

Radiology Report  
10/20/2006

### Thyroid Ultrasound

Clinical Indication: Goiter with enlarging left lobe

Images were performed through the gland in multiple projections. The right thyroid appears somewhat small with diffuse inhomogeneity and vague nodularity. The left lobe is very prominently enlarged measuring up to a maximum of approximately 11 cm in length. This is diffusely inhomogeneous. This lobe appears somewhat larger than previously seen when it measured approximately 9.4 cm in length on 2/28/2006.

Enlarging inhomogeneous left thyroid lobe consistent with goiter. Somewhat small, but inhomogeneous right lobe.

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Radiology Report  
11/22/2006

### Nuclear Medicine Thyroid Uptake and Scan

Clinical Indication: Abnormal ultrasound

The patient was administered 292 uCi sodium I-123. Thyroid uptake is less than 6% which is below normal limits as normal values are between 14 and 30%. There is essentially no uptake in the right lobe of the thyroid gland. There is enlargement of the left lobe of the thyroid gland which corresponds with description on ultrasound. There appears to be central photopenia. Findings could reflect cold nodule. Additional considerations would include thyroiditis or large hyperfunctioning nodule on the left with central area of necrosis. This is considered less likely.

Massive enlargement of the left lobe of the thyroid with central photopenia suggesting cold nodule. Correlation with biopsy is recommended if carcinoma cannot be excluded. There is no uptake in the right lobe of the thyroid gland which may be due to hyperfunctioning nodule on the left. Additional etiologies such as thyroiditis could produce this appearance.

Radiology Report  
12/15/2006

Nuclear Medicine Parathyroid Mibi Scan

Clinical Indication: Hypothyroid, parathyroid tumor, goiter, pre-op evaluation

22.9 mCi 99m Tc Sestamibi is administered intravenously and images obtained immediately and after one hour delay. There is a large goiter which preferentially takes up Sestamibi measuring 81.6 x 64.2 mm. There are areas of diminished activity in the superior pole and in the inferior pole which correspond to relatively diminished areas of diminished iodine accumulation. Findings would suggest a "cold" nodule. Sonographic evaluation may be warranted depending on clinical circumstances. There is no evidence of uptake within parathyroid glands. Exam is considered indeterminate for evaluation of parathyroid adenoma given the fact that almost the entire dose appears to be localized within the left thyroid lobe goiter.

Large thyroid lobe goiter. Indeterminate exam for adenoma. No evidence of parathyroid activity identified. Diminished activity in superior and inferior poles of the left thyroid mass suggest possible cold nodule. Further evaluation may be warranted.

## Discharge Summary

Date of Admission: 01/11/2007

Date of Discharge: 01/18/2007

Hospital Course: Patient is a 73-year-old white female who was admitted with a solid cold nodule in the left lobe of her thyroid gland. For this reason, on 01/11/2007, she was taken to the operating room where a total thyroidectomy was performed. It was ultimately described as a Hurthle cell carcinoma. Postoperatively, she was bothered with significant hypocalcemia. She basically went on to do well. She was seen in consultation both by her primary care physician and a medical oncologist. She went on to improve and on 01/18/2007, she was discharged from the hospital.

Disposition: The patient was discharged on 01/18/2007 to be followed as an outpatient in the office.

Signed: General Surgeon

History & Physical  
01/11/2007

Chief Complaint: Left thyroid mass

History of Present Illness: Patient is a 73-year-old white female who has noticed a gradually enlarging left thyroid mass over the years which has been diagnosed as a goiter. More recently has had some marked enlargement of this mass. She was evaluated by her personal physician who felt that this had enlarged markedly. On November 22, 2006 she had a nuclear thyroid scan revealing massive enlargement of the left lobe of the thyroid with central photopenia, really no tracer identified in the right lobe. By history, she has had a thyroid ultrasound and will check on the results of this. She admits some difficulty swallowing, but no true dysphagia or odynophagia. She admits to some quite evident hoarseness.

Family History: Includes a father with a goiter that required surgery but was not felt to be malignant. She denies any history of cervicocephalic radiation.

Past Surgical History: Surgical history includes knee procedure, appendectomy, and cholecystectomy.

Past Medical History: Includes hypertension, and myocardial infarction with stent placement.

Medications: Current medications, none listed

Allergies: Allergies declared are penicillin and codeine

Family History: Mother's family history includes colon cancer. Father's family history positive for diabetes and colon cancer.

Social History: Patient does not smoke cigarettes. Patient does not consume alcoholic beverages.

Review of Systems:

Cardiovascular: Coronary artery disease with stent placement and myocardial infarction.

Pulmonary: Negative

Endocrine: Denies diabetes. Remainder of review of systems was noncontributory.

Physical Examination:

HEENT: Head normocephalic. Eyes, pupils equal, round, and reactive to light. Ears within normal limits.

Neck: Patient has an obvious large left-sided neck mass, which moves with swallowing, certainly feels to be a markedly enlarged left thyroid lobe. I really cannot appreciate any cervical or supraclavicular adenopathy. Examination of the right neck is really negative.

Chest: Clear

Heart: Regular rate and rhythm

Patient MR# 999915  
Patient Name: Dorothy White

Head & Neck Advanced Case #10  
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Abdomen: Soft, nontender, no masses  
Extremities: Within normal limits  
Neurologic: Within normal limits

Impression: Large left thyroid mass

Plan: Patient will be admitted for left thyroid lobectomy on January 11, 2007. Procedure discussed including the possibility of recurrent laryngeal nerve injury and parathyroid injury.

Signed: General Surgeon

Operative Report  
01/11/2007

Preoperative Diagnosis: Mass right lobe of the thyroid gland

Postoperative Diagnosis: Follicular carcinoma of the thyroid

Procedure: Total thyroidectomy

Details: With the patient in supine position after adequate plane of general anesthesia, the area of the neck was prepped and draped in the appropriate manner. A collar incision was made and incision was carried down using sharp dissection. All subsequent bleeders were clamped and cauterized. Subplatysmal flaps were then raised superiorly to above the thyroid and to the sternal notch. The thyroid retractor was placed. The midline was opened. The right lobe of the thyroid gland was identified. This was immensely enlarged. This was freed from the surrounding strap muscles, rotated medially. The inferior pole of the thyroid was divided between clamps, secured with 2-0 silk ties. The superior pole was likewise isolated, divided between clamps and secured with 2-0 silk ties. Obvious parathyroid was identified and the area at the inferior pole was carefully preserved. The gland was further rotated medially. The inferior thyroid artery was divided and clamped, secured with 3-0 silk ties. The recurrent laryngeal nerve was identified. This was carefully avoided throughout the remainder of the dissection. The thyroid gland was dissected free from the anterior surface of the trachea to the level of the isthmus. This was secured with a ligature of 2-0 silk. The left lobe was then sent for frozen pathology with a report as being follicular carcinoma, less likely possibly papillary carcinoma, but definitely a malignancy. For this reason, the left lobe of the thyroid was identified. This was freed from the surrounding strap muscles. This was extremely firm, distally adherent to the trachea. The superior pole was divided between clamps, secured with 2-0 silk ties. The inferior pole was likewise divided between clamps and secured with 2-0 silk ties. The gland was rotated medially. What was felt to represent recurrent laryngeal nerve and an inferior parathyroid gland were identified and carefully avoided throughout the remainder of the session. The entire gland was freed from the anterior surface of the trachea and removed. This was sent for permanent pathology. Careful hemostasis was obtained. A small Penrose drain was brought out through a left inferior stable wound, placed in both operative areas, and brought out through the left sternocleidomastoid muscle, sutured to the skin with 2-0 silk. Standard wound closure was then performed. Tape and sponge count reported correct.

Estimated Blood Loss: 50 mL

The patient tolerated the procedure well, sent to the recovery room in stable condition.

Signed: General Surgeon

Pathology Report  
01/11/2007

Clinical Information: Mass

Specimen:

1. Left thyroid lobe
2. Thyroid

Intraoperative Consult:

Frozen Section: 1FS) Carcinoma. Follicular carcinoma with Hurthle cell change favored. Differential also includes papillary carcinoma.

Gross Description:

Specimen #1 consists of a hemithyroidectomy measuring 9 x 7 x 6 cm. Sectioning through the specimen reveals nodular, firm cut tissue. A section through the specimen is submitted for frozen sectioning and is then placed in Cassette 1FS for permanent sections. An H&E touch prep is obtained. Additional representative sections are submitted in Cassettes 1A through 1F.

Specimen #2 consists of a segment of thyroid measuring 3.3 x 1.6 x 1.5 cm. Sectioning through the specimen reveals a well-circumscribed, solid nodule measuring 0.6 cm in diameter. The entire specimen is submitted in Cassettes 2A through 2E.

Diagnosis

1. Thyroid lobe, left: Poorly-differentiated Hurthle cell carcinoma extensively involving thyroid lobe with lymphatic and vascular invasion, extracapsular thyroidal extension, and involvement of inked margin. See CAP checklist.
2. Thyroid: Poorly-differentiated Hurthle cell carcinoma extensively involving thyroid lobe with extrathyroidal extension and involvement of inked margin.

Specimen Type: Total thyroidectomy

Tumor Site: Right lobe, left lobe, isthmus

Tumor Focality: Multifocal

Tumor Size: Cannot be determined

Histologic Type: Hurthle cell carcinoma

Pathologic Staging (Primary Tumor): pT3

Regional Lymph Nodes: pNX

Distant Metastasis: pMX

Margins: Margins involved by carcinoma

Co-Reviewing Pathologist: has reviewed selected glass slides and concurs with this interpretation

Addendum Diagnosis

- 1) Calcitonin stain is negative in tumor cells. Original diagnosis remains unchanged.

Medical Oncology Consultation

01/13/2007

Reason for Consultation: Hurtle cell carcinoma of the thyroid

History of Present Illness: The patient is a 73-year-old white female evaluated today at surgeon's request regarding the aforementioned complaints. The patient had noticed increasing nodularity at the base of the neck. Studies had indicated an enlarging mass present within the thyroid. Biopsy was performed and compatible with follicular thyroid carcinoma. She was subsequently admitted for total thyroidectomy. The patient was taken to surgery on January 11, 2007. All grossly visible disease was removed at the time of surgery. There was no evidence of distant metastasis. She was found to have a poorly differentiated Hurtle cell carcinoma extensively involving the left lobe of the thyroid with lymphatic and vascular invasion, extracapsular thyroid extension, and involvement of the ink margin. There was also poorly differentiated Hurtle cell carcinoma extensively involving the thyroid in general with extrathyroidal extension and evidence of involvement of the ink margin. She is seen in consultation at this time regarding further recommendations for evaluation and treatment of her disease.

Past Medical History: Includes the usual childhood diseases without apparent sequela. She has a history of hypertension and has had a myocardial infarction with stent placement. The patient has also had hypothyroidism for many years and is on thyroid replacement.

Family History: Significant for father with goiter. There is no history of any sort of radiation.

Past Surgical History:

1. Appendectomy
2. Cholecystectomy
3. Knee surgery

Review of Systems:

Completed and found to be negative, except as noted above.

Physical Examination:

General Description: This is an awake, alert, oriented, cooperative 73-year-old female who appears to be in fair state of general health and who shows no signs of acute distress at this time. Stature and body habitus are compatible with the patient's stated age. Zubrod performance status is 1.

HEENT: Head is normocephalic, atraumatic. Pupils equal, round, reactive to light and accommodation. Extraocular muscles are intact.

Neck: Reveals moderate to significant edema and ecchymosis compatible with surgery

Chest: The heart is regular in rate and rhythm without ectopics. PMI is at the left interspace and nondisplaced. Lungs are clear.

Abdomen: Soft and nontender without organomegaly, mass, or ascites

Extremities: No edema or cyanosis noted. Good distal pulses are present.

Neurologic: Grossly intact and nonfocal

Impression: This is a 73-year-old white female who presents with carcinoma of the thyroid. Pathology indicates poorly differentiated Hurtle cell carcinoma and her initial pathology on biopsy had suggested papillary features. The patient would be felt to have much more aggressive disease than would initially meet the eye, however. She would be felt to have at least a T3 lesion. In order to qualify for a T4A lesion, the patient would have disease extending beyond the thyroid capsule to include subcutaneous soft tissues, larynx, trachea, esophagus, or recurrent laryngeal nerve. I am unable to currently identify any documentation indicating that would be the case. Based upon that, I would tend to feel that this patient is a pathologic T3NXMX disease and it is probably not possible to stage her further at this time.

Recommendations: The patient would definitely qualify for postoperative radioablation with iodine 131. This would also allow us the opportunity to stage the patient disease and complete her staging at that time. The patient does have a high risk for recurrence, but I do think she has an opportunity of having disease controlled based upon her iodine 131. She will definitely require Synthroid maintenance over the long term and will require some degree of aggressiveness in terms of her immediate postoperative care. Our service will continue to follow along and provide additional guidance and support as indicated.

Thank you very much for permitting me the privilege of evaluating this patient in consultation and offering these observations.

Signed Medical Oncologist

Radiology Report  
02/13/2007

Nuclear Medicine Thyroid Carcinoma Therapy

Clinical Indication: Thyroid carcinoma

The procedure was explained to the patient and informed consent obtained. The patient was administered 154.45 mCi I-131 in oral form. The patient tolerated the procedure well and left the department in stable condition.

NOTE: Patient has been instructed to initiate Synthroid within 3 days by her attending.

Pathology Report  
06/13/2007

Clinical Information: History of thyroid cancer. Preoperative diagnosis: Left cervical node adenopathy. Operative findings: Multiple bilateral enlarged nodes about thyroidectomy bed.

Specimen:

23 gauge FNA samples x 3 from most superficial enlarged node, lateral to thyroidectomy bed on left

Gross Description:

The specimen consists of 2 ml of bloody, watery fluid which is concentrated and submitted for three direct alcohol-fixed Papanicolaou stained smears, three air-dried Wright stained smears, and one H&E cell block.

Microscopic Description:

Available for examination are three Papanicolaou stained smears, three Wright stained air-dried smears, and one cell block of fine needle aspirate of lymph node lateral to thyroidectomy bed on left. Sections of the cell block show proteinaceous background material, degenerating blood, and numerous cohesive groups of atypical cells. These cells have abundant brightly eosinophilic cytoplasm, ovoid nuclei with very prominent eosinophilic nucleoli, and scattered mitotic figures. There is moderate pleomorphism and considerable nuclear enlargement. Some fragments of tissue are necrotic. Smears show blood and numerous cohesive groups of atypical cells, which are large with a moderate amount of cytoplasm, pleomorphic enlarged nuclei, and very prominent nucleoli.

Final Diagnosis:

Fine needle aspirate of lymph node, left neck: Positive for metastatic carcinoma, consistent with Hurthle cell carcinoma of thyroid.

Outpatient Clinic Note  
07/13/2007

Referring Physician: Medical Oncologist B

Reason for Consultation: Patient is a 74-year-old lady seen in consultation regarding treatment recommendations for her recurrent Hurthle cell thyroid carcinoma.

History of Present Illness: The patient's history dates back to the fall of 2006 when she began to notice an enlarging mass in the low neck area. The patient was evaluated by her family practice physician. Subsequently a nuclear medicine MIBI scan was obtained on 12/16/2006 and this revealed a large thyroid goiter and it was an indeterminate exam for adenoma. No evidence of parathyroid activity was identified with diminished activity in the inferior and superior poles of the left thyroid suggesting a mass and further evaluation was indicated. The patient was evaluated by General Surgery and on 1/11/2007 the patient underwent a total thyroidectomy. The pathology from this procedure revealed in the left lobe of the thyroid poorly differentiated Hurthle cell carcinoma extensively involving the thyroid lobe with lymphatic and vascular invasion and extracapsular thyroid extension. The thyroidectomy specimen revealed the same diagnosis with involvement of the inked margin. The tumor was multifocal and felt to be pathologic stage T3. The patient was subsequently evaluated by medical oncology who recommended consideration of radioablation with I-131. This was accomplished in the March 2007 timeframe. The patient reports that within a month after completing the radioablation procedure she developed a nodule in the left neck. She subsequently underwent a neck ultrasound on 5/19/2007 and this revealed bilateral hypoechoic nodules within the neck and adenopathy was sustained and a CT neck was recommended. The patient subsequently underwent an ultrasound guided FNA biopsy of the left cervical lymph node and the pathology from this procedure was positive for metastatic carcinoma consistent with Hurthle cell carcinoma of the thyroid. The patient has been recently evaluated by Medical Oncologist B and is seen today in consultation.

Currently patient states she is feeling fairly well. She notes mild hoarseness which is persistent since her surgery in January. She notes some tenderness in the left neck. She denies any odynophagia or dysphagia type symptoms. She otherwise is feeling relatively well.

Past Medical History: Extensive and includes a history of previous myocardial infarction, status post stent placement. She has a history of hypertension, shingles, gastroesophageal reflux disease and hypothyroidism. She is status post appendectomy, cholecystectomy, knee surgery and tubal ligation.

Gynecology: She is G II, P II.

She does not have any history of previous radiation therapy other than the I-131 ablation as noted above.

Allergies: The patient is allergic to penicillin, Codeine and x-ray dye.

Family History: Significant for mother dying of colon cancer

Social History: The patient is accompanied by her husband today. They live in the local area. She is retired. She has a positive smoking history but quit 35 years ago. She has had alcohol occasionally in the past but quit 25 years ago.

Review of Systems:

Constitutional: The patient notes a 10 pound weight loss over the past six months but denies any fevers or poor appetite.

HEENT: Per history of present illness

Neurologic: Negative

Cardiovascular: Negative

Respiratory: The patient notes an occasional dry cough with occasional shortness of breath.

Gastrointestinal: The patient notes occasional nausea and constipation.

Genitourinary: Negative

The remaining complete review of systems are unremarkable as documented in our chart.

Physical Examination:

General Description: Patient is an elderly lady resting comfortably in no acute distress who looks her stated age.

Vital Signs: WT: 182 pounds. BP: 134/80. P: 84. R: 18. T: 92.5.

HEENT: Pupils equal, round, reactive to light and accommodation

Extraocular muscles are intact. Sclerae are anicteric. Examination of the oral cavity reveals normal oral mucosa. The patient is edentulous.

Neck: Reveals a low neck surgical scar which is consistent with the thyroidectomy procedure and appears to be well healed. There are at least three palpable nodules within the left neck in the lower cervical and supraclavicular region corresponding to levels 4 and 5 measuring approximately 1.5 cm in diameter. Examination of the right neck reveals subtle concerning firmness near the right ala of the thyroid cartilage near the right thyroid bed. There is also fullness within the suprasternal notch area.

Lungs: Clear to auscultation and percussion. Spine is nontender.

Cardiovascular: Regular rate and rhythm without murmurs or rubs noted.

Lymphatics: Axilla exam is negative bilaterally

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

Extremities: Without clubbing, cyanosis, or edema

Neurologic: Does not reveal any focal, motor or sensory deficits noted in either the upper or lower extremities. Gait is normal.

Psychiatric: The patient is alert, oriented and cooperative.

Impression: Patient is a 74-year-old lady initially diagnosed with Hurthle cell carcinoma of the thyroid in January of this year status post thyroidectomy and subsequently I-131 radioablation who now presents with regionally recurrent Hurthle cell carcinoma in the cervical neck nodes as described above.

Recommendations: I have had an opportunity to discuss the patient's case with Medical Oncologist B as well as ENT physician. I hope to talk to her family practice physician tomorrow regarding the patient's case as well. At this point, we concur that the patient needs to be re-imaged for staging with a CT scan of the neck and chest (these will be ordered without contrast given the patient's allergy although I hope to discuss this further with her attending) in addition to restaging PET scan.

Given the patient's aggressive clinical course at this juncture following I-131 ablation, it is unlikely that further radioablation would likely be beneficial for this patient.

The role of radiation therapy for Hurthle cell carcinoma is not well established. The Mayo Clinic published retrospective review of 18 patients receiving radiation therapy for Hurthle cell carcinoma of the thyroid gland for a variety of reasons. While the numbers are small, improved local control was noted if adjuvant radiation therapy was given versus primary radiation therapy for salvage of recurrent disease. The National Comprehensive Cancer Network Guidelines indicate that in patients with recurrent Hurthle cell carcinoma the recommendation is to strongly consider surgery for local regional recurrence with consideration of postoperative radiation therapy. ENT Doctor and I concur that this could likely offer the best management for the patient. ENT will be following up with the patient once the aforementioned staging studies are completed.

I understand the patient is also scheduled to follow-up with Medical Oncologist B in approximately two weeks. At this juncture, I have asked the patient to contact me should surgery not be an option for her for any reason or if she has any further questions regarding her restaging studies. I noted that I would want to consider postoperative radiation therapy pending the final pathology reports if she does undergo a neck dissection.

At this juncture, the patient does not have a set follow-up schedule for me at this time. I have asked her to contact me should she have any questions or concerns whatsoever. In the interim as I understand she will be following up with ENT and Medical Oncology after the CT and PET restaging studies.

Please contact me if there are any questions or concerns.

Signed: Radiation Oncologist

Medical Oncology Consultation  
10/23/2007

Reason for Consultation: Thyroid cancer

History of Present Illness: The patient is a 74-year-old, Caucasian female who I saw for the first time back in August of 2007. Prior to that she had seen Medical Oncologist A on several occasions, and this all came about in early 2007, when she underwent a near total thyroidectomy for poorly differentiated Hurthle cell carcinoma of the thyroid. At the time of her surgery, there was lymph node involvement. For that reason, after she had recovered from surgery, she was treated with radioactive iodine ablation of the thyroid. Unfortunately, this did not respond well, and within three or four months, she developed new lymph nodes in her neck. In June of 2007, she had a biopsy of one of these lymph nodes, and metastatic poorly differentiated thyroid cancer was detected. I saw the patient at that time and felt that it was unlikely that she would respond to any further manipulation with radioactive iodine. We had arranged for her to see the surgeon again, and eventually an ENT, for consideration of dissection of her cervical lymph nodes. She had a CT scan and subsequently a PET scan, and there were noted to be multiple nodes in both sides of the neck as well as in the upper mediastinum. There are also some questionable areas of uptake in the lungs. She was eventually referred to ENT Oncologist at University and underwent bilateral neck dissection as well as removal of some of these involved nodes from the superior mediastinum. She has multiple positive lymph nodes from both of these neck dissections and from the mediastinum (23/29 Left, 20/37 Right). After a couple of weeks from the surgery, she saw Radiation Oncologist and has been receiving radiation therapy to the neck. She is receiving a field to both necks as well as the upper mediastinum. She had gotten through about 11 radiation treatments. She was admitted to the hospital this past Wednesday afternoon because of worsening shortness of breath and wheezing. She has noticed some difficulty with swallowing. She has not had significant cough or sputum production. Her initial chest x-ray showed a left perihilar infiltrate, and she has been on antibiotics for that reason. Her most recent chest x-ray is now showing some slight interstitial infiltrates in the right lung. She had a CT scan of the neck which showed postoperative changes within the thyroid and neck area. There was also a soft tissue mass in the left supraclavicular region adjacent to the sternocleidomastoid muscle. This was felt to be suspicious for malignant adenopathy. Currently the patient is still short of breath, although less short of breath than when she was admitted. She did not complain of a lot of pain other than pain with swallowing.

Past Medical History: Pertinent for coronary heart disease, hypertension, hiatal hernia and hyperlipidemia. She is on multiple medications including Lopressor, Lasix, Zestril, Nexium, Lescol, Diovan, magnesium supplements, calcitriol, Synthroid, aspirin, calcium, Vicodin anywhere from six to eight per day.

Allergies: IV contrast, penicillin and codeine

Review of Systems: She has had a fairly good appetite. She does not complain of any bone pain or pain outside of the neck and throat area. She does not have any chest pressure or tightness. No significant nausea or vomiting.

Physical Examination:

General Description: She is a pleasant, slightly hoarse, elderly, Caucasian female. She does not appear in any acute distress.

Neck: She does have some generalized erythema of the neck anteriorly. There was some mild edema in the right and left side of her neck. No readily palpable cervical or supraclavicular adenopathy was noted. There was no fullness in the supraclavicular regions.

Lungs: Scattered wheezes on the right. The left lung field was clear.

Abdomen: Soft and nontender, and there was no organomegaly or mass.

Laboratory Data: CBC today showed a hemoglobin of 10.5. WBC and platelet counts were both normal. Calcium level 7.4. Liver functions all within normal range.

Assessment and Recommendations: I would like to review the patient's CT scan of the chest when it is performed tomorrow, and will review her CT neck with the radiologist. She has a very poor prognosis thyroid cancer which was metastatic to multiple cervical and mediastinal nodes and is poorly differentiated. It is metabolically active on PET scan, and if there is a question as to whether or not she has further disease progression in the lungs or the neck, a followup PET scan may be of utility. I think we have very limited chemotherapy options in that Adriamycin is probably the most active drug for thyroid cancer, and her pre-existing cardiac disease would make that somewhat problematic. I will discuss this further with her attending physician after reviewing her CAT scans. For now, I'd recommend continuing the antibiotics and consider a trial of steroids for her respiratory symptoms.

Signed: Medical Oncologist B

Radiation End-of-Treatment Note  
11/07/2007

I would like to provide you with patient's treatment details regarding her palliative radiation therapy in the treatment of her recurrent/metastatic Hurthle cell thyroid carcinoma. The patient was initially diagnosed with Hurthle cell carcinoma in early January 2007. She underwent resection. The patient subsequently developed recurrent metastatic disease to the neck, biopsy positive in June 2007. Repeat imaging at that time revealed multiple bilateral cervical neck nodes with disease extending in the upper mediastinum and carinal region consistent with metastatic adenopathy. The patient was evaluated at University and underwent bilateral neck dissection which revealed 20 involved neck nodes in the right neck and 23 involved neck nodes in the left neck with extensive extra capsular invasion and extension to the surrounding tissue. I subsequently recommended radiation therapy to the bilateral neck and upper mediastinal area. After informed consent, the patient was treated.

The patient was simulated on the dedicated CT scanner. An Aquaplast mask head and shoulder device was used for mobilization. The images were brought to the treatment-planning computer. The images were carefully reviewed and an IMRT inverse plan treatment technique was developed. After physics quality assurance testing, the patient was treated.

Treatment:

Site: Planning target volume (bilateral neck and upper to mid mediastinal region).

Energy: 6 MV photons

Technique: IMRT

Dose Fraction: 200 cGy

Total Fractions: 12

Total Dose: 24 Gy

Treatment Dates: 10/03/2007 through 10/20/2007

Clinical Treatment Course: The patient developed mild esophagitis type symptoms during the course of her treatment but continued to tolerate a soft diet and nutritional supplements relatively well. She was seen in the clinic on 10/18/06 with acute shortness of breath and an oxygen saturation of 92% on room air. The patient was subsequently admitted to the hospital by her managing physician and noted to have pneumonia changes. The patient was placed on antibiotic therapy. Initial CT imaging revealed small bilateral effusions with soft tissue densities noted in both the right and left lung consistent with either an infectious etiology or possible metastatic disease. The patient was followed by Medical Oncology and myself while being managed by her family physician. We elected to hold the radiation therapy. The patient did experience increased odynophagia-type symptoms, modestly controlled with analgesics. A follow up CT scan showed significant improvement in the left lung infiltrate. The patient developed increased nausea and vomiting which resolved with progressive treatment of gastroparesis. The patient's pain with swallowing subsequently improved. She was eating relatively adequately. She was subsequently discharged to home. She was readmitted to the hospital on 11/07/2007 with shortness of breath and fever. She was started on broad-spectrum antibiotics. A repeat barium swallow revealed deep penetration of thin liquids with no definite gross aspiration. The patient had some difficulty

swallowing the barium secondary to a dry mouth. I discussed the patient's case in considerable detail with her family physician and we concluded, given the patient's multiple comorbidities, that further palliative radiation therapy would not likely be beneficial or prudent for this lady. The decision was made to stop her radiation therapy.

I will arrange to follow up with patient in 1 month. Thank you again for allowing me to participate in the care and treatment of this very pleasant lady.

Signed: Radiation Oncologist

Medical Oncology Consultation  
12/21/2007

Reason for Consultation: This 74-year-old followed by my partner, Medical Oncologist B, who presents with increasing shortness of air and a pleural effusion. Her oncologic history begins in January of 2007 when she was diagnosed with poorly differentiated Hurthle cell carcinoma, extensively involving the thyroid lobe with lymphatic and vascular invasion and extra papular extension was noted at that time. The patient was treated with I-131 ablation postoperatively, but then relapsed in June of 2007 with metastatic disease to a left neck node. She underwent bilateral radical neck dissections at University and then external beam radiation therapy. In October she was admitted with interstitial lung changes and the question of neck nodes and now she presents with a pleural effusion, which has been tapped and shows metastatic disease. The patient's primary complaint is of neck pain. I believe her dyspnea has gotten better since her thoracentesis. Her prior history includes coronary artery disease, hypertension, hiatal hernia and hyperlipidemia. An echocardiogram done last month shows an ejection fraction of 45-50%.

Physical Examination:

In General: She is alert. She complains of neck pain.

Vital Signs: T: 98.2 degrees. P: 86. R: 20. BP: 128/71.

Skin: No icterus or jaundice

HEENT: No oral lesions

Neck: There is woody induration of her neck, but I do not feel any discrete masses. She has Lidocaine jelly across it, so it is a little hard to examine.

Heart: Regular

Lungs: Decreased breath sounds at the left base

Abdomen: Soft and nontender

Extremities: She has 3+ edema to the mid shin

Assessment and Plan:

1. Malignant pleural effusion. Chemotherapy really does not work for Hurthle cell malignancy with a response rate of perhaps 20% with Adriamycin. Anthracyclines are contraindicated in her because of her decreased ejection fraction. As such, there is little to offer her in the way of systemic palliation. As such, I would recommend a consideration of a pleurodesis. I think maybe we could get the surgeons to see her while she is in this time and get it set up for after the holidays.
2. Otherwise, she could have serial thoracenteses, but since that lung already looks entrapped, I think that she is going to need a decortication in order to get free flowing fluid.

Thank you for letting me know she is in. Her following physician will be back next week and I will watch her while she is in the hospital this time.

Signed: Medical Oncologist C

## Death Summary

Date of Discharge/Expiration: 01/06/2008

### Reason for Admission:

1. Tension pneumothorax with arrest
2. Metastatic Hurthle cell carcinoma
3. Recurrent pneumonia
4. Orthostatic hypotension
5. Atrial fibrillation
6. Coronary artery disease
7. Severe gastroparesis
8. Hypocalcemia secondary to thyroidectomy
9. Type 2 hyperlipidemia
10. Hypothyroidism
11. Hiatal hernia
12. Reglan dystonia
13. Carcinoma of the colon
14. Gout
15. History of codeine intolerance

Consultants: Thoracic surgery

Procedure: Placement of chest tube

Complications: None

Hospital Course: This elderly white female had collapsed at home. She was admitted to the hospital with a tension pneumothorax. She was resuscitated, and had chest tube placed. She was admitted with severe acidosis, essentially unresponsive, and in a terminal status. The family requested supportive care only, and this was done. She continued to deteriorate, had cardiopulmonary arrest, and died as above.

Cause of death was tension pneumothorax secondary to metastatic Hurthle cell carcinoma.