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Peritoneal Malignant Mesothelioma: About a Case and Literature Review

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***Abstract*— Malignant mesothelioma is a rare tumor, the occurrence of which is closely linked to exposure to asbestos, Its incidence is estimated at 0.5 to 3 cases per million inhabitants in humans and 0.2 to 2 cases per million in women.**

Pleural mesothelioma is the most frequent form, the peritoneal location represents the second location in terms of frequency, it represents 30% of cases. It is a tumor characterized by clinical polymorphism, and the diagnosis is often made at an advanced stage of the disease, and is based on pathological examination with immunohistochemical study.

The prognosis remains poor, and the treatment is multimodal and discussed in the multidisciplinary consultation meetings (RCP), based on cytoreductive surgery associated with hyperthermic intraperitoneal chemotherapy (CHIP) in localized forms and systemic chemotherapy in disseminated forms. to the entire peritoneal cavity.

***Index Terms*— Peritoneal mesothelioma, Surgery, HIPEC, Chemotherapy.**

I. INTRODUCTION

Malignant mesothelioma is a rare , aggressive , tumor that develops from the mesothelial cells of the pleura, peritoneum, pericardium and testicular vaginal [1].

Pleural malignant mesothelioma is the most common, with peritoneal malignant mesothelioma (MMP) accounting for only about 10-30% of all malignant mesothelioma [1].

Its incidence is estimated at 0.5 to 3 cases per million population in males and 0.2 to 2 cases per million in females [2].

It is a primary pathology of the peritoneum characterized by an infiltration of the peritoneal serosa, progressive, which can cause visceral damage by continuity. Its diagnosis is difficult to ascertain, given the non-specificity of clinical presentations, the low sensitivity of peritoneal cytology,and the macroscopic appearance similar to secondary peritoneal carcinosis. The pathological examination and the realization of suitable immunohistochemical markings must lead to the diagnosis of peritoneal mesothelioma (carcinoembryonic antigen-ACE-, Ag B72.3 negative, calretinin positive) [3].

Treatment has long been purely palliative, based on systemic chemotherapy, with median survivals not exceeding 15 months [4-6].

The development of intraperitoneal hyperthermic chemotherapy (CHIP) techniques led to a discussion of another therapeutic strategy consisting, once the diagnosis of certainty established, in the achievement of an optimal cytoreduction surgery associated with a CHIP.

OBSERVATION

Ms S . L is a 45-year-old patient without ATCD consulted in January 2020 for abdominal distension with vomiting, diffuse abdominal pain, constipation associated with ascites and unencrypted weight loss.

The physical examination finds an ascites and the rest of the examination is without particularities.

Pelvic IRM . was requested on 14/01/2020 and showed a peritoneal nodular thickening related to carcinosis on a probable ovarian tumor. Figure 1”

An exploratory laparotomy was carried out on 17/01/2020 with right annexectomy + peritoneal granulation samples.

The pathological examination of the operating room was in favor of an epitheloid mesothelioma .

The immunohistochemistry complement showed anti-calretinin, anti-WT1, anti-CK56 and anti-CK5/6 positivity and negativity for anti-RE, anti-hibine, anti-Melan A and anti-GATA-3 markers and rare anti-PAX-8 labelled cells.

The RCP decision of 17/06/2020 was to start palliative chemotherapy.

The patient was put on gemcitabine-cisplatin chemotherapy and received only one treatment on 24/08/2020 and then lost sight of.

DISCUSSION

Mesothelioma is a tumor resulting from the neoplastic transformation of mesothelial cells, lining the serosa. This is neoplasia involving serous membranes of the pleura

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(65–70%), peritoneum (30%), more rarely pericardium (1–2%) or testicular vaginal tunic[7].

The epidemiology of this pathology is characterized by many geographical and temporal variations.

The incidence in industrialized countries is between 0.5 and 3 cases per million of men, and 0.2 and 2 cases per million of women [2]; Moreover, because of the low sensitivity and specificity of the diagnosis, peritoneal mesothelioma can be confused with peritoneal locations of other tumors of gynecological or digestive origin. Overall, the incidence of mesothelioma in all locations is gradually decreasing, probably due to reduced exposure to asbestos.

Peritoneal mesothelioma accounts for 6-10% of all mesotheliomas [8] and occurs in adults, with a median age of 55 years, affecting men more frequently, and whose prognosis is more favourable for women [9]. Our patient's age is lower than the literature.

The role of asbestos as a risk factor remains discussed in the MMP. According to some studies, exposure to asbestos is a significant etiological factor for MMP, but its involvement is less than that observed in pleural mesothelioma [2].

According to US SEER data, the incidence of pleural mesothelioma increased between 1973 and the 1990s and then stagnated,

In the United Kingdom, the use of asbestos has been reduced by 20 to 40 years. In contrast, the incidence of MMP varied little between 1973 and 2003, suggesting that asbestos exposure is responsible for only a minority of MMP cases [10].

Other stell mineral fibres such as erionite, a mineral fibre belonging to the zeolite group, or mica were implicated in the tumor igenesis of MMP [11,12].

Many studies have detected the SV40 papovavirus sequence in the pleural mesothelioma samples and for some, the SV40 virus has a co-carcinogenic role associated with asbestos. Data for MMP is limited. Shivapurkar et al. analyzed 11 peritoneal mesothelioma cases and SV40 sequence was detected in 7 of these cases [13]. Finally, the possible etiological role of chronic peritonitis has also been reported [14,15].

Anatomopathological examination is the key to diagnosis, and histological confirmation must be done by two experts and preferably in a specialized center. Macroscopically, peritoneal mesothelioma is characterized by the presence of multiple tumor nodules of variable size and consistency disseminated in the peritoneal cavity. These lesions can range from sub-centimetric diffuse nodules to large nodular masses that extend into leaflets and confluent to form plates and masses [16].

Microscopic examination distinguishes three histological subtypes: epithelial; Sarcomatoid and biphasic, the latter presenting an association of the two other subtypes.

The epithelial or epitheloid subtype found at the anatomopathological examination of our patient is the most common, and can form four different histological variants: tubular, papillary, diffuse and deciduoid (abundant eosinophilic cytoplasm) [7,17].

Cells resemble normal flat or cuboid mesothelial cells with a nucleaumonotone, mitotic figures are infrequent.

Immunohistochemistry is essential for diagnosis.

Mesothelioma cells are positive for several cytokeratins, including 5/6 cytokeratins, vimentine, cal-retinin, EMA (epithelial antigen membrane),

Mesothelin and WT1. In our observation, immunohistochemistry revealed anti-calretinin, anti-WT1, anti-CK56 and anti-CK5/6 positivity and negativity for anti-RE, anti-hibine, anti-Melan A and anti-GATA-3 markers and rare cells labeled anti-PAX-8.

Although no immunohistochemical marker is specific, but some allow it to differentiate from more common tumors such as adenocarcinoma.

Metastatic, peritoneal primary serum carcinoma, or soft tissue sarcoma that may have a similar histological appearance [7,18,19].

The clinical symptomatology of peritoneal mesothelioma is non-specific; Indeed, we frequently find ascites, localized or diffuse abdominal pain, constipation-type transit disorders, or even a subocclusive syndrome, weight loss or abdominal mass. Our patient's chart is typical of this description.

Clinically, peritoneal mesothelioma can be subdivided into two localized and diffuse subtypes; diffuse mesotheliomas, which extend throughout the abdominal cavity and are manifested by a rapid development of ascites or painful tumor progression in the abdominal cavity, and localized mesotheliomas, less frequent in the form of focal mass, which may have a local or locoregional extension, with invasion of adjacent organs [16].

Imaging plays a key role in the positive and differential diagnosis of peritoneal mesothelioma. Abdominal CT or MRI are the most useful initial, although non-specific, examinations showing the presence of ascites, diffuse and extensive tumor infiltration of the peritoneal cavity, irregular

and nodular thickening of the peritoneum, or more rarely the presence of an isolated budding intraperitoneal mass [20,21].

Imaging allows us to obtain information on the extent of the disease, despite a tendency to underestimation, and contributes to the therapeutic decision through the use of PCI (Peritoneal Carcinoma Index). Imaging also allows guided biopsy punctures under ultrasound or CT that are the key to diagnosis.

Sometimes laparoscopic or exploratory laparotomy is necessary. This biopsy must be carried out with extreme caution, because of the risk of tumor dissemination along the biopsy path, it makes it possible to establish the histological and immunohistochemical diagnosis of certainty. Cytological analysis of ascites fluid, often non-contributory, is of limited diagnostic utility [16].

Indeed, differentiation between benign or malignant proliferation of mesothelial cells can be difficult, and cytology does not reveal stromal invasion in the peritoneum or underlying viscera [20] Tumor markers have no diagnostic value.

The differential diagnosis of a peritoneal mesothelioma can be discussed with all other isolated peritoneal disorders, including inflammatory or infectious disorders such as the peritoneal rculosis tube (partition ascites, many ADP), a lymphoproliferative disease or a carcinomatous tumor, most often of digestive or gynecological origin.

Because of the rarity of this pathology, and its heterogeneity, both clinically and prognostically, we have only small clinical trials with a small number of patients, Making it difficult to reach a real consensus on the management of peritoneal mesothelioma.

Many treatments were evaluated prior to the development of CHIP [22].

Several systemic chemotherapy agents have been used (cisplatin, gemcitabine...) with no real improvement in prognosis, with reported survival medians not exceeding 15 months [22].

Chemotherapy takes on its full importance in cases not covered by surgical treatment.

Treatments such as anti-EGFR, anti-VEGF and anti-PDGF are under study, having not shown for the moment any major activity.

In our observation, the decision was to do gemcitabine-cisplatin palliative chemotherapy, the patient received only one treatment and was lost sight of, so the assessment of the response to this protcole was impossible.

The prognosis of this pathology remains gloomy, the median survival in untreated patients does not exceed nine months, this survival rate can be improved thanks to the various therapeutic means currently available.

CONCLUSION

Peritoneal mesothelioma is a rare clinical entity, the diagnosis is often at a late stage due to the non-specific character of the initial symptomatology.

The key to diagnosis is the pathological examination of a peritoneal biopsy, confirmed by two experts and preferably in a specialized center.

The prognosis remains bleak, however, since the development of locoregional treatments, a significant improvement in survival has been observed in cohort studies. These locoregional treatments are complex, heavy, at risk of complications, non-standard and must be reserved for specialized centers.

The effectiveness of the combination of cytoreduction surgery and intraperioperative hyperthermal chemotherapy improves the progression of the disease in terms of survival, and should today be the reference of peritoneal mesothelioma, despite significant morbidity.

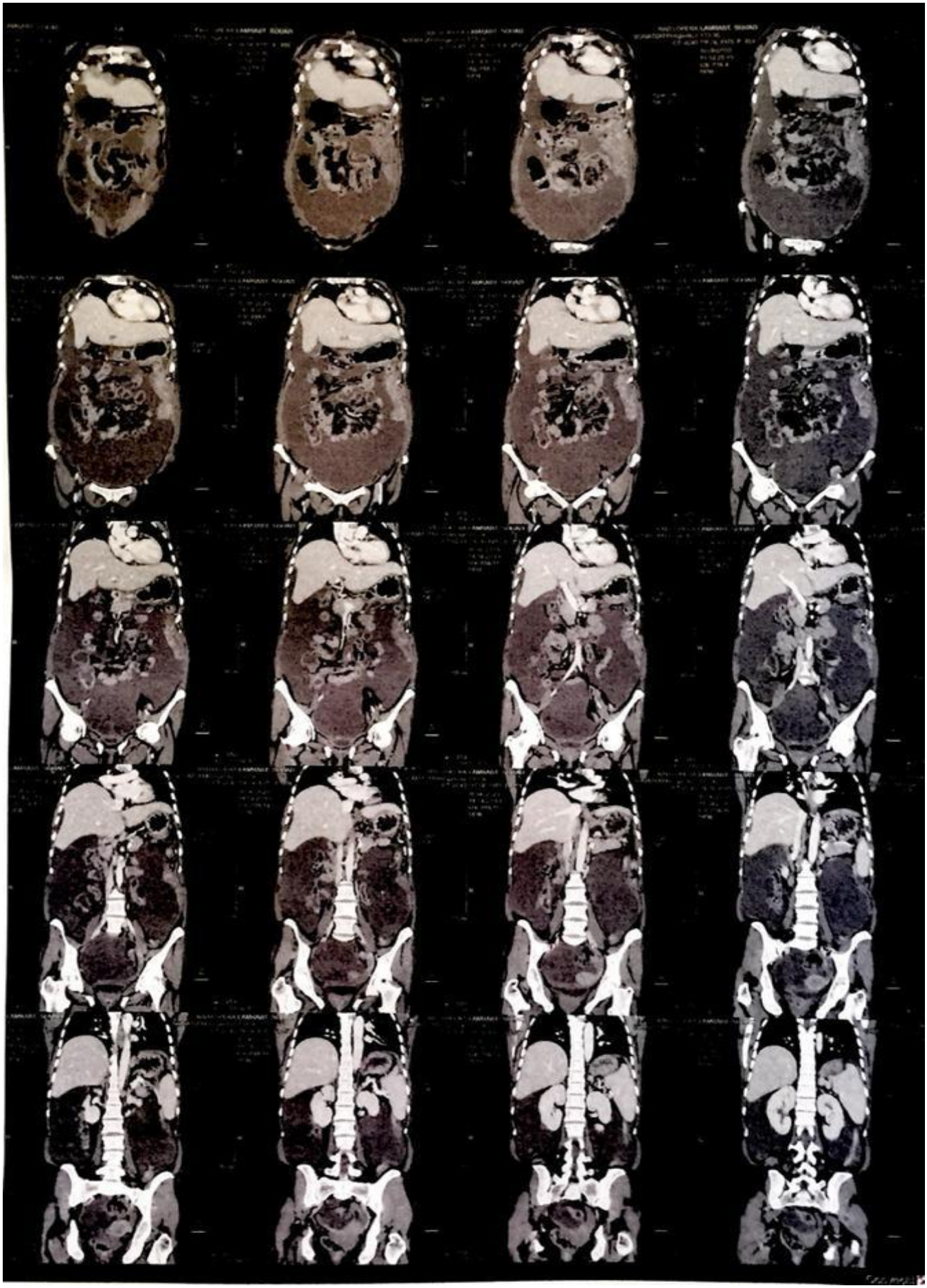

Figure 1. Pelvic abdomen IRM

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