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LETTER TO THE EDITOR

A CASE OF SYMPTOMATIC MESENTERIC PANNICULITIS PRESENTING WITH UNUSUAL POSITIVE FDG PET/CT NODULAR COMPONENTS: AN ATYPICAL IMAGING STRATEGY WITH HISTOPATHOLOGIC CORRELATION.

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Dear Editor in Chief,

Mesenteric panniculitis (MP) is a benign inflammatory condition of unknown etiology that involves the adipose tissue of the proximal mesentery and has received considerable attention over the last two decades. In a recent couple of papers published in volume 94 (2011) of JBR-BTR we successively tried to explore the typical imaging findings and to prospectively study the prevalence and natural course of MP (1,2).

The radiological CT diagnosis of MP is classically based on typical if not pathognomonic features clearly described and documented in the literature (1-6). They comprise the presence of a well-defined "mass effect" on neighboring structures (sign 1) constituted by mesenteric fat tissue of inhomogeneous higher attenuation than adjacent retroperitoneal or mesocolonic fat (sign 2) and containing small soft tissue nodules (sign 3). These nodules are typically surrounded by a hypoattenuated fatty "halo sign" (sign 4) and a hyperattenuating pseudocapsule may also surround the all entity (sign 5). The last two signs (4 and 5) are considered inconstant but extremely specific.

We first concluded that the prevalence of mesenteric panniculitis was much higher than previously reported ranging from 3, 42% to 7, 83% of patients – following the number of CT signs (3 or 5) considered as efficient to achieve the diagnosis – in which an abdominal CT was performed for various reasons or symptoms (2). This high prevalence could probably explain the spontaneous association with the numerous and probably unrelated clinical situations found in the literature in many single cases reports. In fact we also concluded that the vast majority of cases could be considered as idiopathic, benign an asymptomatic (2). Moreover follow-up CT studies showed a great stability of the CT findings of mesenteric panniculitis in about 85% of cases (2).

One of our most important but still controversial conclusions was that the value of MP in term of predictivity of an associated neoplasm was probably not relevant. Indeed except a discretely higher prevalence found in patients presenting with bladder and/or prostatic neoplasms and with

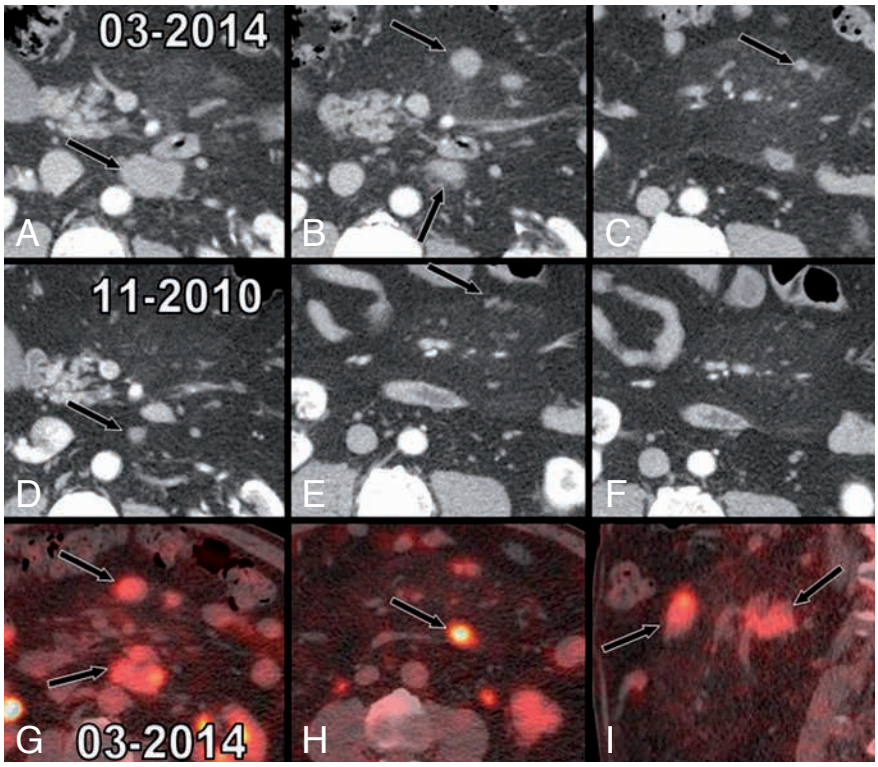

Fig. 1. - Axial images (A-C) illustrate rather typical CT features of mesenteric panniculitis (MP) comprising mesenteric fat tissue of slightly higher attenuation than adjacent retroperitoneal or mesocolonic fat, a "mass effect" on neighbou ring structures, diffuse small soft tissue nodes and a subtle "halo sign" around several nodes. Nevertheless unusual and sometimes supracentimetric large nodes (black arrows) are also associated in the mesentere itself and in the preaortic retroperitoneal fat. Fortunately a previous abdominal CT performed 30 months earlier is available in our PACS (D-F) already showing MP signs and subtle peripheral nodes. We first conclude that the process has an extremely slow growth reinforcing the high probability of a begnin process. For safety reasons a PET/CT is proposed (G-I) to reinforce the diagnosis of benign MP. Nevertheless the results appear very ambiguous and paradoxically pejorative with a marked hypermetabolism of the largest atypical nodules.

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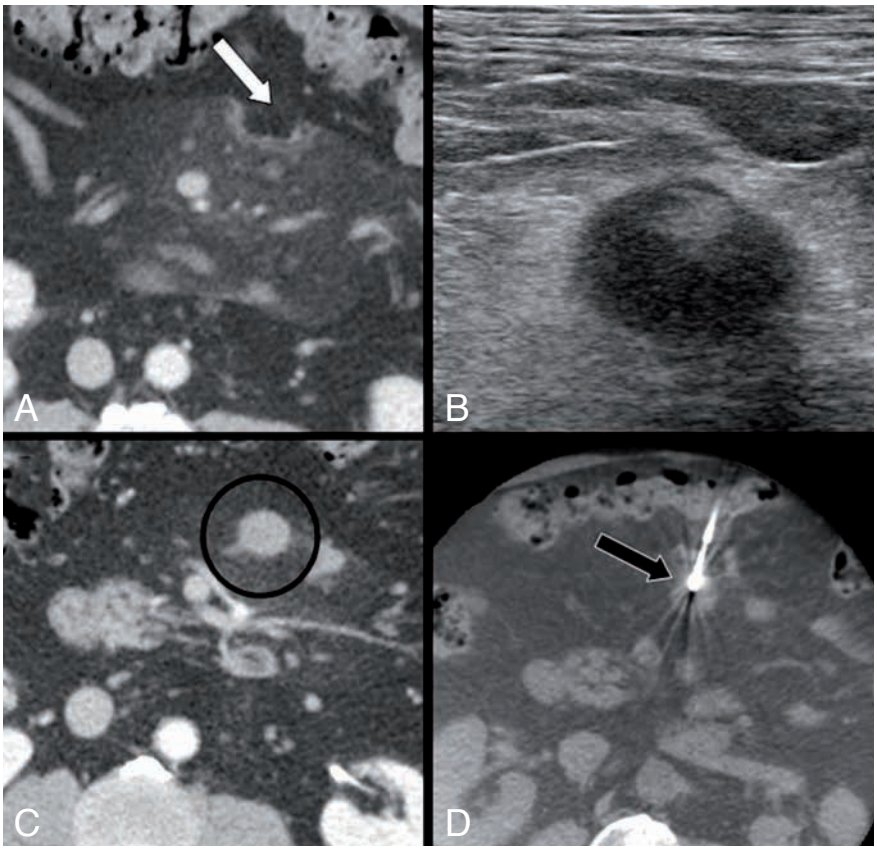

Fig. 2. - On a control CT performed 2 months (A, B) after surgical exploration it clearly appeared (as suspected in the light of the histologic result) that the surgical biopsy whose trace was still perfectly visible (white arrow on A) had been made in the predominantly lipomatous portion of the MP. The most superficial supracentimetric hypermetabolic nodule was still present (B). During complementary abdominal Ultrasound this nodule appears as a hypoechoic, hyperattenuating and almost avascular mass (C). The nodule was successfully biopsied under combined ultrasound and ConeBeam CT guidance (black arrow on D).

lymphoma the general prevalence of mesenteric panniculitis in our study didn't significantly differ in our two "neoplastic" and "non neoplasic" large cohorts of patients (2). This important conclusion remains ambiguously controversial for several authors (7, 8) but nevertheless and recently been comforted by a large matched case-control study (9).

Another of our conclusions, which remained more speculative, was that the potential progression of MP to the heavy more debilitating retractile mesenteritis was extremely difficult to predict. It seemed to remain a very rare event that was not encountered in our rather long period of observation (1,2). Therefore such a progression may also be considered as doubtful. A real kinship or a complete independence between the two entities remains thus an open question which cannot be unequivocally answered.

Finally PET/CT as reported by Zissin (10) was also comforted as being useful to correctly exclude mesenteric tumoral involvement in doubtful or ambiguous cases (2).

Nevertheless even with an excellent experience in CT diagnosis of MP, unusual and ambiguous situations may be found in several patients necessitating the deployment of more unusual and/or invasive strategies to obtain an unambiguous certified diagnosis.

So we also recently read with interest the paper of Garg (11) who performed CT-guided percutaneous administration of Spot sterile carbon stain to a single F-18 FDG positive mesenteric lymph node to allow identification during subsequent laparoscopic resection in a patient presenting with an atypical PET-positive mesenteric panniculitis.

We recently experienced a similar atypical and ambiguous case. A 68 year-old presented to the department of gastroenterology with complaints of fluctuating epigastric abdominal pain. Gastroscopy, upper abdominal Ultrasound and laboratory tests were normal. Abdominal CT demonstrated typical CT findings of mesenteric panniculitis (MP) (Fig. 1A-C) but some unusual and sometimes supracentimetric large nodules were also associated in the mesentery itself and in the preaortic retroperitoneal fat.

A previous abdominal CT performed 30 months earlier was available in our PACS (Fig. 1D-F). Typical MP was already clearly visible and had been described. The nodules described today were also already present but at this time there were infracentimetric. It was thus first concluded that the process has an extremely slow growth, reinforcing the high probability of a benign process. However for safety reasons PET/CT was performed (Fig. 1 G-I) to reinforce the diagnosis of benign MP. Nevertheless the results appeared very ambiguous and paradoxically pejorative with a marked hypermetabolism of the largest atypical nodules.

Celioscopic mesenteric biopsy was first performed and illustrated typical histopathologic features of MP.

Nevertheless we remained convinced that the histology did not correspond to the nodule that had been supposed to have been biopsied. Indeed the fat content of the histologic specimen was too important to correspond to the positive PET-CT dense nodule. In fact the histology was more corresponding to the more classical and usual inflammatory fat that constitutes most of the volume of the mesentery in cases of MP (Fig. 3 A, B). Effectively the nodule was still visible on a control CT performed two months later (Fig. 2B) and the scar of the unsuccessful surgical biopsy was clearly seen near it (Fig. 2A). The nodule was clearly visible during focused abdominal ultrasound (Fig. 2C, D) and pressure on the lesion was painful. Percutaneous biopsy under ultrasound guidance and supported by Conebeam CT revealed a benign histology of dense inflammatory fibrosis (Fig. 3C, D).

The patient was finally discharged with symptomatic treatment (analgesic and anti-inflammatory drugs)

This case demonstrates that while most cases of MP have pathognomonic CT appearances there are atypical presentations where more invasive diagnostic strategies are needed. Our case also offers the opportunity to illustrate different histological patterns of the same benign disease.

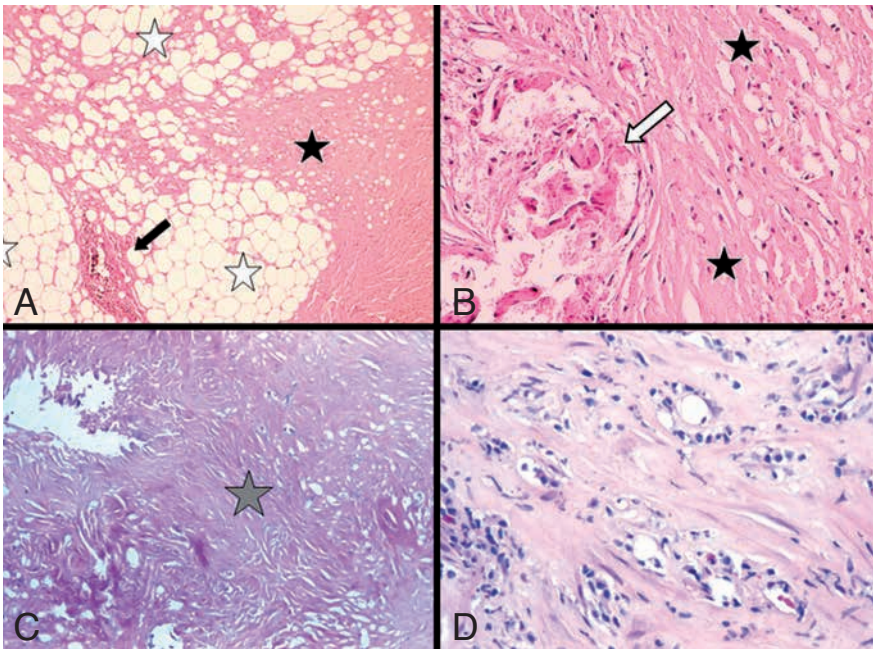

Fig. 3. - Photomicrographs. A (Hematoxylin and Eosin, × 5) & B (Hematoxylin and Eosin, × 20) illustrate the typical histopathology of the predominantly adipous component of the mesenteric panniculitis obtained during celioscopy. The mesenteric adipous tissue (white stars) is dislocated by fibrous bands (black star on a). A minimal inflammatory reaction is present with a lymphoid focus (black arrow). Figure B shows an area of adiponecrosis with macrophagic reaction (white arrow) surrounded by fibrosis (black stars). C, D illustrate the benign histopathology of the hypermetabolic nodule biopsied under ConeBeam CT guidance. Extensive fibrosis (grey star) is intermingled with a predominantly lymphocytic inflammatory reaction. Some plasmocytes and eosinophiles are also present on figure D.

Until now the precise etiology of MP (the more accurate histological name being "sclerosing mesenteritis") remains unknown. However, as shown in the reported cases, many histological features such as the presence of lymphocytic infiltrates, and to a lesser degree of plasmocytic and eosinophilic reactions in "active" nodules and but also the development of massive fibrosis which succeeds when the lesions become more quiescent is not unlike the appearance of autoimmune diseases.

In this autoimmune hypothesis the possibility that MP could represent another additional expression of the constantly increasing group of IgG4 related diseases (IgG4-RD) has already been suggested by several authors (12, 13) but rejected by others (14) because of a relatively low rate of IgG4+ plasma cells during immunohistochemistry.

Nevertheless today there is no published international consensus on the diagnostic criteria for IgG4-RD (15). A raised serum IgG4 level is not mandatory for the diagnosis but may be of valuable assistance. Moreover, not every entity with increased IgG4+ plasma cells and a high histologic IgG4/IgG ratio can be considered to belong to the IgG4-RD spectrum. Most authors agree that a definitive diagnosis of IgG4-RD requires histologic confirmation including the presence of characteristic histopathologic features such as dense lymphoplasmacytic infiltration, storiform fibrosis, obliterative phlebitis, mild to moderate eosinophilia and germinal center formation along with immunohistochemical staining demonstrating an increased number of IgG4+ cells (15). Except the absence of obliterative phlebitis most of these classical histopathologic were undoubtedly found in the reported case.

One thing is certain, future research is still needed to continue to affirm or refute the possibility that mesenteric panniculitis MP (alias sclerosing mesenteritis) belongs to the ever growing group of IgG4-RD.

References

1. Coulier B.: Mesenteric panniculitis. Part 2: prevalence and natural course: MDCT prospective study. *JBR-BTR,* 2011, 94: 241-246.
2. Coulier B.: Mesenteric panniculitis. Part 1: MDCT – pictorial review. *JBR-BTR,* 2011, 94: 229-240.
3. Sabaté J.M., Torrubia S., Maideu J., et al.: Sclerosing mesenteritis: imaging findings in 17 patients. *AJR*, 1999, 172: 625-629.
4. Horton K.M., Lawler L.P., Fishman E.K.: CT findings in sclerosing mesenteritis (panniculitis): spectrum of disease. *Radiographics*, 2003, 23: 1561-1567.
5. Mata J.M., Inaraja L., Martin J., Olazabal A., Castilla M.T.: CT features of mesenteric panniculitis. *Comput Assist Tomogr*, 1987, 11: 1021-1023.
6. Okino Y., Kiyosue H., Mori H., et al.: Root of the small-bowel mesentery: correlative anatomy and CT features of pathologic conditions. *Radiographics*, 2001, 21: 1475-1490.
7. van Putte-Katier N., van Bommel E.F., Elgersma O.E., Hendriksz T.R.: Mesenteric panniculitis: prevalence, clinicoradiological presentation and 5-year follow-up. *Br J Radiol,* 2014, 87 (1044): 20140451.
8. Daskalogiannaki M., Voloudaki A., Prassopoulos P., et al.: CT evaluation of mesenteric panniculitis: prevalence and associated diseases. *AJR*, 2000, 174: 427-431.
9. Gögebakan Ö., Albrecht T., Osterhoff M.A., Reimann A.: Is mesenteric panniculitis truely a paraneoplastic phenomenon? A matched pair analysis. *Eur J Radiol,* 2013, 82: 1853-1859.
10. Zissin R., Metser U., Hain D., Even-Sapir E.: Mesenteric panniculitis in oncologic patients: PET-CT findings. *Br J Radiol*, 2006, 79: 37-43.
11. Garg V., Alvarado N., Raju R.: CT-guided percutaneous administration of Spot sterile carbon stain to a single F-18 FDG positive mesenteric lymph node to allow identification during subsequent laparoscopic resection. *Abdom Imaging,* 2014, 39: 1134-1136
12. Nomura Y., Naito Y., Eriguchi N. et al.: A case of IgG4-related sclerosing mesenteritis. *Pathol Res Pract,* 2011, 207: 518-521.
13. Chen T.S., Montgomery E.A.: Are tumefactive lesions classified as sclerosing mesenteritis a subset of IgG4-related sclerosing disorders? *J Clin Pathol,* 2008, 61: 1093-1097.
14. Belghiti H., Cazals-Hatem D., Couvelard A., Guedj N., Bedossa P.: Sclerosing mesenteritis: can it be a IgG4 dysimmune disease? *Ann Pathol,* 2009, 29: 468-474.
15. Coulier B., Montfort L., Beniuga G., Pierard F., Gielen I.: Small bowel obstruction caused by peritoneal immunoglobulin g4-related disease mimicking carcinomatosis: case report. *Korean J Radiol,* 2014, 15: 66-71.