

Riedel's Lobe: Clinical Importance of a Rare Variant in Liver Morphology

Juferdy Kurniawan¹, Dewi Anggraeni², Esthika Dewiasty¹, Lutfie¹

¹ Department of Internal Medicine, Faculty of Medicine Universitas Indonesia - Cipto Mangunkusumo Hospital, Jakarta, Indonesia.

² Department of Obstetric and Gynecology, Faculty of Medicine Universitas Indonesia / Ciptomangunkusumo Hospital, Jakarta, Indonesia.

Corresponding Author:

Juferdy Kurniawan, MD. Division of Hepatobiliary, Department of Internal Medicine, Faculty of Medicine Universitas Indonesia - Cipto Mangunkusumo Hospital. Jl. Diponegoro no.71 Jakarta 10430, Indonesia. email: juferdy.k@gmail.com.

ABSTRAK

Lobus Riedel merupakan salah satu bentuk variasi normal pada lobus kanan hepar, yang umumnya jarang ditemukan. Kami melaporkan kasus seorang perempuan berusia 38 tahun dengan temuan insidental yang tidak ditemukan melalui pemeriksaan fisis, namun dijumpai hepatomegali pada saat pemeriksaan ultrasonografi ginekologis. Diagnosis lobus Riedel dikuatkan dengan hasil temuan serupa pada ultrasonografi hepatobilier, MRI abdomen, dan laparoskopi diagnosis. Pasien kami pulangkan dan disarankan untuk menjalani pemeriksaan follow-up tiga bulan kemudian. Pengetahuan pada anomali ini penting untuk dimiliki karena temuan lobus tambahan hepar tidak selalu bersifat asimtomatik seperti pada kasus pasien kami, melainkan dapat pula berkaitan dengan komplikasi klinis yang bermakna.

Kata kunci: lobus Riedel, temuan insidental, ultrasonografi hepatobilier, MRI abdomen, laparoskopi.

ABSTRACT

Riedel's lobe is a normal variant form of right liver lobe rarely found. Here we report a case of 38 years old female with an incidental finding not revealed in physical examination, but then known to have hepatomegaly by gynecological ultrasonography. Diagnosis of Riedel's lobe was strengthened by similar results on hepatobiliary ultrasonography, abdominal MRI, and diagnostic laparoscopy. Our patient was discharged and had follow up examination three months later. Knowledge regarding this anomaly is essential to be understood because the finding of accessory liver lobe does not always remain asymptomatic as in our patient, but rather can be related to significant clinical complication.

Keywords: Riedel's lobe, incidental finding, hepatobiliary ultrasonography, abdominal MRI, laparoscopy.

INTRODUCTION

The liver is an internal organ with various anatomical variations, for both vascular and biliary tract structures. In spite of that, the formation of accessory liver lobe is a quite rare anomaly, with an estimated prevalence less than 1%.¹⁻³ One of the abnormalities reported several

times is the Riedel's lobe, defined as a downward tongue-like projection of the anterior edge of the right liver lobe to the right of the gallbladder.⁴ This variant was first published by Riedel based on the result of his surgical patients with palpable right hipocondrium mass.

The incidence of Riedel's lobe in general

population varies widely, from 3,3% to 14,5% depends on the diagnostic criteria and methods used.^{1,5} This rare morphological lobulation is relatively asymptomatic, rarely found by physical examination, and mostly found incidentally from surgery, radiological examination, endoscopic procedure, or autopsy.^{1,3,6,7} Awareness regarding this anomaly is essential, due to the experience of several cases reporting malignancy and torsion involving the Riedel's lobe.⁸

We report a case of a 38-year old female with incidental finding of typical feature of Riedel's lobe unidentified by abdominal palpation.

CASE ILLUSTRATION

A middle-aged woman, 38 years old, came to her gynecologist with chief complaint of abdominal discomfort on the lower quadrant. The complaint was intermittent and had been experienced several times before, diagnosed with abdominal colic. The patient did not have any complaint of fever, nausea, vomitus, urination, defecation, and menstrual problems. History of trauma or previous surgical procedure was denied. There was not any similar complaint ever felt by her family member. Physical examination showed stable vital signs. Both abdominal and gynecological examinations failed to reveal any abnormality.

Gynecological ultrasonographic examination found normal endometrium (0,79 mm), uterus (6,8 x 3,74 x 6,15 mm), and both ovaries size (right 2,87 x 1,92 mm; left 2,67 x 3,6 mm), with

suspicion of right ovarian mass sized 1,66 x 1,31 mm. On the same examination, hepatomegaly was incidentally found, which later was confirmed by hepatobiliary ultrasonography. (**Figure 1**) The result showed an elongation of right liver lobe through the lower lobe of right kidney, whereas gallbladder, spleen, and pancreas appeared to be in normal condition. Routine blood examination was within the normal limits, and so was the liver function test (ALT/AST, bilirubin) and tumor marker of Ca-125.

The patient underwent whole abdomen MRI examination (**Figure 2, Figure 3**) in order to identify the ovarian mass and hepatomegaly previously found. The result showed feature of inflammation on bilateral adnexa with ovarian tube and right hydrosalpinx abscess. Another result found was fluid collection on Douglas pouch, suspected to focal adenomyosis in the anterior side of uterine corpus. An elongation of right liver lobe to the inferior side until the lower pole of right kidney was also confirmed, corresponded to normal variation of liver called Riedel's lobe. There was not any focal lesion or pathological enhancement on both lobes of the liver, and also no abnormality found in paraaortic, bilateral parailiac, and bilateral inguinal lymph nodes.

We performed pap smear procedure and the anatomical pathology examination was dominated only by squamous epithelial and glandular cells as well as leukocyte infiltration, whereas malignant tumour cells were not found.



Figure 1. Patient's hepatobiliary ultrasonography. Noticed the elongation of right liver lobe through the lower lobe of right kidney.

Human Papilloma Virus (HPV) genotyping with GenoFlow method showed negative HPV DNA array detected for either high or low risk virus.

In order to obtain definitive diagnosis regarding her gynecological status, the patient then underwent diagnostic laparoscopy examination. The result of examination was in accordance with the previous finding from the MRI, which was ovarian tube and hydrosalpinx abscess, together with Riedel's lobe. (**Figure 4**)

Based on the data of supporting examination done, it was concluded that the patient's chief complaint was due to the abscess of internal genital organ, meanwhile the finding of hepatomegaly was actually the Riedel's lobe, a normal variant of

liver morphology. The patient was discharged from hospital and recommended to visit outpatient clinic for an evaluation three months later.

DISCUSSION

In spite of its complex embryological development, macroscopic abnormality of the liver is rare. The variation is usually related to morphological irregularity, but the formation of an accessory liver lobe is rather extremely rare.⁹ Accessory liver lobes are defined as supranumerary number, composed of normal liver parenchyma in continuity directly with the original liver, by mesentery, or by a pedicle.¹⁰

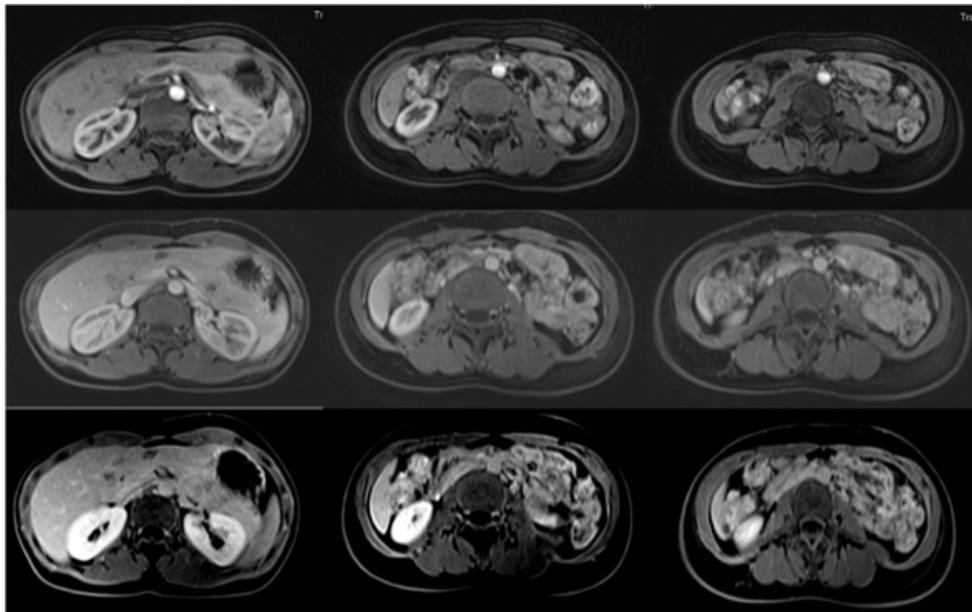


Figure 2. Patient's whole abdomen multiphasic MRI (axial section). Noticed the elongation of right liver lobe to the inferior side as high as the lower lobe of right kidney, revealing Riedel lobe, a normal variant of liver.

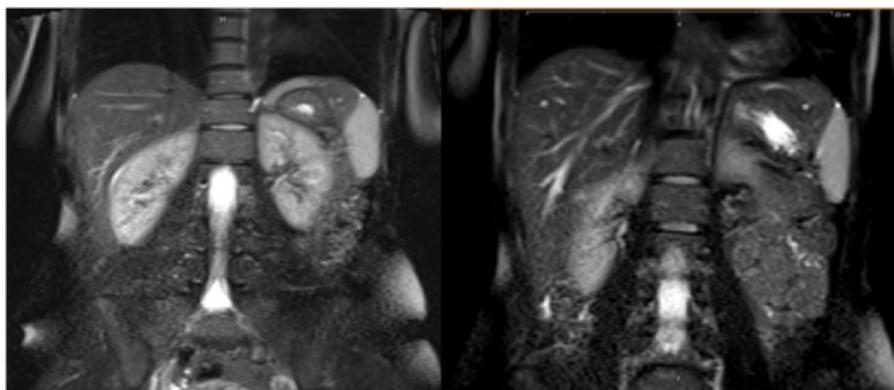


Figure 3. Patient's whole abdomen multiphasic MRI (coronal section). Noticed the elongation of right liver lobe to the inferior side as high as the lower lobe of right kidney, revealing Riedel lobe, a normal variant of liver.



Figure 4. Patient's laparoscopy examination. Noticed the elongation of segment 6 liver to the inferior side through the lower lobe of right kidney.

There are several types of accessory liver lobes classified by volume and weight, including a bulky accessory liver lobe (>31 gram, connected to the liver via a stalk of tissue or wide base in the subphrenic or perihepatic zone); a small accessory liver lobe (11-30 gram, connected to the liver via a wide base on the surface of the liver), an ectopic liver lobe (a completely separate lobe with no connection to normal liver tissue, often diagnosed as mass in the thorax or pelvic cavity);^{11,12} a pinpoint atopic lobe (<10 gram, most often located at the margins of the liver or even gallbladder wall).^{1,10,13} Our patient's variant was a bulky type, with a clear connection to its original liver.

Riedel's lobe incidentally found in our case is a rare morphologic feature of hepatic lobulation with inferior projection of the anterior edge of 5th and 6th liver segment to the right of the gallbladder.⁴ In its classic form, Riedel's lobe's functional anatomy is similar to liver in general, which receives portal, arterial, and biliary branches. This patient's additional liver lobe elongates until the lower pole of the right kidney, just like how Riedel's lobe usually found approaching iliac fossa with "tongue like" or triangular pyramid shape.¹

Epidemiologically, Riedel's lobe's prevalence is higher in women (4,5-19,4%), as in our case, than in men (2,1-6,1%).^{1,5,6} A radiologic series with different definition criteria noted higher incidence (31%) and close proportion between both sexes.^{1,7} We had this finding in a middle-aged woman, but this accessory hepatic lobe has

been reported in infants as young as 2 months of age as well as in patients presenting late in 79 years old, predominantly in adult or elderly.^{7,14}

The etiology of Riedel's lobe in our patient could be either congenital or acquired. The congenital origin of accessory liver lobe is associated with an excessive disembryoplastic anomaly in the development of a hepatic bud.^{1,6,15} History of omphalocele or gastrochisis, which is also proposed to be related with supernumerary lobes, were denied by our patient.^{2,3,14} Despite of that fact, we were not able to exclude the congenital possibility because its rare occurrence correlated to an autosomal recessive gene with a very low frequency in population.¹³ However, our patient also had an acquired risk factor for occurrence of Riedel lobe, due to intrapelvic inflammatory condition of gynecologic adnexitis and abscess.^{3,6,7} Therefore, the occurrence of Riedel's lobe in this case can be attributed to combination of congenital anomaly and the impact of inflammation experienced several times before.

The existence of Riedel's lobe actually can be presented with minor symptoms of acute or recurrent abdominal discomfort, nausea, constipation, or bloating caused by extrinsic compression or episode of torsion.^{1,13,16} Not the least of these arises from the fact that most patients are asymptomatic, even though they have hepatomegaly.⁶ This is the usual pattern of incidental finding as reported in most case reports, just like our case in which no clinically significant symptoms occurred.

Similar results from patient's hepatobiliary ultrasonography, abdominal MRI, and diagnostic laparoscopy strengthen the diagnosis of Riedel's lobe as a cause of hepatomegaly in our case. The diagnosis is usually established by imaging techniques, for instance ultrasonography with or without Doppler examination, abdominal CT scan, abdominal MRI, scintigraphy, and arteriographic modalities.^{5,6,8} Diagnostic laparoscopy was performed a role as a definitive diagnostic method as there was still doubt from the previous radiological examination performed. The laparoscopic examination was able to present a clear visualization of the liver and thus conservative treatment could be

preferred as only normal tissue found.¹⁰

As a normal variant, our patient's Riedel's lobe is usually associated with good prognosis, considering early-stage diagnosis and the lack of clinical complications. Knowledge and awareness of its possibility is essential, as it does not always remain clinically latent. Approximately 20-30 cases related to its mechanical complication, particularly about torsion of hepatic lobe with pedicle, have already been reported.^{2,3,7} Moreover, bleeding, rupture, and extrinsic compression of the stomach have been described.^{1,10} Other data we need to be aware is the case of malignancy arising in Riedel's lobe, for example hepatocellular carcinoma or metastatic lesion.^{8,17} The incidence estimated to range between 0.2-4.2% for tumors arise only in the accessory liver lobe.^{1,8} Fortunately, none of those manifested in our case.

Asymptomatic or uncomplicated Riedel's lobe usually does not need any special treatment, moreover to non peduncular one.¹³ Surgical treatment, with or without cholecystectomy, can be considered in the case of the hypertrophic parenchyma in case of torsion with noisy clinical presentation, metastatic lesion, or liver hydatid cysts of the Riedel's lobe.^{6,7} Some other literatures suggested that resection be done more often because malignancy of Riedel's lobe is sometimes difficult to be differentiated with only imaging procedure and the confirmation of diagnosis can only be made after histopathological examination following resection or by laparoscopic.^{4,7}

Taking into account that no significant complication or suspicion of malignancy was found, we decided that the patient could be discharged and recommended to visit outpatient clinic for an evaluation three months later. Our choice went along with the report from Savopoulos, et al., in which the author still recommended that the asymptomatic patients still needed to do a follow up and monitoring several months after the diagnosis was made.⁵

CONCLUSION

Riedel's lobe is a normal variant form of liver which is rare. The diagnosis is usually established incidentally upon radiological examination,

surgery, or autopsy. This case mostly has good prognosis, but follow up examination is still recommended for the uncomplicated case without surgical treatment.

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