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Gut obstruction from multiple metastasis of subcutaneous leiomyosarcoma : a rare pheonomenon

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Superficial Leiomyosarcoma, an uncommon soft tissue sarcoma, has hematogenous spreading, commonly to the lung and has never been reported to have distant metastasis to the gastrointestinal tract. This is the first case of metastatic superficial leiomyosarcoma to the small bowel as three malignant nodules which resulted in clinical gut obstruction. It is rare that other types of leiomyosarcoma that primarily arises in the gastrointestinal tract, uterus, and retropeironeum revealed evidence of cutaneous metastasis.

In this case, the patient had history of superficial leiomyosarcoma on the left thigh for ten years before it developed distant metastases to the lung, kidney, vertebral body, and finally gastrointestinal tract. Immunohistochemical study was performed to confirm the diagnosis of leiomyosarcoma, both in the cutaneous and its metastasis in the small intestine. The result supported the diagnosis.

Keywords : *Metastatic Leiomyosarcoma, Gastrointestinal tract.*

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ดวงเพ็ญ ถิระบัญชาศักดิ์, วรนุช ธนากิจ. ภาวะลำไส้อุดตันจากการแพร่กระจายของมะเร็งชนิด subcutaneous leiomyosarcoma (อุบัติการณ์ที่หาพบได้ยาก). จุฬาลงกรณ์เวชสาร 2546 ต.ค; 47(10): 653 – 60

Superficial Leiomyosarcoma เป็นsoft tissue sarcoma ชนิดหนึ่งที่พบได้ไม่บ่อยนัก มีการแพร่กระจายทางกระแสโลหิตซึ่งส่วนใหญ่ไปที่ปอดเป็นหลัก และไม่เคยพบมีรายงานการกระจายไปที่ gastrointestinal tract มาก่อน นี่เป็น case แรกที่พบมีการกระจายของ Superficial Leiomyosarcoma ไปที่ gastrointestinal tract หรือ small bowel ใน case นี้ และทำให้ผู้ป่วยมาพบแพทย์ด้วยอาการลำไส้อุดตันในที่สุด ชนิดอื่น ๆ ของ Leimyosarcoma อันประกอบด้วยชนิดที่ถือกำเนิดขึ้นเป็น primary ที่ gastrointestinal tract, uterus, และ retroperitoneum จะพบได้บ้างที่มีการกระจายไปเป็น cutaneous lesion

Case report รายนี้ ผู้ป่วยรายนี้เคยมีประวัติ superficial leiomyosarcoma ที่บริเวณต้นขาด้านซ้ายในตอนแรก ต่อมามีการกระจายไปที่ปอด ไต กระดูกสันหลัง และระบบทางเดินอาหารหรือลำไส้เล็กในที่สุด ได้มีการศึกษาทาง Immunohistochemistry เพื่อยืนยันผลการวินิจฉัยซึ่งได้ทำการย้อมทั้งในชิ้นเนื้อที่มาจากลำไส้เล็กและชิ้นเนื้อที่เป็น primary ที่ subcutis ผลการย้อมก็สนับสนุนการวินิจฉัยใน case นี้

Leiomyosarcomas have been found in various organs and tissues.[1,2] In comparison to leiomyosarcomas that occur in the gastrointestinal tract, uterus, or retroperitoneal region, the superficial leiomyosarcomas occur less frequently, account for 2 % to 3 % of all superficial soft tissue sarcoma.[3] Most common sites of metastasis from primary superficial lesion are lungs via hematogenous spreading and regional lymph nodes, as mentioned in Stout and Hill's cases.[3] We report a patient who presented with primary superficial leiomyosarcoma on the left thigh which metastasized to the lungs, kidney, and bone as well as multiple polypoid masses within the small intestine, which is very uncommon.

Case Report

A 59-year-old Thai male patient, presented himself with gut obstruction. His previous history revealed leiomyosarcoma on the left thigh for ten years, accompanied by distant metastasis to the lung, kidney, and multiple sites of the vertebral bodies about six years earlier. The segmental resection of the affected small bowel was done. Macroscopic examination displays three fungating masses along small intestine without any invasion to the serosa accompanied by serosal adhesion, measuring 5, 3, and 3 cm in largest diameters, respectively. These masses grossly occupied mostly in the submucosal area and *muscularis propria*, pushing its border to the upper surface, which was covered by thin mucosa. The cut surfaces showed inhomogeneous grey-white areas with scattered small foci of hemorrhage and necrosis. (Figure 1)

On histologic examination, the all tumor masses showed invasive growth, arising from the submucosa and *muscularis propria* without serosa involvement. It was composed of interlacing fascicles of spindle-shaped cells with eosinophilic cytoplasm

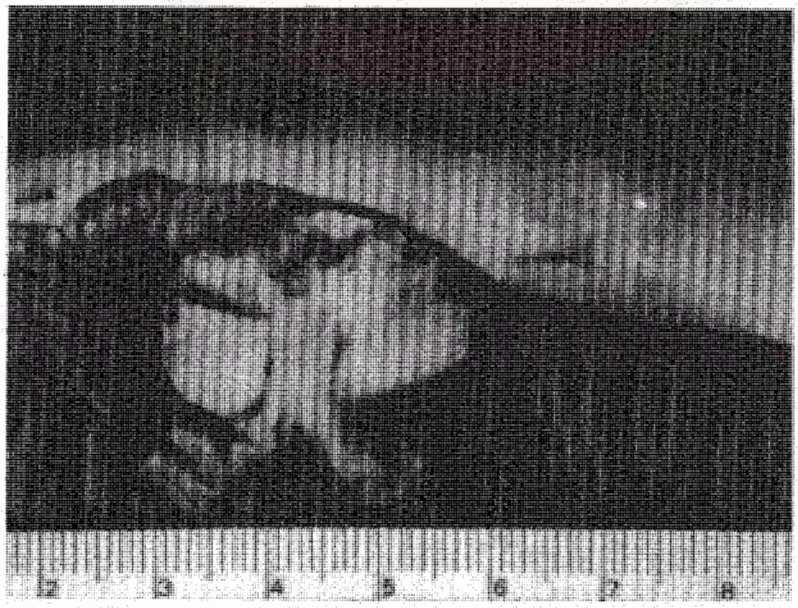

Figure 1. Macroscopic examination of the tumor mass in the small intestine: there are three masses occupying the submucosa and muscularis propria. The mucosa is stretched by the mass effect of the tumor. The cut surfaces display heterogeneous grayish white with occasionally hemorrhagic areas.

and elongated blunt-ended nuclei. Their nuclei were slightly pleomorphic. The mitotic rate was relatively high, with more than 2 mitotic figures per 10 high power fields. (Figure 2-3) A panel of immunohistochemistry studies revealed reactive to smooth muscle specific actin and desmin, but non-reactive to CD34 and CD117 (Figure 4-5).[4]

Because there were three multiple lesions along the gastrointestinal tract following the clinical leiomyosarcoma with its metastasis, we concluded that the diagnosis was metastasis superficial leiomyosarcoma to small intestine. The GIST markers, CD34 and CD117, were negative to exclude the subcategory of stromal tumor which commonly arises

Figure 2. This picture, the tumor presents as submucosal mass of spindle cell tumor with interlacing fascicles. See the intact mucosal epithelium of small intestine at the surface.

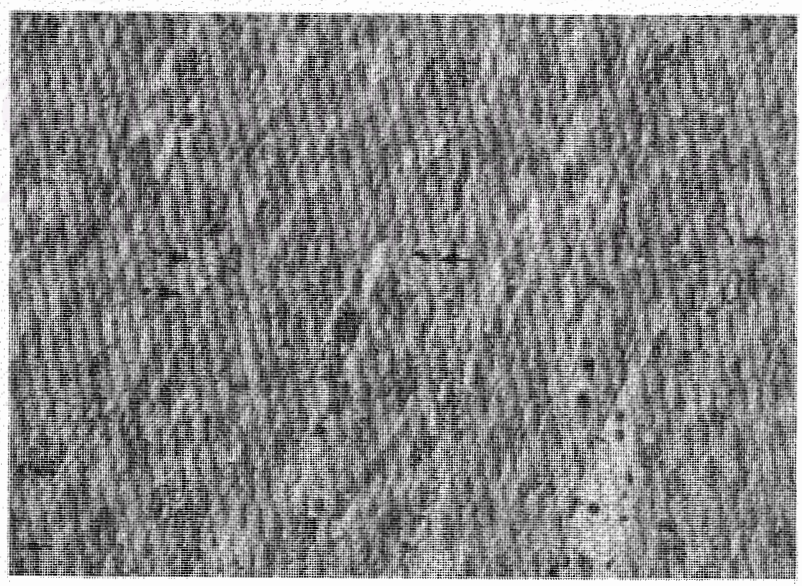

Figure 3. High magnification of the tumor mass (x 40) with six mitoses (arrow). These spindle shaped tumor cell possess pleomorphic nuclei with conspicuous nucleoli, arranging in interlacing fascicles.

Figure 4. The tumor cells, leiomyosarcoma, are evenly positive smooth muscle specific actin. Internal positive control is myofibroblast surrounding blood vessels. (arrow).

Figure 5. This picture shows tumor mass in the submucosa that was totally negative of CD34 staining. See the positive internal control, the capillary wall, in this picture (arrow).

in the gastrointestinal tract.

The additional records about this patient to support the diagnosis are as following findings:

This patient has medical record about first presentation with left thigh mass for two years since July 1995 and the histopathological study reported formalin fixed specimen of skin and subcutaneous tissue, 19x4.5x3.0 cm. The cut surfaces reveal hard grayish white appearance. The specimen of wide excision was submitted as A to E, included lateral resected margin. The final report at first visit for this illness was superficial leiomyosarcoma of left thigh with free resected margins (SP 38-6996). The primary lesion was reviewed and disclosed subcutaneous leiomyosarcoma with express the similar features as found in the small intestine.

March 1999, he developed large mass at right posterior neck with epicenter at soft tissue of lateral neck and encasement the whole right brachial plexus with destruction of adjacent bone and intraspinal extension causing extrinsic cord compression as described that likely to be tumor mass (from MRI report since February 26,1999). Therefore, he was treated by palliative treatment - the radiation. Histopathology of the mass disclosed malignant spindle cell tumor arising in brachial plexus and immunohistopathologic study revealed positive actin and negative S100, CD34, and factor VIII (SP42-2450).

March 2001, he presented with paraparesis symptom and X-ray finding reported right upper lung mass and spondylytic lesion of C6, C7, and T1 with cord compression at thoracic level and neurogenic bladder. Partial laminectomy and palliative radiation were performed. The ultrasonography of KUB system reported findings of metastasis to the liver, right kidney, and left back muscle (U-4341/44).

May 2003, he finally comes to Chulalongkorn hospital with clinical gut obstruction from the metastatic leiomyo-sarcoma to the small intestine as we reported (SP46-4758) and then develops another metastatic lesion at scalp (SP46-6699).

Discussion

Leiomyosarcomas are malignant tumors with express the features of smooth muscle cell differentiation. Mostly the tumor arises beneath the skin, from deep soft tissues of the extremities and the retoperitoneum. The possibility of metastasis from a primary tumor in a deep internal organ has to be considered when there are multiple superficial leiomyosarcomas.[5]

Cutaneous and subcutaneous leiomyosarcomas usually occur in late adult life.[6-9] These tumors are generally diagnosed at an early stage when they are superficial and local. Therefore, a good prognosis is usually given for this type of tumor. They may arise from vascular walls or *arrector pili* muscles. In contrast, deep soft tissue and retroperitoneal leiomyosarcomas follow a more aggressive course.[10-12] Leiomyosarcomas of the latter group, the retroperitoneal type, often arise in the walls of veins as multinodular intravascular growth in the past study.[6,13,14] Numerous cases of leiomyosarcomas have been described as arising in the inferior vena cava, mostly in women. There are scattered reports of leiomyosarcomas that involve the great vessels of the thorax.[15]

Superficial leiomyosarcoma, account for 2 to 3 % of all superficial soft tissue sarcoma[1], and comprises of cutaneous and subcutaneous leiomyosarcoma. The behavior of this tumor is quite good and is analogous to the favorable prognosis in other forms of sarcomas that they are restricted to the superficial soft tissue. Although recurrences develop in almost half of the patients[7], metastases are infrequent and seem to be well correlated with the depth of the original tumor.[1] In contrast to other leiomyosarcomas[16], the superficial leiomyosarcoma is male predominant. They characteristically occur in the hair-bearing regions of the extremities without significant pain or ulcer. Cutaneous leiomyosarcoma is only associated with local recurrence, in contrast with subcutaneous leiomyosarcoma, has its metastatic spread in 30 to 60 % of cases and with 30 to 40 % of mortality rate.[17] Kinoshita S. et al.[4] reported leiomyosarcoma of the skin with generalized

metastasis. In the experiment of Fields and Helwig[8], the tumors that are confined to the dermis hardly metastasize, where as one third of those involving the subcutaneous tissues meta-stasized. This same trend was also noted by Dahl and Angervall[9], who observed metastasis in about 10 % of cutaneous lesion, and 40 % of subcutaneous lesions. The high rate of metastasis (50 %) noted in the early report of Stout and Hill [3] reflects the fact that substantially alters the outcome for the worse. Reviews of clinical features confirmed that subcutaneous leiomyosarcomas were more likely to behave indolently as reported by Swanson and Stanley.[7] Like previously mentioned reference, metastasis usually spreads via hematogenous route to the lung and even regional lymph nodes were noted in about 25 % in Stout and Hill's cases[3] and have been noted in sporadic case reports.[18]

In this case, the primary lesion was considered superfical leiomyosarcoma with distant metastasis to the gastrointestinal tract, small intestine, which is uncommon locations for the tumor.[18,19] He presented with clinical gut obstruction from three tumor masses in small intestine. These masses are localized in the submucosa and muscularis propria, which extended to the mucosa. Macroscopic and microscopic examinations displayed histological features suggestive of leiomyosarcoma and was later confirmed by immunohistochemical study. The patient has been on record for eight years of a primary lesion on the left thigh and the distant metastasis developed in the next four years. The previous metastatic lesions were localized at the 6th and 7th cervical spines and masses were found in both lungs. For these reasons, the tumor masses in the small intestine were likely to have metastasized from the superficial leimyosarcoma.

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