Ultrasonogram of Menetrier’s Disease

HARUMI AKAGAWA, YOSHIHIRO MORIGUCHI, HIROSHI NISHIMURA, YOSHITAKA BUSSAKA, SEIICHIRO MORITA, MICHIIHIKO KOGANEMARU AND HISASHI OHTAKE

Department of Radiology, Kurume University School of Medicine, Kurume, 830 Japan

Received for publication February 13, 1985

Summary: Menetrier’s disease is a relatively rare disease characterized by greatly enlarged gastric rugae resembling the convolutions of the brain and often associated with hypoproteinemia. Although radiographic examination of the stomach is one of the most reliable diagnostic measures of this disease, it is hard to clarify the structure of the gastric wall by this method. Ultrasonographic examination of the stomach, which has recently become more practical, has the advantage of delineating the structure of the gastric wall. We report here the ultrasonogram in a case of Menetrier’s disease. The ultrasound demonstrated gastric wall thickening (pseudo-kidney sign), crinkled mucosal folds projecting into the lumen, a smooth serosal surface with a clear boundary between the adjacent organs, and a pliable gastric wall. The follow-up study revealed no changes in the sonographic appearance. The diagnostic value of ultrasound in Menetrier’s disease and its limitations are discussed.

Key words: Menetrier’s disease — Ultrasonogram — thickened gastric wall — crinkled mucosa — smooth serosa

Case Report

A 34-year-old man was admitted with a complaint of epigastric pain after drinking alcohol. Physical examination revealed no abnormality except for mild edema of the upper eyelids. Laboratory tests showed mild hypoproteinemia (5.5 g/dl). An upper gastrointestinal radiographic series in the standing position demonstrated considerable fluid retention in the stomach, a ragged lesser curvature and remarkable serration along the greater curvature in the upper body and fundus of the stomach. The pliability of the stomach remained intact and no irregularity was observed in the angle or antrum of the stomach, or in the duodenal bulb. A double-contrast roentgenogram showed marked enlargement of the rugae in the body and fundus of the stomach (Fig.1). On a transverse scan through the epigastrium ultrasonography demonstrated a sonolucent rim 15–20 mm in thickness which corresponded to the thickened gastric wall, enclosing a high level echo zone (Fig.2). No abnormality of the liver or other surrounding organs was identified.

Endoscopy of the stomach revealed diffusely enlarged rugae in the upper, anterior and posterior wall of the body. Although a moderate amount of mucus adherence was observed, there was no evidence suggesting malignancy (ie. protruding lesions, ulcerations or reduced pliability of the lumen). The endoscopic gastric biopsy revealed histological findings of interstitial edema and cellular infiltration but not malignancy.
Fig. 1. Double-contrast roentgenogram showing giant mucosal folds.

Fig. 2. Ultrasonogram showing gastric wall thickening. Pseudo-kidney sign is seen.

Based on these findings, a diagnosis of Menetrier’s disease was made. Following a period of 2 years, during which the patient was asymptomatic and receiving no specific treatment, his symptoms recurred and he was referred back to our institution.

Fig. 3. Double-contrast roentgenogram taken 2 years later showing no remarkable changes from the initial one.

Fig. 4. Transverse sonogram in the distended state. Marked thickening of the gastric wall, ragged mucosa represented by crinkled folds, and smooth serosa are seen.

This time, there was no eyelid edema and total serum protein was slightly improved over the previous admission, but was still low (6.0 g/dl). An upper gastrointestinal series demonstrated the same findings as before but, unlike the previous study (Fig. 3), mucus-mixing due to excessive mucus was observed. Ultrasonographic examination done via a transverse scan through the epigastrium was performed before and after ingestion of 400 ml water on an
ULTRASONOGRAM OF MENETRIER'S DISEASE

empty stomach in the early morning. Ultrasound demonstrated a thickened gastric wall of about 20 mm, a markedly ragged mucosa represented by crinkled fold, and a smooth serosa. A dilated lumen and normal gastric distensibility were also seen (Fig. 4). Endoscopic examination and gastric biopsy showed no evidence of malignant change in the gastric mucosa.

Discussion

The radiographic and endoscopic examinations of the stomach are reliable diagnostic measures for Menetrier's disease, however a biopsy is essential in making the diagnosis (Reese et al. 1962; Derchi et al. 1982). Reese and colleagues (Reese et al. 1962) proposed the following roentgenographic diagnostic clues for Menetrier's disease: enlargement of the mucosal folds, irregularity of the greater curvature, thickening of the gastric wall, and mucus mixing. In the patient presented here, all of these were observed except for the thickened gastric wall. Assessment of the gastric wall thickness was impossible because the serosal line could not be identified on the roentgenogram.

In recent years, the high-resolutive real-time electronic scanner has made the evaluation of the gastrointestinal tract possible (Fleischer et al. 1981). The gastric wall in the middle body and the antrum can be demonstrated relatively easily with this examination. Ingestion of water is helpful in detecting the gastric wall. Fleisher and colleagues (Fleischer et al. 1981) documented that the normal gastric wall thickness on ultrasound averages 5 mm when nondistended and 4 mm when distended. The gastric wall thickening is seen as a doughnut or crescent shaped low-echo zone on the ultrasound. In the center of this sonolucent area, a high level echo zone corresponding to the lumen is seen. This is called the pseudo-kidney sign (Bluth et al. 1979) (Fig. 2) because its ultrasonic appearance resembles that of the kidney.

When gastric wall thickening is seen on sonographic examination, carcinoma (especially advanced cancer), gastric ulcer, acute gastritis, malignant lymphoma and Menetrier's disease should be considered.

When gastric wall thickening is seen, the assessment of gastric wall extensibility is essential. In the case of carcinoma (particularly with circumferential involvement of the stomach) and acute gastritis showing gastric wall thickening, loss of pliability of the wall can be demonstrated by the fluid-filled stomach method (Kremer and Gröbner, 1981). In the case of Menetrier's disease presented here, intake of water made the lumen dilate and this indicated the pliable gastric wall. The wall thickening in Menetrier's disease is due to simple hypertrophy of the mucosa in the area of the fundic gland. The mucosal layer has a ragged surface due to the hypertrophic folds. Reese and colleagues (Reese et al. 1962) documented this as crinkled appearance on roentgenographic examination. In the case presented here, this crinkled and ragged surface was seen on both the ultrasonogram and the roentgenogram. Derchi and associates (Derchi et al. 1982) reported this sonographic appearance in their patient with Menetrier's disease. In our experience, ultrasonograms of acute gastritis show gastric wall thickening, but have no crinkled appearance. Although the crinkled mucosal image is considered one of the characteristic sonographic signs of Menetrier's disease, a similar pattern may be detected in some instances of malignant lymphoma. This indicates that the crinkled mucosal appearance is not pathognomonic for Menetrier's disease.

The serosa of the gastric wall in Menetrier's disease was found to have a smooth appearance sonographically in our case as well as a previously reported one (Derchi et al. 1982). Although ultrasonograms of advanced gastric carcinoma penetrating the
serosa show a ragged serosa and obscure boundaries between contiguous organs, that of gastric carcinoma without involvement of the serosa, and malignant lymphoma, may show a smooth serosa.

Menetrier's disease can be differentiated from these other two conditions by detecting metastatic lesions to other abnormal organs, lymph node swelling and aggravating changes, all of which are absent in Menetrier's disease. In the case presented here ultrasonographic findings showed no changes after a 2-year follow-up period.

References


