Case Report:

Incidental Case of Metastatic Squamous Cell Carcinoma in the Posterior Thoracic Wall: A Cadaveric Finding

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Abstract: Occurrence of secondary tumors from visceral carcinomas on the thoracic cage represent a relatively rare form of metastasis. We present in this report an extremely rare case of an incidental finding of tumor mass (squamous cell carcinoma) in the thoracic wall of an adult male cadaver. During routine dissection of thoracic cavity, we noticed this unique tumor in the posterior thoracic wall. Its gross measurements were noted and a small piece of the tumor mass was processed for histopathological examination, to confirm its nature. The H&E stained section showed presence of infiltrating tumor composed of islands of squamous cells with pleomorphic nuclei, course chromatin, scattered dyskeratotic cells and foci of keratin pearl formation, which confirmed the tumor to be secondary metastatic squamous cell carcinoma. Such metastatic tumors with very rare occurrence are an interesting diagnostic and therapeutic challenge for thoracic surgeons.

Key Words: Squamous cell carcinoma, human cadaver, thoracic wall, tumor.

Introduction:
Secondary tumors from visceral malignancy forming tumors on the thoracic cage represent a relatively rare form of metastasis. Among them, occurrence of squamous cell carcinoma on the posterior thoracic wall of the thoracic cavity from an unknown primary site is extremely rare. Tumors of the chest wall include a wide variety of benign and malignant conditions. The most common being, rib metastases and direct chest wall invasion from adjoining lung and breast carcinoma.(1) Literature has reported that the most frequent locations of metastasis include back, chest wall, neck, posterior abdominal wall and thigh muscles.(2,3) But there is paucity of data regarding occurrence of metastatic squamous cell carcinoma in thoracic wall and till date there are no reports or observation of metastatic tumor in human cadavers. To our knowledge, diagnosis of metastatic tumors in almost all reported cases was done in live, symptomatic or asymptomatic patients during routine examination. We report in here an extremely rare case of presence of metastatic squamous cell carcinoma in the posterior thoracic wall at the vicinity of costovertebral junction in an adult male cadaver.

Case Report
During routine dissection of thoracic cavity for medical undergraduate students, we observed this very rare occurrence of a tumor near the costovertebral junction in an adult male cadaver. It was an isolated thoracic specimen, in which all the organs were removed and only the posterior thoracic wall was present. The posterior thoracic wall of the specimen was cleaned and dissected to expose the tumor. Since the viscera was removed in the specimen and non-availability of the medical record of the cadaver, we were unable to locate the primary site of malignancy and could not conclude if the tumor was benign or malignant. Hence, a small piece of the tumor was processed for histopathology examination.

Gross examination:
Detailed examination revealed that the tumor was roughly horseshoe shape. It occupied the left side of the posterior thoracic wall near the costovertebral junction and was related to 8th, 10thand 11th ribs (Figure 1). The uniqueness of this tumor was that it was seen only on the ribs but not in the intercostal spaces. The tumor mass was well circumscribed and did not cross the midline and hence there was no extension of it seen on the right hemi thorax. The mass measured 4.2x3 cm at 8th rib, 3x3.2 cm at 10th rib and 1x1.2 cm at 11th rib.

Figure 1: Cylindrical mass near the costovertebral junction.
Figure 1: Gross appearance of metastatic tumor of thoracic wall spanning over left 8th, 10th and 11th ribs (asterisks). DIA- descending thoracic aorta, LPN- left phrenic nerve

Histopathological examination
Haematoyxin & Eosin (H&E) stained tissue sections were examined under the microscope using different magnifications. The section showed presence of an infiltrating tumor composed of sheets and islands of squamous cells with round to oval enlarged pleomorphic nuclei, coarse chromatin, few with prominent nucleoli, few bizarre forms, mitosis, moderate to abundant eosinophilic cytoplasm, scattered dyskeratotic cells and foci of keratin pearl formation (Figure 2). Based on these inferences, the tumor was confirmed to be metastatic squamous cell carcinoma.

Figure 2: Histopathological features of metastatic squamous cell carcinoma of the thoracic wall, showing keratinization (thick arrow)

Discussion
The primary appearance of this tumor mass in the posterior thoracic wall raised multiple possibilities about its nature. It could have been a lipoma, sarcoma, a benign or malignant tumor. Microscopic observations confirmed that the mass was a metastatic tumor. It has been observed that most of the metastases to the chest wall are from adjacent structures, commonly the breast, lung, pleura, and mediastinum. (4) Primary chest wall tumors account for less than 1% to 2% of all primary tumors and might develop on the bone, skin or soft tissues of the thoracic cage. (5) Metastatic tumors on the thoracic wall as reported in our case is a very rare finding. Since all the visceral organs were removed in the studied specimen we could not find the primary site of metastasis but it has been reported in the past that, majority of the metastatic tumors on the thoracic wall originated from the lung, breast, and head and neck tumors. (6) Due to the very low incidence of secondary tumors and high mortality rate associated with the underlying primary tumor, the impact of such metastatic tumor on prognosis is not known. (7) An operating surgeon and radiologist should be aware of such anomalous presence of secondary tumors as their presence might significantly influence surgical and oncological treatment. The rare presentation of thoracic wall metastasis reported here highlights the importance of thorough and repeated physical examination in staging and treating cancer patients.

Squamous cell carcinoma is characterized by numerous malignant squamous cells with eosinophilic glassy cytoplasm, keratin debris and necrosis. (8) Histopathological examination of the tumor reported in the present case showed similar findings which confirmed that it was a squamous cell carcinoma with secondary site of origin. Such metastatic tumors with very rare occurrence are an interesting diagnostic and therapeutic challenge for thoracic surgeons.

Pathologic findings encountered during cadaveric dissection are not only important to surgeons but also benefit undergraduate medical students, as it provides them excellent opportunities to introduce and discuss such findings. Unique variations as such aids in the teaching process and attempts to bridge the gap between preclinical sciences and clinical medicine. (9) To conclude, the present case of squamous cell carcinoma on the posterior thoracic wall in a cadaver is first of its kind and has not been reported in literature till date. Presence of secondary tumors suggests that careful evaluation of the patient and radiographic imaging before and after the treatment is vital to prevent any secondary deposits from being unnoticed.

References