Case report

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An unusual presentation of a retroperitoneal tumor – CEUS characterization and outcome

Mirela Liana Gliga[1], Paula Maria Chirila[1], Mihail Gliga[1], Adriana Gomotirceanu [2], Ioan Tilea[1], Cristian Nicolae Chirila[1]

[1]"George Emil Palade" University of Medicine, Pharmacy, Science and Technology, [2]TOPMED Medical Center, Targu Mures, Romania

Abstract

We present a case of a 51-year-old woman referred to our department for unspecific abdominal pain. Two hypoechoic focal lesions in the retroperitoneal space and one hypoechoic mass superficially located in the mesogastrium were found at ultrasound (US) examination. All three masses were characterized as malignant by using contrast enhanced ultrasound (CEUS), due to the rapid hyperenhancement pattern followed by rapid wash-out. Laparoscopic biopsies revealed the final positive diagnosis of Burkitt lymphoma and hematologic treatment was immediately initiated.

Keywords: Burkitt lymphoma; color Doppler ultrasonography; contrast enhanced ultrasound; retroperitoneal neoplasm

Introduction

Burkitt lymphoma (BL), first described in 1958 by Denis Burkitt in African children, is a highly aggressive B cell non-Hodgkin lymphoma detected in endemic, sporadic and HIV-infection related forms [1,2]. We describe the case of a middle-aged woman, who presented unspecific abdominal pain and hypertension. She was sent to our department for a color Doppler abdominal ultrasound (US). Multiple hypoechoic areas in the retroperitoneal region were found. The aim of this case report is to emphasize the role of US and contrast-enhanced ultrasound (CEUS) in the characterization and positive diagnosis of a sporadic variant BL.

Case report

A 51-year-old female patient was admitted to the Nephrology Department with abdominal pain and the suspicion of secondary hypertension. At clinical examination, she was in a good clinical status, with mild peripheric edema and diffuse sensitivity at abdominal palpation, mainly in the epigastrium and umbilical area. Laboratory tests were in the normal range.

Abdominal US was performed in order to investigate the abdominal pain and to exclude the renovascular hypertension, using the VOLUSON 3 E8 machine (GE Medical System Kreztechnik GmbH Tiefenbach 15, Austria) with a 3.5 MHz convex array abdominal transducer. The technical parameters were: emission frequency 3.5 MHz, color frequency 2.5 MHz, Gain 60-70, Filter 5, TIS 1.2 and MI 0,24 for CEUS examination. Three hypoechoic focal lesions were found, one irregularly shaped located superficially in the lower epigastrium and two round-shaped profound lesions in the proximity of the aorta resembling retroperitoneal adenopathies (fig 1). Color Doppler US could not characterize the vascular pattern of the lesions, therefore CEUS and CT-scan examinations were performed.

For CEUS examination, 2.4 ml of SonoVue were injected followed by 10 ml saline flush and a continuous 60 s cine-loop was recorded. A second bolus of contrast agent was necessary for the characterization of the two retroperitoneal lesions. Regarding the superficial lesion, in the arterial phase an early enhancement started

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Corresponding author: Paula Maria Chirila, MD
6A Borzesti street,
540076 Targu Mures, Mures, Romania
Phone: +40 728 948793
E-mail: paulachirila@yahoo.com

6 s after the injection and reached its peak at 15 s. After that, an early inhomogeneous wash-out phenomenon was recorded. The two profound lesions showed almost the same pattern during CEUS investigation. Although the superficial lesion's shape was not characteristic for an adenopathy, its CEUS pattern was identical compared to the profound lesions. For this reason, mesenteric and retroperitoneal malignant adenopathies were suspected. (fig 2) The CT scan described the lesions, sustained the CEUS suspicion, but no other details could be identified.

A laparoscopic biopsy was the method of choice for the mesenteric and retroperitoneal lesions, as US-guided biopsy prelevation was not available in our department. Histopathology detected sporadic Burkitt lymphoma stage 1A with mesenteric and retroperitoneal localization. The patient was referred to hematology for specific treatment. After 2 years of follow up, the patient was still in remission.

Discussions

As the incidence of BL in adults is variable and rather low in European countries, imaging modalities are very important for the diagnosis and monitoring the disease [3]. It has been reported that CEUS could be a promising diagnostic modality in differentiating between benign and malignant lymph nodes [4]. The studies published so far showed that contrast enhancement patterns are highly variable in lymphoma. The most observed pattern is the intense homogeneous enhancement, which is not always different from reactive inflammatory lymph nodes [5]. However, in our patient's case, the rapid hyperenhancement was followed by immediate wash-out in all three masses, suggesting their malignant character.

At US, the affected malignant lymph nodes are usually hypoechoic, round-shaped and without a vascular hilum [6,7]. In our case, the 2 retro-aortic masses were round, but the superficial lesion was irregular in shape. This could raise the suspicion of two different tumors, but the contrast agent distribution was similar in all three masses.

Xuelei et al found two ultrasound patterns of the lymphomatous lymph nodes that could be used as diagnostic criteria: rapid well-distributed hyperenhancement and rapid heterogeneous hyperenhancement in the arterial phase lasting 5-15 s [7]. In our patient, all the lesions had

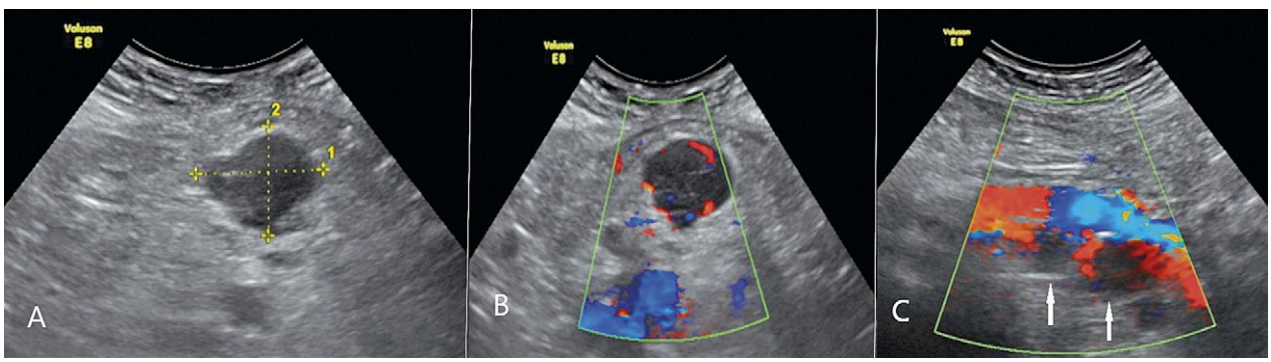

Fig 1. Grey scale and Doppler US: A. Transversal view in the inferior epigastrium: hypoechoic irregular-shaped mass 36/31/34 mm, with superficial localization. B. Color Doppler US of the same lesion showing peripheric vascular signal. C. Longitudinal view, colour Doppler US of the two round retro-aortic hypoechogenic lesions (white arrows), suggesting malignant adenopathies.

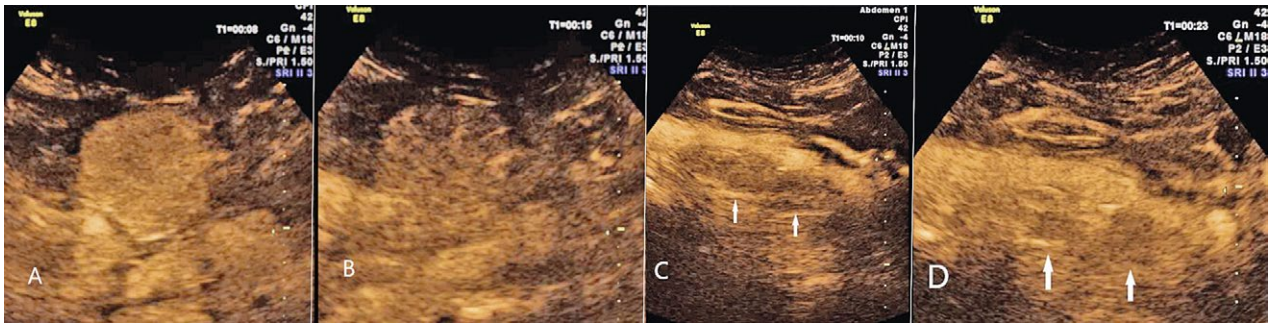

Fig 2. CEUS examination: A. mesenteric mass, arterial phase: 8 s after the injection, a rapid hyperenhancement pattern was recorded, suggesting an intense vascularization. B. mesenteric mass: rapid inhomogeneous wash-out phenomenon 15 s after the injection. C. early enhancement of the two retro-aortic masses. D. wash-out of the contrast agent 23 s after the injection in both retro-aortic masses.

a rapid homogeneous hyperenhancement in the arterial phase, followed by a rapid wash-out phenomenon, starting 15 s after the injection in the mesenteric mass and at 19 s in the retroperitoneal adenopathies. The wash-out pattern was inhomogeneous in all three lesions, which could be considered as a possible characteristic of BL.

Grey scale and color Doppler US revealed valuable information regarding the shape and position of the three lesions, but the vascularization pattern could not be well described. However, CEUS revealed the same homogeneous wash-in, inhomogeneous wash-out of the contrast agent in all masses. Laparoscopic biopsies were the method of choice for positive diagnosis and the supposition of malignant adenopathies localized both in mesenterium and retroperitoneum was confirmed.

The particularity of our case was related to the different shapes of the 3 adenopathies (the superficial mass was irregular in shape, while the two retro-aortic lesions were round) and their different localization, but almost the same CEUS characteristics.

In conclusion, US, as the first choice imaging technique for examination in abdominal pain, can lead to the diagnosis of a severe life-threatening disease such as BL, even if clinical signs are not specific. CEUS can increase the diagnosis accuracy in lymphomatous patients by describing the vascularization pattern, but a biopsy is needed in order to confirm the histology type. CEUS showed a very rapid hyperenhancement pattern in the arterial phase, followed by the rapid inhomogeneous wash-out in the late phase, a pattern which was not described in BL before due to a relatively reduced number of cases. The combination of clinical information with US and CEUS rapidly assured the proper management of the case.

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