Calcifying epitheliomas are uncommon tumors involving the hair matrix. Calcification is seen in most of these tumors. More than 75% of cases occur in the head and neck region during the first two decades of life. Treatment of choice is surgical excision. Calcifying epitheliomas can be multiple and rarely manifest atypical changes or malignant behavior. I describe three cases of calcifying epitheliomas in the chest wall, elbow, and arm of young adults.

Case Reports

Case 1
A 22-year-old man came to the clinic requesting excision of a chest wall lump. He had been well and denied any trauma, foreign travel, or eating raw pork. He gave no history of pain or discharge from the swelling. Findings on review of systems were completely normal.

He was a short man of average build. His temperature was 99.0°F, his pulse 80 beats per minute, and his blood pressure 110/70 mm Hg. He had no hypopigmented or hyperpigmented skin patches and no rash, and his hair distribution was normal. There was a 1.5 × 2-cm solitary, hard, well-defined, subcutaneous lump about 3 cm below the midclavicular point. The lump was nontender and freely mobile, with normal overlying skin, and was not fixed to skin or deeper tissues. The surface was nodular. Physical examination findings were otherwise unremarkable.

Excision of the total lump was easily accomplished following local infiltration with lidocaine. On cut section the lump was hard, irregular, and tan-brown with flaky calcific material. The histology report described it as calcifying epithelioma of Malherbe with extensive ossification.

Case 2
A 29-year-old woman complained of a 6-month history of a painful lump on the inner aspect of the right arm. The pain was localized to the lump and had an aching, dull character with no radiation or throbbing. She denied any tingling, numbness, or weakness in the upper limb. There was no history of trauma, foreign travel, fractures, or eating raw pork. She had had an incision and drainage of the lump 2 months previously with no relief. Apparently, a thick whitish material had been expressed at the time of the incision and drainage. She had also noticed a nonhealing wound over the site of the incision. The woman was of average build. Her pulse was 74 beats per minute, blood pressure 104/68 mm Hg, respirations 18/min, and temperature 98.4°F.

The patient had a few acne scars and comedones on her face, but no other hypopigmented or hyperpigmented patches or rash. A single lump 2.5 × 1.5 cm was found on the medial aspect of her right arm about a hand’s breadth above the medial epicondyle. The lump was subcutaneous, tender, and adherent to the skin. There was a 1-cm ulcer with a whitish base and sloping edges over the central part of the lump, but there was no increased warmth locally. The lump was not fixed to deeper tissues. There was no lymphadenopathy, and no neurologic deficit was evident. Bones and joints in the extremity were normal. Findings of a physical examination were otherwise unremarkable.

Local infiltration with lidocaine was given, and an ellipse of skin to include the ulcer was excised along with the entire lump. The lump was pale and white with keratinous material. A histology report described it as being consistent with calcifying epithelioma of Malherbe.

Case 3
An 18-year-old woman complained of a painful lump that had been over her right elbow since she was 2 years old. The lump had been static in size after an initial slow growth. The pain was sharp,
pricking, and localized. She had no tingling, num-
ness, or weakness in the upper limb. She denied any
trauma, fractures, excessive strain or exertion of her
arms, foreign travel, or eating raw pork. She had no
history of any prolonged pressure over the area.

This lean, young girl had a temperature of 99°F,
pulse of 84 beats per minute, blood pressure of
96/64 mm Hg, and respirations of 16/min. She had
smooth skin with no rash or abnormal pigmen-
tations. A single 3 × 2-cm lump was evident about 2
to 3 cm above the lateral epicondyne of the right
arm. The lump was well-defined, mobile, hard, and
nontender, and it was not fixed to skin or deep
tissues. There was no increase in local temperature.
Overlying skin was normal in color and texture.
There was no neurologic deficit. Bones and joints
in the extremity were normal.

Local infiltration anesthesia with lidocaine was
used, and the entire mass was easily excised. It was
a light pink, tan-brown, firm, ovoid mass. Histo-
logically it was described as a calcifying epithelioma
of Malherbe.

Discussion
Malherbe first described calcifying epithelioma or
pilomatricoma in 1880. Moehlenbeck’s analysis of
140,000 skin tumors found an incidence of
0.12%.

Calcified epitheliomas or pilomatricomas must
be included in the differential diagnoses of hard
subcutaneous lumps. Other, subcutaneous lumps
(Table 1) include lipomata, sebaceous cyst, calcified
hematoma, parasitic cysts, tumorcal calcinosis, for-
eign body granuloma, dermoid cyst, chondroma,
osteoma cutis, and metastatic bone formation.

Pilomatricomas originate in the hair follicle, as con-
firmed by immunohistochemical and electronic mi-
croscopy studies. Marrogi et al, reporting on 76
patients from 69 patients, found their patients’ aver-
age age to be 8 years, with a female-to-male pre-
dominance of 3:1. Although most of these tu-
mors tended to occur in the head and neck regions,
they have also been reported in the parotid gland,
in the eyelids, and intraorally. The

The median size of these tumors is 1.2 cm. Lopansri and Mihm reported that the tumor does
not have to be large to show aggressive behavior.
Yoshimura et al reviewed 37 cases diagnosed during
a 17-year period, and found a mean age of 23
years and a female-to-male ratio of 2.4:1. Only 2
patients (5%) had multiple tumors. The average
size was 0.5 to 3 cm. The most common site was
the preauricular region. They recommend com-
plete excision, an opinion expressed universally in
all studies reviewed, including any area of attached
skin, because it is often impossible clinically to
separate benign from malignant masses.

Lesions with typical features, such as cords and
sheets of basaloid cells with sheets of ghost or
shadow cells and sometimes squamous pearls or
abortive hair follicles, rarely recur; those showing
atypia, such as cell necrosis, mitotic figures, or
prominent nucleoli, can be locally aggressive.
Frank carcinoma has been observed in lesions that
show necrosis, mitoses, large vesicular nuclei, and
irregular borders. Zhang, in his study of 73 cases, reported an
incidence of 0.094%. Most of his patients (70.2%)
were children or young adults, and 47 patients
(64%) were female. Most of the tumors (88.5%)
measured 0.5 to 1.5 cm. Ossification was found in
21%, whereas calcifications were seen in 86%.

Ichikawa et al described a large 18 × 12 ×
8-cm right upper arm pilomatricoma that was sub-
cutaneous and calcified. After excision, there was
no recurrence within a 3-year follow-up.

Pilomatricomas have been reported to be asso-
ciated with myotonic dystrophy and Gardner
syndrome.

McCulloch et al described a case of a 25-year-
old mentally disabled man who had 11 cutaneous
scalp lesions excised within a 19-year period. None
was examined histologically, as the clinical diagno-
sis of epidermal cyst was made. A fast-growing new
lesion on his scalp, which became ulcerated and
infected, was debrided without histologic examina-
tion of the lesion. One year later, after a recurrence
of the problem, histologic examination of the ma-
terial was obtained, and a diagnosis of aggressive
pilomatricoma was made. The authors hypothe-
sized that the case possibly represents one of mul-
tiple benign pilomatricomas that later turned ag-
gressive. They emphasized the need for histologic
confirmation of all lesions undergoing excision.

Death from local invasion and even metastatic
lesions has been reported in cases of pilomatrical
carcinoma. Most of these cases, however, are be-
gen, and simple excision results in cure. When the
lesion is associated with atypical histologic features,
close long-term follow-up is recommended.
# Table 1. Subcutaneous Lumps and Nodules.

<table>
<thead>
<tr>
<th>Lumps</th>
<th>Number</th>
<th>Distribution</th>
<th>Clinical Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lipoma</td>
<td>Single, can be multiple</td>
<td>Anywhere except palms, soles</td>
<td>Soft, lobulated, slips under examining finger; usually painless; variable size; no fixity to skin or tissues</td>
</tr>
<tr>
<td>Sebaceous cyst</td>
<td>Single usually; if multiple or in childhood—Gardner syndrome</td>
<td>Hair-bearing areas</td>
<td>Soft unless calcified, cystic, punctum, present; fixed to dermis; soft cheesy, keratinous contents</td>
</tr>
<tr>
<td>Calcified hematoma</td>
<td>Usually single</td>
<td>Anywhere</td>
<td>History of trauma with skin discolorations. Ill-defined edges, usually painless</td>
</tr>
<tr>
<td>Parasitic cyst</td>
<td>Single or multiple</td>
<td>Anywhere, at times intramuscular</td>
<td>History of third world travel or origin, eating raw pork, meats. Firm, cystic, well-defined, poorly mobile</td>
</tr>
<tr>
<td>Tumoral calcinosis</td>
<td>Single or multiple</td>
<td>Elbows, iliac crest</td>
<td>Hard, nodular, whitish chalky material</td>
</tr>
<tr>
<td>Foreign-body granuloma</td>
<td>Usually single</td>
<td>Anywhere</td>
<td>History of trauma, foreign body. Ill-defined edges, painful at times. Chronic</td>
</tr>
<tr>
<td>Dermoid cyst</td>
<td>Single</td>
<td>Midline, eyebrows</td>
<td>Congenital, cystic, smooth, well-defined, nontender; at times bony erosion palpable under cyst</td>
</tr>
<tr>
<td>Chondroma</td>
<td>Single or multiple</td>
<td>Chest wall</td>
<td>Painful, nodular, firm to hard</td>
</tr>
<tr>
<td>Osteoma</td>
<td>Single</td>
<td>Skull, femur (adductor magnus—rider’s bone), knee (medial collateral ligament)</td>
<td>Smooth, painless, bony hard. If associated with multiple sebaceous cysts—Gardner syndrome</td>
</tr>
<tr>
<td>Pilomatricoma</td>
<td>Single</td>
<td>Head and neck, extremity</td>
<td>Hard, well-defined, nodular; 1-3 cm</td>
</tr>
<tr>
<td>Neurofibroma</td>
<td>Multiple</td>
<td>Anywhere, along nerve distribution</td>
<td>Appear at puberty, soft, sessile, or pedunculated. Burton-holing on compression, dome-shaped, violet hue</td>
</tr>
<tr>
<td>Keratoacanthoma</td>
<td>Single or multiple</td>
<td>Limbs, trunk</td>
<td>Elderly. Possible viral cause. Start as 1-2-mm papule, then enlarges to 2 cm or more. Nodular with central keratin crater</td>
</tr>
<tr>
<td>Tuberous sclerosis</td>
<td>Multiple</td>
<td>Cheeks</td>
<td>Firm, pink- to flesh-colored, papular, 3 mm to several centimeters (adenoma sebaceum)</td>
</tr>
<tr>
<td>von Recklinghausen</td>
<td>Multiple</td>
<td>Generalized</td>
<td>Varying sizes, soft, pedunculated, nontender; autosomal dominant; café au lait spots, axillary freckling</td>
</tr>
<tr>
<td>Dermatofibroma</td>
<td>1-10</td>
<td>Limbs, trunk, especially anterior surface of leg</td>
<td>3-10-mm, raised, pink-brown, hard; nodules retract under the skin on compression</td>
</tr>
<tr>
<td>Pilar cyst</td>
<td>Single or multiple</td>
<td>Scalp, scrotum</td>
<td>Movable, cystic, varying size. Soft, nontender, cannot be moved separate from skin. Cheesy contents</td>
</tr>
<tr>
<td>Rheumatoid nodules</td>
<td>Multiple</td>
<td>Elbows, pressure areas</td>
<td>History of rheumatoid arthritis, 0.5-4.0 cm, hard, nodular</td>
</tr>
<tr>
<td>Tophaceous gout</td>
<td>Multiple</td>
<td>Ear helix, elbows, prepatellar</td>
<td>Firm, yellow; occasionally discharge chalky material. Contents monosodium urate. History of gout, hyperuricemia</td>
</tr>
<tr>
<td>Dermal metastases</td>
<td>Multiple</td>
<td>Anywhere</td>
<td>Firm, flesh-colored nodules can be pink, blue, or black. In men, associated with colon and lung cancer and melanoma. In women, associated with breast, colon, and lung cancer. Initial finding in some cases of kidney, lung, or ovarian cancer.</td>
</tr>
</tbody>
</table>

## Conclusion

I report an uncommon subcutaneous tumor originating from the hair matrix in 3 patients. The sites were uncommon, occurring as they did on the chest wall in one and on the elbow and arm in the other two. Hard calcific nodules in subcutaneous areas merit inclusion of pilomatricoma in the differential diagnosis. Histologic confirmation of all excised lesions is important to avoid missing any atypical or aggressive tumors.

## References