PRIMARY LEIOMYOSARCOMA OF THE OMENTUM

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Two cases of leiomyosarcoma developed from great omentum and gastro-hepatic omentum respectively are reported.

The Case 1 is a 52-year-old female with chief complaint of a mass in the abdomen, which was found to be a primary gastrohepatic tumor upon laparotomy, and histologically diagnosed as leiomyosarcoma.

The Case 2 is a 46-year-old male with chief complaint of precordial pain. Upon laparotomy a part of tumor was found adhered to gastric serosa. The tumor was excised together with stomach. Microscopic observation revealed infiltration spread in the gastric wall.

In either case no metastatic focus was found at the time of operation, and no recurrence is expected although 3 years and 7 years, respectively, passed after the operation.

INTRODUCTION

In a broad sense peritoneum consists of peritoneum, great omentum and mesentery, on which tumor grows rarely. Therefore only a few reports, namely, those of Ackerman (1954), Yannopoulos and Stout (1963), and Stout (1963) are available. Referring to peritoneum, when limited to great omentum and gastrohepatic omentum, leiomyosarcoma is quite seldom, only being found in one case reported by Sanes and Kenny (1934), 2 cases by Levy and Pund (1940), one case by Stout (1963) and one case by Yannopoulos and Stout (1963).

We have experienced two cases of leiomyosarcoma grown on great omentum and gastrohepatic omentum respectively.

CASE 1: 52-year-old female

Chief complaint: Mass in the abdomen.

Present illness: Since March 1975 a palm-sized mass was palpable at upper in the abdomen, but she did not seek medical aid having no subjective symptom at all. The patient visited the hospital because the mass grew larger gradually and became as large as man's head with irregular and uneven surface. It was firm and movable. The examinations of blood, urine, serum and others revealed no abnormalities. Upon laparotomy the tumor was found to be in conformity with gastrohepatic omentum, showing neither infiltration nor metastasis to surrounding tissues and comparatively sharp demarcation. The tumor was excised.
Macro- and microscopic findings:

The tumor, $11 \times 26 \times 15$ cm in size was enveloped with connective tissue and firmly elastic with no apparent infiltration out of capsule. The cut surface was gray and showed lobulation with fibrous connective tissue. Hemorrhage, necrosis and cyst were observed (Fig. 1). Under the microscope the tumor was relatively rich in cellular components and acidophilic tumor cells like long spindles with spindle-shaped nucleus were arranged in irregular bundles or spirals (Fig. 2). Cells were slightly pleomorphic and mitosis was also found at a rate of one in several visual fields, thus it was diagnosed as leiomyosarcoma.

CASE 2: 46-year-old male

Chief complaint: epigastralgia

Present illness: Since May 1979 (one month prior to admission) the patient had epigastralgia and visited the hospital. At the epigastric region movable palm-sized mass was palpable, the surface of which was irregular and firmly elastic. The X-ray examination of the epigastric area revealed that the mass was located near the stomach pressing the greater curvature. Gastroscopically no abnormality was observed on the mucosa of the stomach.

Laparatomy revealed a palmsized tumor laying between the great omentum and the greater curvature. The tumor was enucleated together with the stomach, since it was adhered to the serosa on the greater curvature side of the stomach.

Macro- and microscopic findings:

The tumor was solid and firmly elastic and encapsulated with thin connective tissue. It measured $10 \times 8 \times 10$ cm. The cut surface was fully covered with gray and solid tumor, about $1/4$ to $1/3$ of which showed necrosis and hemorrhage (Fig. 3). The tumor fibroously adhered to serosa on the greater curvature side of the stomach. Under the microscope it was rich in cellular components and cells in spindle and round shapes were mixed irregularly (Fig. 4), and giant cells were observed near necrosis and hemorrhagic areas. In the comparatively solid part mainly spindle-shaped tumor cells were arranged in bundle with irregular runs. Pleomorphism of cells was observed, and mitosis was seen sporadically. At the part of adhesion to serosa of the stomach infiltration of tumor cells was observed.
Fig. 3. Tumor consists of grayish-white, solid tumor and necrosis and hemorrhage are prominent, compared with case 1.

Fig. 4. Tumor tissue is rich in cellular components, and spindle and round shaped tumor cells reveal irregular arrangement. (H. E. stain 5×40).

Fig. 5. In silver stain individual or a few tumor cells are enveloped by reticular fiber. (Silver stain 5×20).

By PTAH staining both Case 1 and 2 showed myofibrils in tumor cells, which, however, was not apparent in round-shaped tumor cells of the Case 2, and in the specimen for electron microscopy prepared from the materials fixed with formaline, a few myofibrils and basal membrane components were observed in the round-shaped tumor cells. By silver staining, either case showed reticular fibers enveloping single or several cells (Fig. 5).

From the above-mentioned findings both Case 1 and Case 2 were diagnosed as leiomyosarcoma.

DISCUSSION

Two cases of leiomyosarcoma on the great omentum and gastrohepatic omentum were reported either of which shows no metastasis to surrounding lymph nodes.

Tumors possibly grow on peritoneum, mesentery and great omentum being originated from blood vessel, fibrous tissue, fat, nerves, etc., but its frequency is very small, which has been discussed by Ackerman (1954), Yannopoulos and Stout (1963), and Stout (1963).

In Japan the reports of Okajima et al. (1968), Kurosawa et al. (1973), and Kojima et al. (1976) are available. According to the study of Yannopoulos and Stout (1963) with 44 cases of non-epithelial mesenteric tumor, 7 cases of smooth muscle tumor covered 16% of the total mesenteric tumor, out of which 29% was leiomyoma, while the remaining 71% was leiomyosarcoma. In their reports one case was found to be leiomyosarcoma developed from gastrohepatic omentum (32-year-old male). Stout (1963) reported on 24 cases of tumor developed from gastrocolic omentum, which included 10 cases of smooth muscle tumor (42%), i.e., 3 cases of
leiomyosarcoma and 7 cases of leiomyoma. Out of 16 cases of benign tumor developed from great omentum, 7 cases were leiomyoma (44%) and out of 9 cases of malignant tumor 3 cases were leiomyosarcoma (33%). When tumors of smooth muscle on mesentery and great omentum are compared, the former appears to be more malignant and the latter are more benign.

In Japan Okajima et al. (1968) reported on leiomyosarcoma developed from peritoneum, and in addition on tumors developed from peritoneum and mesentery clearly diagnosed histopathologically as leiomyosarcoma based on English and Japanese literatures, according to which 9 cases developed from peritoneum, including 4 cases from great omentum and one case from gastrohepatic omentum. Further studies made it possible to add 5 more cases in Japan, namely, two cases of leiomyosarcoma developed from gastrohepatic omentum (Kojima et al., 1976, Kurosawa et al., 1973), one case from great omentum (Moriwaki et al., 1973) and two cases as mentioned above by the present authors.

A total of 10 cases of leiomyosarcoma developed from great omentum and gastrohepatic omentum, namely, five cases referred by Okajima et al. as well as 3 additional reports and two cases of the authors' are shown in the Table 1.

The age ranged from 26 to 70 years old, 45.5 years on the average, the weight of which is inclined to the younger compared with leiomyosarcoma of digestive system (60-year-old), especially of the stomach. Difference was

<table>
<thead>
<tr>
<th>Authors</th>
<th>Pt. sex</th>
<th>Pt. age</th>
<th>Symptoms</th>
<th>Size</th>
<th>Site</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanes and Kenny (1954)</td>
<td>M</td>
<td>48</td>
<td>abdominal mass</td>
<td>50 g.</td>
<td>Great Om.</td>
<td>Died. (post op.)</td>
</tr>
<tr>
<td>Levy and Pund (1940)</td>
<td>F</td>
<td>29</td>
<td></td>
<td>6×5×3 cm.</td>
<td>Great Om.</td>
<td>Died. Recur.</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>26</td>
<td>abd. distress</td>
<td>20 cm.</td>
<td>Great Om.</td>
<td>Died. (post op.)</td>
</tr>
<tr>
<td>Stout et al. (1963)</td>
<td>M</td>
<td>38</td>
<td>abdominal mass</td>
<td>huge</td>
<td>Great Om.</td>
<td>Died. Metastasis</td>
</tr>
<tr>
<td>Yannopoulas and Stout (1963)</td>
<td>M</td>
<td>32</td>
<td>abd. distress</td>
<td>6×4 cm.</td>
<td>Gastrohepatic Om.</td>
<td>Died. Metastasis</td>
</tr>
<tr>
<td>Kurosawa et al. (1973)</td>
<td>F</td>
<td>70</td>
<td>abdominal mass</td>
<td>22×14×13 cm.</td>
<td>Gastrohepatic Om.</td>
<td>Died. Metastasis</td>
</tr>
<tr>
<td>Moriwaki et al. (1973)</td>
<td>M</td>
<td>55</td>
<td>abd. distension</td>
<td>multiple</td>
<td>Great Om.</td>
<td>Died. Metastasis</td>
</tr>
<tr>
<td>Kojima et al. (1976)</td>
<td>M</td>
<td>43</td>
<td>abdominal mass</td>
<td>22×19×12 cm.</td>
<td>Gastrohepatic Om.</td>
<td></td>
</tr>
<tr>
<td>Authors (1979)</td>
<td>F</td>
<td>52</td>
<td>abdominal mass</td>
<td>11×26×15 cm.</td>
<td>Gastrohepatic Om.</td>
<td>Alive. 3 years</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>46</td>
<td>abdominal mass</td>
<td>10×8×7 cm.</td>
<td>Great Om.</td>
<td>Alive. 7 years</td>
</tr>
</tbody>
</table>
scarecelly observed in sex with 6 males and 4 females. Clinically, there were 5 cases of mass in the abdomen, 4 cases of a sensation of fullness discomfort in the hypochondriac region, and one case of others complaints. These symptoms are caused mainly by the pressure based on rapid growth of tumor as general characteristics of malignant tumor. The size of tumors in 10 cases ranged from 5 to 20 cm being larger than those of the benign ones. It is considered that size of tumor is largely influenced by the characteristics of onset regions, such as mesentery and great omentum.

Stout (1963), in his studies, classified tumors on great omentum clinically to those with and without symptoms, and found that malignant tumors had symptoms in all cases, while benign tumor showed only 5 cases with symptoms out of 13 cases, thus those with symptoms generally had tumors larger in size.

Grossly, tumors on smooth muscle are solid, enveloped by capsule, the cut surface of which being gray, solid, necrotic and bleeding. Histological pictures differ much case by case, but it comprises the mixture of bundle arrangement of spindle-shaped cells or round-shaped cells, and there are many to look at including pleomorphism of cells, mitosis, etc. In the authors' experiences mitosis was observed at a rate of one in several high power fields together with slight pleomorphism of cells. In case of smooth muscle tumor the boundary of being benign and malignant is difficult. When infiltration and metastasis are seen it is clear, however, if they are not found diagnosis must be given in careful consideration upon checking pleomorphism of cells, mitosis, size of tumor, mixing of bizarre cells, etc. The prognosis was grave with five patients out of 10 (including one unknown) being died of metastasis, either one of which showed metastatic foci at the time of operation. Two patients died of postoperative complications. The two cases reported in this paper progressed favorably 3 years and 7 years respectively, with no sign of recurrence and metastasis.

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REFERENCES

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