Malignant melanoma metastasis to skin, lymph node, parotid, extraocular muscles, breast, lung, heart, bones, liver, pancreas, muscle in one patient detected in computer tomography

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ABSTRACT

Melanoma is known to metastasize to almost all organs. Visceral metastatic spread most commonly occurs via hematogenous route. A 50-year-old woman presented with local indurated swelling in scalp and ipsilateral parotid swelling. She had a history of frontal scalp melanoma treated with local excision and skin grafting five years back. Computer tomography revealed high attenuation soft tissue mass deposits noted on various sites. Image-guided biopsy revealed it to be metastatic deposits of melanoma. Melanoma is known to metastasize widely but its spread to skin, lymph node parotid, extraocular muscles, breast, lung, heart, bones, liver, pancreas, and muscle in a single individual as in this case has not been reported earlier.

Keywords: malignant melanoma, metastasis, computer tomogram

CASE REPORT

A 50-year-old Indian woman presented to our clinic with complaints of scalp swelling, muscle pain, back and bone pain, poor appetite and generalized weakness. She had history of malignant melanoma of right side frontal scalp five years ago. She was treated with local excision with sentinel node excision. Scalp lesion was the primary focus of malignant melanoma. She did not have any metastases at the time of initial diagnosis. Initial tests in our hospital revealed she had a normal white blood cell count, hematocrit, platelet count, increased lactate dehydrogenase levels of 1476IU/L. Blood urea, creatinine, amylase, sodium, potassium, chlorine and calcium ion levels, total bilirubin levels were all normal. Patient was sent for computer tomogram (CT) evaluation to detect the extent of disease. CT evaluation was done for head, thorax, and abdomen region. On head CT scan, a high attenuation scalp based mass was seen on right side with cystic necrotic areas (fig.1).

Fig. 1. Non contrast CT, coronal cut reveal high attenuation scalp based mass on right side with satellite metastatic deposit on scalp.

Other scalp based high attenuation deposits also seen as satellite nodule close by and other side of scalp. Lobulated high attenuation similar to the scalp lesion seen on right side parotid (fig.2), right intraocular space (fig.3), right level VII lymph node, subcutaneous tissue on right axilla (fig.4), left breast (fig.5), interventricular septum and myocardium (fig.6), liver, pancreas (fig.7) and right side gluteal muscles (fig.8).
Fig. 2. Axial cut reveal high attenuation lobulated mass on right side parotid gland.

Fig. 3. Axial cut reveal high attenuation extraocular muscle metastatic deposit in right side medial rectus muscle (blue arrow) with high attenuation skin deposit in right pinna (red arrow).

Fig. 4. Coronal cut reveal high attenuation skin based deposit on right side axilla (blue arrow), same side parotid (red arrow) and high attenuation liver (yellow arrow) metastasis also seen in same picture.

Fig. 5. Axial cut reveal high attenuation rounded mass on left side breast (white arrow), interventricular and myocardial deposit also seen at same level (black arrow).

Fig. 6. Axial cut reveal mild high attenuation interventricular and myocardial metastatic deposit.

Fig. 7. Axial cut reveals mild high attenuation rounded metastatic deposit over liver (green arrow) and pancreas (red arrow).
Biopsy was done from the scalp, parotid, lymph node, liver confirming metastatic malignant melanoma. Patient was diagnosed as recurrent melanoma with widespread visceral metastasis. Patient was put on chemotherapy but succumb after 2 months due to extensive lung metastasis. Malignant melanoma is known to metastasize widely. Wide spread metastasis to all organs detected mostly on post mortem examination. In this patient CT scans nicely picked up the metastasis and the organ involvement.

**DISCUSSION**

Malignant melanoma represents about 1% of all cancers and deaths but only 3% of all malignant skin diseases, although it accounts for 65% of deaths caused by skin cancer. It shows a progressive increasing trend in incidence with age. Melanoma is more common among whites. The skin pigment has a protective function in colored people, especially the black and yellow races. The most important cause of this cancer seems to be solar exposure.¹ The primary lesions are located in limbs (22%), trunk (40%), head and neck (15%), and 16% in unknown sites.² 20% of patients diagnosed with melanoma develop metastasis via hematogenic or lymphatic routes. Metastatic melanoma has been observed in almost all regions of the human body. Multiple organ metastases were present in 95 per cent of the patients.¹ The most common sites of metastases found in the autopsy are skin and subcutaneous tissue (75%), lung (70%), liver (68%), small intestine (58%), pancreas (53%), heart (49%), brain (39%) and spleen (36%) but only 1% to 4% of them are diagnosed antemortem.³

Patient management and treatment strategies for metastatic melanoma depend largely on the

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**Fig. 8.** Axial cut reveal mild high attenuation rounded metastatic deposit over right gluteus muscle

**Fig. 9.** Coronal cut reveal multiple lung and pleural metastasis

**Fig. 10.** Sagittal cut reveal mixed lytic and sclerotic areas over multiple thoracolumbar vertebral bodies suggestive of metastasis
stage of metastatic disease. Stages of the disease are determined by the thickness of primary disease, nodal status and distant metastasis. For distant metastasis various radiological modality can be used like ultrasonogram, Computer tomogram, magnetic resonance imaging and PET-CT.

In CT scan melanoma metastasis can be isodense, hyperdense and hypodense. In case of melanocytic melanoma magnetic resonance imaging shows hyperintensity on T1 sequence and hypointensity on T2 sequence. Among contrast-enhanced whole-body magnetic resonance imaging and whole-body computed tomography to detect distant metastases for staging. Whole-body MRI detects more metastases than whole body contrast enhanced CT in liver, spleen, subcutaneous tissue, muscle, bone marrow and brain but in case of metastasis to lungs CT is superior than MRI. The sensitivity and specificity for whole-body MRI were respectively 82% and 97%, while PET-CT reached 72.8% and 92.7%. DW sequence allowed the detection more malignant lesions (20%) in comparison with standard MRI protocol. Moreover, this technique has been shown to be the most accurate for detecting metastases in the liver, bone, subcutaneous and intra-peritoneal sites. Consequently, a DW sequence should be added systematically to the standard whole-body MRI oncologic protocol because of its high added-value for metastasis detection.

Our case is a primary case of scalp melanoma diagnosed 5 years back treated with local excision and sentinel node biopsy which revealed no nodal metastasis. After which she was asymptomatic for 5 years. Recent computer tomogram reveals metastasis to ipsilateral and contralateral scalp, ipsilateral parotid, lymph node, intraocular space, axillary skin, breast, lung, heart, liver, pancreas and gluteal muscle and vertebral bones all the sites nicely detected. Most of the sites metastasis appearing as high attenuation deposit. Metastasis to different organs confirmed with histopathology. Wide spread metastasis indicates poor survival as in our patient. Most commonly death occurs due to massive involvement of lungs in addition to pleura. The second leading cause of death is complications of brain metastases (increased intracranial pressure and hemorrhage). The average survival period for patients with non-visceral metastases is 7.2 months, but it falls to 2.4 months when liver metastases are considered, whether associated with other organs or not.

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REFERENCES


