06/17/2007

Reason for Consultation: Brain tumor

History of Present Illness: The patient is a 59-year-old Caucasian male who was admitted to the hospital on 06/12/07 following new onset of seizures. Evaluation in the Emergency Room revealed a large, multiloculated, partially necrotic mass involving the right frontal lobe with crossing of the corpus callosum. This was felt to be suspicious for glioblastoma. He had an MRI scan performed, which showed a large, right frontal lesion with significant mass effect, surrounding edema and a multiloculated, enhancing rim. This was felt to be either an abscess or GBM. He was seen by infectious disease, neurology and neurosurgery. He was treated with antibiotics and went to the Operating Room on 06/15/2007. A large right frontal brain lesion was detected and the tumor was resected by the neurosurgeons. He tolerated the procedure well. The pathology report reveals moderately differentiated squamous cell carcinoma. The patient has no previous history of any type of cancer. I specifically asked him about skin cancers and he has never had one. He has never been diagnosed with a lung tumor. He is a heavy smoker in the past although he stopped about a month ago. He has a history of chronic obstructive pulmonary disease. He has not had any hemoptysis or chest pain. He denies any difficulty with swallowing, hoarseness or any types of sores or non-healing ulcers in his mouth or oral cavity. He did mention that he once had a sore in his nose but it healed spontaneously.

Past Medical History: Pertinent for chronic obstructive pulmonary disease. He has also had previous coronary heart disease and a stent. He has had a fem/fem bypass procedure in the past. He has chronic obstructive pulmonary disease and was using a Combivent inhaler. He also was on an aspirin per day. He denies any diabetes or chronic health problems.

Past Surgical History: He has had surgery on one of his knees. He has never had any cancer.

Family History: Negative

Social History: He is currently single. He has had a couple of previous marriages. He lives alone. He has been disabled for about the last three years. He did smoke for over 50 years and just stopped a month ago.

Review of Systems: He has had a few pounds of weight loss in the last few months. He has not complained of any headaches or other focal weakness prior to the onset of his seizures. He has not had any cough, sputum production or hemoptysis. He denies any chest pain or pressure. No tightness in the chest. No significant alteration in his bowel habits. No bleeding in his bowel movements. No urinary complaints or bleeding in his urine. The remainder of the review-of-systems is negative.

Physical Examination:

General Appearance: He is a pleasant, elderly, Caucasian male. He appears somewhat older than his stated age of 59.

Vital Signs: T: 98.3. BP: 125/70. R: 14 per minute.

HEENT: He has a bandage over the right frontal area, which was dry. He has some mild swelling around the right periorbital area with some bruising in that region. His extraocular movements are intact. Throat is clear. He has poor dentition. There are no obvious ulcerations or lesions noted. He has no palpable cervical, supraclavicular or axillary lymph nodes.

Lungs: Clear although breath sounds diminished

Cardiac: Regular rhythm with no murmurs

Abdomen: Soft, nontender with no organomegaly or mass

Extremities: No significant clubbing or edema

Pertinent Lab: His electrolytes and liver function studies were all normal. CBC on admission showed hemoglobin 14.6, white count 19,000, platelet count 226,000.

Chest x-ray shows that the lung fields are clear and well expanded. No evidence of an acute pulmonary process.

Assessment Recommendations: The patient has had subtotal resection of a right frontal brain tumor, which appears to be metastatic squamous cell carcinoma. There is no previous history of cancer or obvious primary on his physical examination or chest x-ray. Still I think that the lungs, head and neck and esophagus would be the most likely sources of this metastatic cancer, given his heavy history of tobacco use. I agree with a CT scan of the chest and abdomen. If that study is negative then a thorough evaluation by an ENT doctor including triple endoscopy would be warranted. The patient will likely benefit from palliative radiation to the brain but it would be nice to know where the source of this tumor was so that it can be monitored closely and we can decide whether it needs to be treated now or in the future. This was all discussed with the patient. I will follow along until his CAT scan and other work-up is completed and then try to meet with him and his daughters to discuss prognosis and treatment recommendations.

Thanks again for the opportunity to see this patient in consultation.

Signed: Medical Oncologist Doctor

Radiation Oncology Consultation  
06/18/2007

Diagnosis: Metastatic squamous cell carcinoma to the right frontal lobe status post gross total resection of this solitary mass on June 15, 2007. We were asked to see him regarding the role of palliative external beam radiation.

Patient is a 59-year-old gentleman with long history of smoking who presented to the Emergency Room here on June 12, 2007, following his first ever generalized tonic/clonic seizure. Following this, he was brought by ambulance here to the Emergency Room. CT followed by MRI scan revealed a complex cystic, ring enhancing mass of the medial right frontal lobe extending across the corpus callosum causing mass effect associated with surrounding edema, all of which was highly compatible with primary or metastatic malignancy.

In retrospect, he has had a three- month history of severe debilitating headaches, mental status changes noted by his daughter and family where he has been more paranoid in behavior, and has had short term memory loss.

Following CT followed by MRI assessment, he did undergo right frontal craniotomy and resection. At the time of resection the tumor was grossly removed and small peripheral attachments were coagulated with bipolar cautery at the end of the resection. By report, pathology revealed squamous cell carcinoma.

Since this finding was noted, he has undergone visceral staging with CT scan of the chest and abdomen which revealed a densely calcified left lower lobe mass consistent with likely old granulomatous disease and infrarenal abdominal aortic aneurysm. No convincing evidence for primary or metastatic disease was seen on the CT scan by my review.

In retrospect, he has had four to five pound weight loss over the last several months. He was also hospitalized two weeks ago here for incidental pneumonia.

Past Medical History: Remarkable for a brain tumor resected around the right eye in use, resulting in right eye blindness. He has had knee surgery in the past, severe chronic obstructive lung disease, coronary artery disease status post stent placement, peripheral vascular disease status post femoral bypass.

Current Medications: Ceftriaxone, Cerebyx, Flagyl, vancomycin, Flurazepam, Zofran

Family History: Unremarkable for malignancy

Social History: He is single. He lives alone and has been divorced for 20 years. He has smoked a pack or more a day for 50 years. He has two adult daughters. Following his convalescence, he plans to go to Iowa to be with his daughter there where he plans to get any postoperative treatment. He retired from the local newspaper where he was a pressman. He retired two years ago.

Physical Examination:

General Description: The patient is a gentleman appearing older than his chronologic age.

HEENT: He has ecchymosis around his right orbit reflecting his recent craniotomy.

Neurologic: The right eye had exotropia and minimal vision on confrontation. The left eye was normal. Other cranial nerves were intact. Strength, reflexes and sensation were grossly intact. He was alert and cooperative during the examination, but could not offer a history related to his recent seizure episodes.

Lymphatics: No palpable adenopathy

Lungs: Clear

Abdomen: Unremarkable

Extremities: No clubbing, cyanosis or edema

Laboratory Data: Studies from June 16, 2007. Hemoglobin 11.6, white count 20,000, platelets 210,000. Electrolytes within normal limits.

In summary, my impression is that of metastatic squamous cell carcinoma to the right frontal lobe status post gross total resection. Visual staging reveals no occult lung primary, although a lung primary would be statistically the most likely source for this. He has no ENT symptoms. Certainly, an occult ENT primary is a secondary consideration, and a panendoscopy as previously recommended by the medical oncologist is rational.

In any case, I anticipate the panendoscopy is likely to show no findings given his lack of symptoms, and we will then be left with treatment of his brain postoperatively to prevent recurrence within the resection bed. I discussed treatment, its goals and toxicities as it relates to whole brain radiation. Given his interest in staying with his daughter, he is likely to receive radiation in Cedar Rapids, Iowa, which is satisfactory as it would assist him in his overall family support. We will plan to see him in followup Monday, June 19, 2007, to confirm his overall preference for the location of postoperative radiation.

I discussed this in detail with the patient and his daughter. Thank you for allowing us to participate in his care.

Signed: Radiation Oncology Doctor A

Radiology Report  
06/20/2007

CT Head

Clinical Indication: Brain mass, seizure

Multiple contiguous axial imaging was acquired through the head from the base of the skull to the vertex at 5 mm intervals both with and without the use of 50 ccs of Omnipaque 350 contrast material. This is compared to the previous exam 6-11-07. There are postsurgical changes of right frontoparietal craniotomy. There is a small amount of pneumocephalus and subcutaneous gas. There has been resection of the right upper lobe mass when compared to the patient's previous exam. Small amount of subdural hemorrhage and intraparenchymal hemorrhage is noted around the operative site. There is some residual edema with effacement of the right frontal horn. A small degree of right to left midline shift. The degree of edema has improved when compared to the presurgical evaluation.

Status post right frontoparietal craniotomy with resection of large right frontal mass. There is an area of porencephaly in the right frontal region with some surrounding edema. Mass effect and small degree of shift of the midline structures. The degree of shift has improved when compared to the patient's prior study.

Pneumocephalus and subcutaneous emphysema.

Small amount of subdural and intraparenchymal hemorrhage.

Large mass in the right anterior ethmoid air cells. Given the patient's history of metastatic squamous cell carcinoma, this is concerning for an additional focus of metastasis.

ENT Consultation  
06/21/2007

History of Present Illness: The patient is a 59-year-old gentleman whom we have been asked to evaluate for possible nasal mass. This gentleman is status post craniotomy for resection of a metastatic squamous cell carcinoma of the right frontal lobe. His admission to this hospital was prompted by a generalized seizure and the ensuing evaluation of that seizure revealed a mass in the right frontal lobe. The initial CT scan also revealed some opacification in the right ethmoid sinus. A metastatic and primary survey to date has revealed evidence of no other disease, but there is some abnormal mucosa in the ethmoid sinus, which is of concern.

The patient denies any recent symptoms of anything that he would classify as sinus disease. He denies any difficulty breathing through his nose. He has no complaints of recent epistaxis or unusual nasal drainage.

Anterior rhinoscopy shows the nasal mucosa to be normal in appearance. The inferior and middle turbinates do not look abnormal. I did not see any abnormal tissue or mass in the nose on either side. There are no unusual secretions present.

Primary malignancies of the sinuses are very unusual, but do occur.

Recommendations: My recommendations at this time are that we proceed with a formal CT scan of the sinuses to evaluate more carefully the extent of the abnormality or mass that is seen in the ethmoid cavity. Following that, recommendations can be made as to whether or not biopsy or resection would be necessary.

Thank you for asking me to see him in consultation.

Signed: ENT Doctor

Radiology Report  
06/22/2007

CT Sinuses

Clinical Indication: Mass

Multiple 2.5 mm axial scans are performed through the sinuses. Coronal reconstructed images are generated.

There is evidence for a right frontal craniotomy. There is subcu air along the scalp and extending down along the right orbit and along the right lateral wall of the maxillary antrum. There is mild scattered mucosal thickening involving the maxillary antrum on the right compatible with some minimal chronic inflammatory sinus disease.

There is a focal soft tissue mass with its center at the ethmoid frontal sinus junction. This mass is expansile and has destroyed the portions of the thin bone through the superior ethmoids which is displacing the right medial orbital bone in a lateral direction with thinning and early destruction. This appears to extend into the right frontal sinus which is hypoplastic. This does not have the appearance of a mucocele and underlying carcinoma would be of concern. This mass measures at least 3.7 cm in length x 2 cm across.

Expansile destructive mass at the junction of the right frontal and superior ethmoids suggesting the presence of a carcinoma.

Evidence for previous right frontotemporal craniotomy.

Minimal inflammatory sinus disease involving the right maxillary antrum.

Outpatient Radiation Clinic Note  
08/12/2007

Dear Colleagues,

I had the pleasure of meeting the patient today in follow up regarding further treatment recommendations. To briefly summarize, the patient was initially evaluated at the hospital on June 12, 2007, after presenting with a generalized tonic/clonic seizure. Subsequent imaging including MRI scan of the brain revealed a cystic ring enhancing mass in the medial right frontal lobe extending across the corpus callosum with surrounding edema. The patient was subsequently evaluated by neurosurgery and a CT scan of the chest, abdomen and pelvis did not reveal any evidence of primary neoplasm. The patient subsequently underwent a craniotomy and biopsy and tissue from this confirmed metastatic squamous cell carcinoma, moderately differentiated. During the course of the patient's admission he was evaluated by ENT. Subsequent CT scan of the sinuses revealed an expansile destructive mass at the junction of the right frontal and superior ethmoid sinus suggesting the presence of a carcinoma measuring 3.7 by 2 centimeters across. The patient was subsequently discharged and scheduled to follow up with his extended family in Iowa and undergo further evaluation at that site.

The patient informs me today that he did undergo evaluation in Iowa. However, the patient is a very poor historian and he is unclear as to what actually transpired. The patient states that he did have a biopsy of a nasal lesion on 08/02/2007 which confirmed the diagnosis. He further notes that he has decided not to receive any treatment in Iowa and wants to be treated here.

Currently, he states that he is feeling okay. He notes continued pain in the right side of his head and the right supraorbital region. He denies any recent seizures or any focal weakness, numbness or tingling. He does report a five-pound weight loss over the past few weeks. He has had long-standing vision loss in the right eye essentially since birth and he states that this is essentially unchanged. He has run out of his Hydrocodone and Decadron.

Physical Examination:

General Description: Patient is resting comfortably in no acute distress.

Vital Signs: WT: 162 lb. BP: 124/68, P: 96, R: 20.

HEENT: Reveals lateral deviation of the right eye. The craniotomy scar is well healed. There is no preauricular, cervical or supraclavicular adenopathy. Examination of the oral cavity does not reveal any suspicious masses or lesions.

Lungs: Reveal decreased breath sounds throughout.

Abdomen: Exam reveals a soft, nontender abdomen with normal abdominal bowel sounds and no evidence of hepatosplenomegaly or masses.

Neurologic: Does not reveal any gross motor or sensory deficits noted in either the upper or lower extremities. Examination of the cranial nerves reveals lateral deviation of the eye and it is poorly responsive to light.

Impression: Patient is a 59-year-old gentleman who after my review of the patient's images appears to be primary squamous cell carcinoma of the paranasal sinuses with extension through

the cribriform plate to directly involve the frontal lobe, status post right frontal craniotomy and resection confirming squamous cell carcinoma.

Recommendations: Unfortunately, the patient is a very poor historian. I will need to contact the patient's daughter in order to obtain records from his evaluation in Iowa. I have had an opportunity to review the patient's MRI and CT imaging from the June time frame and I have also had an opportunity to discuss the patient's case with the radiologist who confirms the appearance of likely direct extension from the paranasal sinuses into the frontal lobe. I hope to discuss the patient's case in the near future with ENT consultant as well.

Plan:

1. I will be discussing the patient's case with his daughter in Iowa. The patient does inform me he was evaluated at a hospital there, but did not receive any treatment.
2. As it has been approximately 6 weeks since the last MRI (results difficult to interpret secondary to motion artifact). I will obtain a repeat MRI of the brain and orbits with conscious sedation (if the radiologist thinks this is needed) to obtain accurate visualization of the disease process.
3. I will be discussing the patient's case with ENT consultant.
4. If the patient did indeed undergo a biopsy of a mass in the ethmoid sinus region, then I will obtain the pathology report for this.
5. If the aforementioned information confirms locally advanced squamous cell carcinoma of the ethmoid sinus with extension into the frontal lobe area then the main treatment option from my standpoint would be palliative radiation therapy to optimize the local control. Unfortunately, in these cases long-term local control or cure is considered quite unlikely given the extensive nature of this gentleman's disease.

The patient will be scheduled to follow up with myself a few days after the aforementioned MRI, which hopefully will be accomplished next week.

Thank you again for allowing me to participate in the care and evaluation of this very pleasant gentleman. Please contact me if there are any questions or concerns.

Signed: Radiation Oncologist B

Radiology Report  
08/15/2007

MRI Brain with and without Contrast Administration

Indication: History of squamous cell cancer, metastases to the brain.

Technique: Multiplanar, multi-sequence images of the brain were obtained with and without the administration of 15 ccs of Gadolinium contrast media.

Findings: Comparison is made to two prior studies dated 6-15-07 as well as 6-12-07. There has been interval resection of the large rim-enhancing mass which appears to extend from just below the level of the cribriform plate into the right frontal lobe. There has been significant resection of the right frontal lobe with hyperintense signal intensity seen within the extra-axial fluid collection. We again note an enhancing mass involving the right ethmoid sinuses. Fluid collection demonstrates some rim-enhancement and at the posterior aspect on image #11. We note an area of decreased fluid signal with rim-enhancement which measures approximately 4 mm x 10 mm. This demonstrates a similar appearance to the previously noted multiloculated rim-enhancing mass. Residual tumor in this region cannot be entirely excluded. It is also difficult to differentiate enhancing tumor in the ethmoid sinus and nasal region from granulation tissue which is purely postoperative. Comparison with operation notes is recommended. What appears to be a small amount of encephalomalacia is also seen at the superior aspect in the region of the right semi centrum semiovale. No new areas of enhancing mass are identified. Diffusion weighted sequences are negative.

Impression:

1. Large interval resection of the loculated and multi-septated rim-enhancing right frontal mass. There is an extra-axial right frontal somewhat hyperintense fluid collection. A small area of rim-enhancement is seen on image #20 which measures 10 x 4 mm and is somewhat suspicious for residual tumor, although this could be postoperative. We also again note enhancing mass destroying most of the right ethmoid sinuses and nasal region. It is difficult to exclude residual tumor vs. Granulation tissue in this region. Orbital findings are discussed on the orbital MRI.
2. No new areas of enhancement are identified.

Radiology Report  
08/15/2007

### MRI Orbits

Clinical Indication: History of squamous cell carcinoma

Technique: Multiplanar, multisequence images of the orbits were obtained with and without contrast administration in the amount of 15 cc of gadodiamide contrast media.

Findings: Comparison is made to a previous stereotactic MRI dated 06/12/2007. We do note interval resection of the right frontal mass seen on the previous exam discussed completely in the MRI brain dictation for the same day. There is a residual enhancing mass seen within the right ethmoid sinuses extending past the midline into a portion of the left ethmoid sinuses. It also extends into the para orbital fat adjacent to the medial rectus muscle of the right orbit. It appears to be primarily extra conal. The globe is intact and does not appear to be involved and the optic nerve also appears to be clear. There is, however, extension through the lamina papyracea and all of this involvement appears to be post septal. Some mass effect upon the medial rectus is noted. The area of extension through the ethmoid sinus is measured at approximately 7 mm. Findings of the brain are fully discussed in the brain dictation. The left orbit is clear.

### Impression:

Post septal extra conal invasion of the periorbital fat of the right orbit by an enhancing mass extending from the right ethmoid sinuses. There has been resection of the intracranial portion of this lesion. The medial rectus on the right appears to be somewhat bowed secondary to mass effect. Intra conal structures and the globe demonstrate no obvious evidence of direct invasion.

## Radiotherapy Summary

Dear Colleagues,

I would like to provide you with the patient's formal treatment details regarding his radiation therapy in the treatment of his T4, N0, M0 squamous cell carcinoma of the ethmoid sinus with direct extension into the brain.

To briefly recap the patient's history, he initially presented to the Hospital in the mid-June 2007 time frame with generalized seizures. Subsequent imaging revealed a medial right frontal lobe mass and subsequent craniotomy confirmed metastatic squamous cell carcinoma.

Further evaluation revealed an expansile destructive mass in the right ethmoid sinus region. The patient subsequently elected to be evaluated closer to some of his relatives in Iowa. Available records indicate that he underwent biopsy of his ethmoid sinus lesion and this confirmed invasive squamous cell carcinoma. The patient elected to return to this area for treatment. I subsequently recommended treating with intensity-modulated radiation therapy to the area. The patient was evaluated by medical oncology who recommended concurrent Erbitux systemic therapy. After informed consent, the patient was treated with chemoradiotherapy.

Treatment:

Site: Planning treatment volume

Technique: IMRT

Energy: 6 MV photons

Dose Fraction: 200 cGy

Total Fractions: 33

Total Dose: 66 Gy.

Treatment Dates: 08/28/2007 through 10/12/2007

The patient was stimulated on a dedicated CT simulator. Subsequently, the images were brought to the treatment planning computer. The gross tumor volume was carefully contoured on multiple axial slices involving the ethmoid sinus. This was expanded to obtain a planning treatment volume of 66. Additional volume of the postoperative craniotomy resection bed was developed for a planning treatment volume of 60. Subsequent Intensity-modulated radiation therapy, inverse planned treatment was developed. Of note, MRI fusion was used with imaging from 08/15/07. Subsequent plan was developed in order to limit the dose to the optic apparatus on the left (the patient's seeing eye). This did limit the overall total dose.

Clinical Treatment Course: Overall, patient tolerated his radiation therapy well. He did develop mild to moderate skin reactions over the bridge of his nose in the medial aspect of the right orbit. He was evaluated by ophthalmology. The patient completed a Decadron taper course. He did develop acneiform rash secondary to his Erbitux. The patient's CBC remained stable during the course of his radiation therapy.

The patient's weight at the time he was under treatment evaluation was 160 pounds as compared to his pretreatment weight of 162 pounds.

I have asked the patient to follow up with myself in 1 month with a repeat MRI of the brain and orbits as well as baseline blood work.

Thank you again for allowing me to participate in the care and treatment of this very pleasant gentleman. I am certainly happy to report that he appears to have tolerated his aggressive combined chemo/radiation therapy relatively well. Please contact me if there are any questions or concerns.

Signed: Radiation Oncology Doctor B