THE CLINICAL PATHOLOGY AND DNA PLOIDY OF GASTRIC MUCOSA ASSOCIATED LYMPHOID TISSUE (MALT) LYMPHOMA INFILTRATING THE LEIOMYOMAS OF THE UTERUS

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ABSTRACT

Objective: To investigate the clinicopathology and DNA ploidy of gastric mucosa associated lymphoid tissue (MALT) lymphoma infiltraving the leiomyomas of the uterus of a patient. Methods: The routine paraffin slides were cut, stained with HE, immunochemically by ABC methodusing the and stained by Feulgen method. Then the DNA ploidy of tumor cells was measured with an image cytometer. Results: In the mucosa, submucosa and the smooth muscle layer of the stomach and in the leiomyomas of the uterus there was diffusive and dense infiltration of centrocyte-like cells. The DNA measurement results were that the distribution of DNA mass of lymphoma cells in stomach and in lymph nodes had a single main aneuploidy peak each, and the distribution of DNA mass of lymphoma cells in leiomyomas of uterus had two peaks; one of them was the diploid, the other aneuploid. Conclusion: The MALT lymphoma cell invasion in uterus must be differentiated with a primary lymphoma in the uterus, the chronic lymphocyte leukemia in uterus and an endometrial stromal sarcoma. The present prognosis of the patient under discussion was poor. The follow-up results indicated the DNA index seemed to be important for predicting the malignancy degree and prognosis.

Key words: MALT lymphoma, Leiomyoma, Clinicopathology, DNA ploidy

The mucosa associated lymphoid tissue (MALT) lymphoma is a sort of lower malignant lymphoma with special pathological morphology and clinical characteristics.[1] Its involvement in leimyomas of the uterus is relatively rare. In this article we report one case of MALT lymphoma in stomach and its cells infiltrated the Leimyomas in the uterus and and also report its clinicopathology characteristics and DNA ploidy.

MATERIALS AND METHODS

The patient was a 54 years old woman. She had been menopausaul for two years. Then, she had a loss of 10 kilograms of her body weight in 4 months and found a lump in her lower abdomen. The patient also felt anorexic, sometimes had stomach pain and thin stools for one month. After taking some medicine, the patient felt the symptoms were relieved. The patient had been healthy before. The pregnancy history was 1-0-1-1. Physical examination: no superficial lymph node or enlargement and, the liver and the spleen were felt. Gynecological examination: The cunnus was parous. The vagina was unobstructed but with some cafe color liquid in it. The cervix of uterus was atrophied. The body of the uterus was in retroposition. An immovable cystic lump could be felt in front of the uterus. Its surface was smooth. And there was no tenderness. The upper boundary of the tumor was up to the height 3 cm between the umbilicus. The lateral boundary reached to the wall of pelvis. The patient's peripheral blood was normal. B-mode ultrasound examination showed there were leimyomas of the uterus and a cyst in the right ovary. The barium meal examination did not show any abnormallities. With extradural anesthesia, the patient underwent a hysterectomy and oophorectomy. During the operation, it was seen that the surface of the uterus was rough, and there was a huge cyst in right ovary. The left ovary was atrophied. The left overian duct was normal. In the meantime, a tumor in the antrum of the stomach was found, so that the stomach with its local lymph nodes was removed. After the operation, the patient received chemotherapy and died 1.5 months after the operation.

The resected specimens were fixed with 3% methanol. The routine paraffin slides were cut and stained with HE, immunochemistry ABC methods, and were stained by the Feulgen method. The DNA ploidy of tumor cells was measured with an image cytometer ICM-100 cell morphology analysis

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system. The objective used for measurement was 40, the wave of the light was 560 nm. The small lymphocytes around the follicles in the lymph node of a normal person were selected as the normal control, which was batch stained with the lymphoma cells.

RESULTS

Gross Examination

The tumor in the antrum of stomach was 9 cm × 4 cm in size. The mucosal surface of the tumor was rough. In the center of the tumor there was an irregular ulcer. The tumor was infiltrating around the whole antrum and was white and gray in color in its cutting surface. The texture was fish flesh like. The tumor was 2 cm away from the upper and 1.5 cm from the lower resection line of the stomach. Ten lymph nodes with the size of 1 cm^3 to 0.8 cm^3 in great curvature and 6 lymph nodes with the size of 0.5 cm^3 to 0.3 cm^3 in small curvature were found. The size of the uterus was 11 cm × 8 cm × 7.5 cm. In the muscular layer of the uterus, there were 4 leimyomas. The largest one was 4 cm^3, the smallest one was 1 cm^3. The cutting surface was white with weave like streaks. The surface of the cervix was white and granular. There was a 17 cm^3 cyst in the right ovary. A flat ovarian duct with distinct fimbria was attached to the wall of the cyst. The cyst was filled with clear liquid and the inner wall of it was smooth.

Microscope Examination

There was diffusely dense infiltration of centrocyte-like lymphocytes in the mucosa, submucosa and the muscular layer. The cells were small with round, elliptic and somewhat irregular nuclei. The chromosomes were rough, the nucleoli were indistinct, and no mitosis seen. The lymphocytes had little eosinophilic narrow ring like cytoplasm. Some lymphocytes were like lymph-plasma cells. There were some atrophic glands remaining among the tumor cells. The mucosal infiltration of tumor cells between the epithelia of the glands (lymph-epithelial disease) could be seen. There were no formed follicles seen. Many of the small vessels were irregularly distributed in the stroma. The endothelia were not proliferative. The structure of lymph nodes of great and small curvature of stomach was destroyed. The lymph nodes were replaced by the densely infiltrated neoplasm lymphocytes. There were also many neoplasm lymphocytes infiltrating in the capsules of the lymph nodes and the adipose tissue around them. The leimyoma cells in the uterus were spindles. The size and morphology of them were consistence without atypia and mitosis. The nuclei were rod like; their ends were blunt. The cytoplasm was eosinophilic. The leimyoma cells were arranged in bundles and whirls. There was large quantity of lymphoma cells diffusely infiltrating among the leimyoma cells. In some parts of the leimyoma cells were pushed away by the lymphoma cells and became loose. The density of the infiltrating lymphocytes was varied in each leimyoma, and in different parts of even one leimyoma. In the area only sparsely infiltrated by lymphocytes, the leimyoma cells arranged in bundles could clearly be seen. In the area densely infiltrated by lymphocytes, the leimyoma cells were indistinct, and could sometimes be ignored. The endometrium was simply atrophy of post menopause. The cervix of the uterus showed a slight chronic inflammation. The cyst of the right ovary was lined with cubic and flat epithelial. Outside the epithelia there was a thin layer of smooth muscle. The diagnoses were MALT lymphoma of stomach, multiple leimyomas associated with the invasion of MALT lymphoma in the myomas of the uterus and epioophoron cyst of right ovary.

Immunochemistry

The lymphoma cells in the stomach expressed LCA, L_{26}, IgG, λ, PCNA positive, and κ negative. The lymphoma cells in leimyomas of the uterus expressed LCA and L_{26} weak positive, κ and λ negative. There were some Mac_{387} positive cells sparsely distributed among the lymphoma cells in stomach and in leimyomas in the uterus.

Table 1. The DNA ploidy of lymphoma cells in stomach, lymph nodes and in leimyomas of uterus.

Lymphoma cells in	Number of measured cells	The main peak					The second peak				
		DNA ploidy	DNA mass(pg)	DNA index	CV	S	DNA ploidy	DNA mass(pg)	DNA index	CV	S
stomach	316	Aneu-ploidy	9.98	1.39	0.03	0.03	/	/	/	/	/
lymph nodes	312	Aneu-ploidy	9.04	1.26	0.04	0.03	/	/	/	/	/
leimyomas	311	diploidy	7.02	0.98	0.04	0.03	Aneu-ploidy	13.13	1.83	0.14	0.07

CV, coefficient variation. S, standard deviation.

The DNA Measurement

The lymphoma cells in stomach and in lymph nodes of great curvature of stomach had a single main peak respective. The lymphoma cells were aneuploidy. The lymphoma cells in leimyomas of uterus had two peaks, the main peak was diploidy, and the second peak was aneuploidy (Table 1).

DISCUSSION

The MALT lymphoma was first put forward by Isaacson and Wright in 1983. In recent years, the new concept was proposed by WHO that it is the MALT marginal B cell lymphoma.[2-4] One of the characteristics of MALT lymphoma is that it usually is limited in primary location for long time without distant dissemination. Our case of MALT lymphoma in stomach was disseminated to leimyomas in uterus which is very rare. The symptoms of the stomach were so hidden that they were ignored. It made us suggest that systemic examination before an operation is very important because the correct diagnosis before the operating was crucial to the decision of operation procedure.

The invasion of MALT lymphoma in leimyomas of the uterus must be differentiated with the following diseases: (1) A primary malignant lymphoma in the uterus. In this situation, one should stick to the diagnosis criteria for primary lymphoma in uterus. The infiltrating cells of MALT lymphoma in leimyoma are mainly small lymphoma cells. Under careful examination, one can see the spindle leimyoma cells arranged in bundles and whirls; (2) The invasion of chronic lymphocyte leukemia cells in the uterus. The patients often have hepatomegalia and splenornegaly. On gross examination, no lumps with weave like streaks can be seen. Patients still have the peripheral blood and bone marrow changes; and (3) Endometrial stromal sarcoma. Other than round or elliptic, the shape of tumor cells could be fusiform or short spindle. Mitoses are frequently seen. The tumor cells often grow along the lymphoduct. There are usually many thin-walled arteries in the tumor. The tumor cells express vimentin, desmin and actin positive. The MALT lymphoma cells infiltrated in leimyoma are mainly small centrocyte-like lymphocytes. Mitoses are rare. The tumor cells express the lymphocyte's marks positively. In addition, the long spindle leimyoma cells among infiltrated lymphoma cells can be identified.

The DNA ploidy of malignant tumors was an important indicator to the estimation of malignancy degree, prediction of patient's prognosis and evaluation of treatment effects.[5] It was reported that the rate (53.2%) of aneuploidy of NHD lymphoma was remarkably lower than those (75%—90%) of other solid malignant tumors. The DNA aneuploidy is more likely to be seen in highly malignant lymphomas, while DNA diploidy or near diploidy was seen in low or moderate malignant lymphomas. In our case, the lymphoma cells in the stomach and in the lymph nodes along the great curvature were aneuploid with the DNA indices 1. 39 and 1. 28 respective, and the lymphoma cells in leimyomas in the uterus had an aneuploid second peak with a DNA index of 1.83 besides the main diploid peak, which reflected the relatively higher malignancy of the neoplasm. The follow-up also showed that the patient had died 1.5 months after the operation. Our investigation result supports that the DNA ploidy is well related to the malignancy of lymphoma and the patient's prognosis,[2] and suggests that the DNA index may be an important indicator to the malignant degree of lymphoma and the patient's prognosis.

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