Focal Mass-Forming Autoimmune Pancreatitis Mimicking Pancreatic Cancer: Which strategy?

Forme pseudo tumorale de pancréatite auto immune simulantun cancer du pancréas : quelle stratégie?

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INTRODUCTION

Autoimmune pancreatitis (AIP) is a rare benign fibro inflammatory disorder of the pancreas with a presumed autoimmune etiology [1]. It appears in two different clinical entities, which are mainly differentiated by histological features: Type 1 autoimmune pancreatitis that belongs to the immunoglobulin G4 (IgG4)-related diseases and type 2 autoimmune pancreatitis which does not belong to the IgG4-related diseases. Several groups have published criteria to allow AIP diagnosis [2].

The diagnostic criteria are unfortunately overlapping with those of pancreatic cancer; a pancreatic disease with a treatment and prognosis completely different.

Clinically, AIP patients and those with pancreatic cancer have many similar features [3]. Besides, scan results may be challenging because a pancreatic mass may show a typical diffusely irregular pancreatic duct within a diffusely enlarged gland.

The diagnosis of focal AIP remains a significant clinical challenge. Here we reported three cases of mass-forming AIP that were preoperatively suspected to be pancreatic cancer based on their radiological findings.

Throughout these cases we emphasized the difficulties of the diagnostic process in such cases and we tried throughout a literature review to describe a diagnostic strategy so that we can spare patients unnecessary surgery.

PATIENT OBSERVATION

CASE 1

A 62-year-old male with no past medical history presented with a jaundice evolving since 2 weeks.

He had lost about 10 kg. He was recently diagnosed with type-2 diabetes mellitus. He denied alcohol abuse .His physical examination had no particularities: vital signs were stable, He was afebrile and his abdominal exam was benign without any evidence of hepatomegaly or splenomegaly. Liver function tests were deranged: serum aspartate transaminase 57 U/ L (0 - 31), serum alanine transaminase 184 U/L (0 -37), serum alkaline phosphatase 407 U/L (35 - 104) and serum total bilirubin 4.3 mg/dL (0 - 1). His abdominal computed tomography (CT) revealed a 5 cm × 4.5 cm mass in the pancreatic head with secondary obstruction and dilation of the common bile duct (CBD), and intrahepatic ductal dilation (Figure 1). Endoscopic retrograde cholangiopancreaticography (ERCP) revealed a high-grade stricture in the distal CBD, measuring 2 - 2.5 inches and proximal CBD dilation. Brushings obtained from CBD stricture during ERCP were non-conclusive. Serum CA 19-9 was elevated at 1,568 U/mL (0 - 37); alpha-feto protein was 1.85 ng/mL. Because of the high suspicion for pancreatic cancer due to markedly elevated serum CA-19-9 levels, the patient underwent pylorus sparing pancreaticoduodenectomy. Intraoperative results showed a significant enlargement of the head of pancreas and peripancreatic inflammation. He had a normal postoperative recovery. Histopathology was benign and showed perilobular lymphoplasmacytic infiltrate, periductal fibrosis and phlebitis that was consistent with AIP (figure2). Immunohistochemical staining was positive for lymphocyte markers. The patient started an oral treatement based on prednisone. Serum IgG4 was 60 mg/ dL (1 - 290) after starting steroid treatment.

Several weeks after surgery and initiation of steroid therapy, serum tests returned to normal and the patient remained clinically stable.

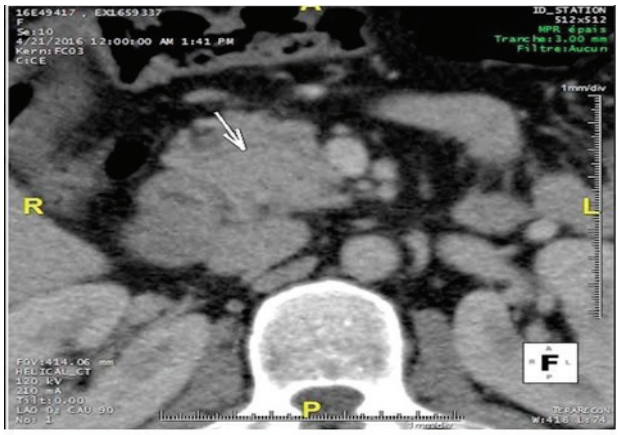

Figure1: CT of patient with autoimmune pancreatitis showing a focally enlarged pancreas (not typical feature for AIP)

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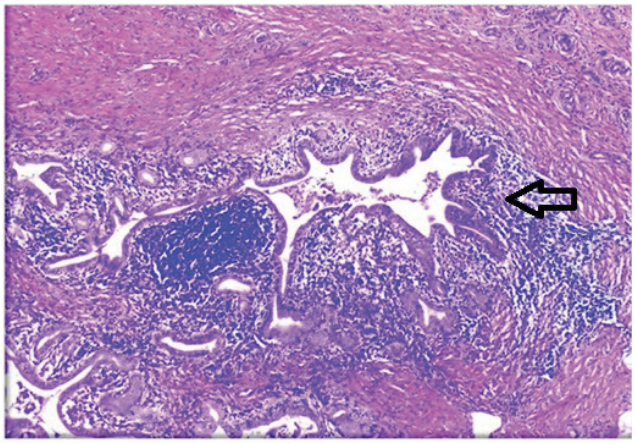

Figure2: histological features of autoimmune pancreatitis lymphoplasmatic infiltrate, periductal fibrosis and phlebitis that was consistent with AIP

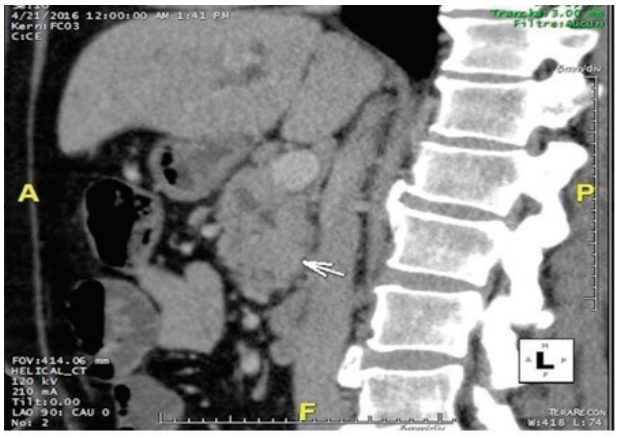

Figure3: contrast enhanced abdominal CT revealed anisoattenuating mass within the pancreatic parenchyma during the delayed phase

CASE 2:

A 68-year-old man was referred to our unit for jaundice .The patient was a habitual alcohol drinker. He had no history of pancreatitis. His clinical examination was normal. Serum total bilirubin and serum alkaline phosphatase were moderately deranged .Serum level of carbohydrate antigen (CA19-9) was slightly elevated (67.0U/mL). A contrast-enhanced abdominal CT revealed a hypo-attenuating mass of 14mm in size at the pancreatic head during the early phase (Figure 3), which appeared as an iso attenuating mass within the pancreatic parenchyma during the delayed phase.

Neither lymph node enlargement nor tumor metastasis was observed. Magnetic Resonance cholangio-pancreatography (MRCP) revealed a severe stricture of Main pancreatic duct (MPD) at the site of the pancreatic mass with upstream dilatation. Endoscopic ultrasonography (EUS) revealed a well-demarcated hypo echoic mass in the head of the pancreas (Fig 4). Based on the diagnosis of pancreatic head cancer, pancreato-duodenectomy with regional lymph node dissection was performed.

Macroscopic examinations revealed a whitish and well-circumscribed tumor of 30mm×15mm in size at the head of the pancreas. According to the microscopic results, the lesion was composed of dense fibrotic tissues with marked lymphoplasmacytic infiltration and IgG4-positive plasma cells. Moreover, a well-demarcated, sharp border adjacent to pancreatic parenchyma was observed.

IgG4-positive plasma cells were not found in the uninvolved adjacent pancreatic tissues.

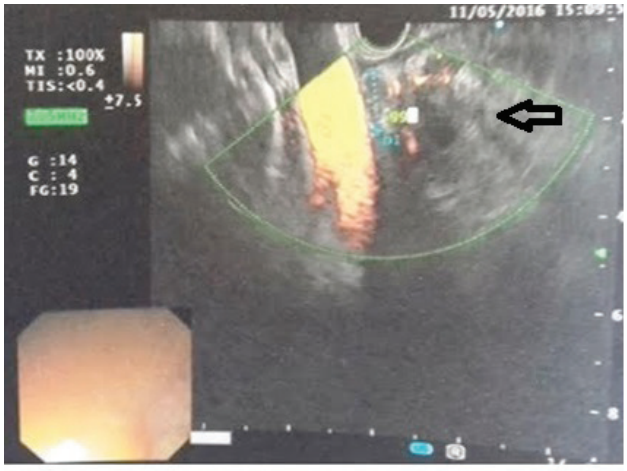

Figure4: endoscopic ultrasonography revealing a well-demarcated hypo echoic mass at the head of the pancreas

CASE 3:

A 50-year-old woman was referred to our unit because of a jaundice evolving since one week. Clinical examination was without any significant anomalies: vital signs were stable, she was afebrile and her abdominal exam was benign without any evidence of hepatomegaly or splenomegaly.

Laboratory examinations revealed elevated serum levels of aspartate aminotransferase (150U/L; normal range 10–35U/L), alanine aminotransferase (300 U/L; normal range 5–40U/L), alkaline phosphatase (1081U/L; normal range 104–338U/L), γ-glutamyl transpeptidase (800U/L; normal range 15–90U/L), direct bilirubin (87.2µmol/L; normal range 0-5.1µmol/L) and total bilirubin (130.0µmol/L; normal

range 3.4–20.5µmol/L). Serum CA19-9 level was elevated (77.2U/mL).Abdominal US revealed awell-demarcated hypoechoic mass in the head of the pancreas. MRCP revealed a stricture of the MPD at the head of the pancreas with slight upstream dilatation and severe stricture of the lower bile duct (Figure 5).

Based on the diagnosis of pancreatic head cancer, subtotal pancreatoduodenectomy with regional lymph node dissection was performed. Macroscopic examination revealed a whitish and well circumscribed tumor of 31mm× 28mm in size at the head of the pancreas. Microscopically, the lesion was well-demarcated with a capsule-like border and was diagnosed AIP with IgG4-positive plasma cells (Figure6).

Periductal inflammation was mild, and few IgG4-positive plasma cells were observed in the adjacent uninvolved pancreatic tissues.

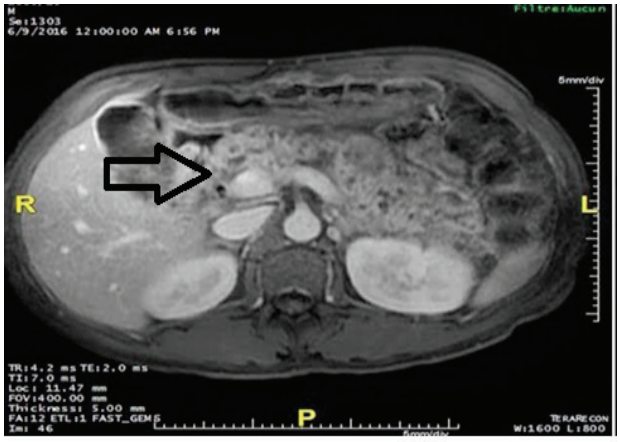

Figure5: Magnetic resonance cholangiopancreatography (MRCP) revealed a severe stricture of Main pancreatic duct at the site of pancreatic mass with upstream dilatation.

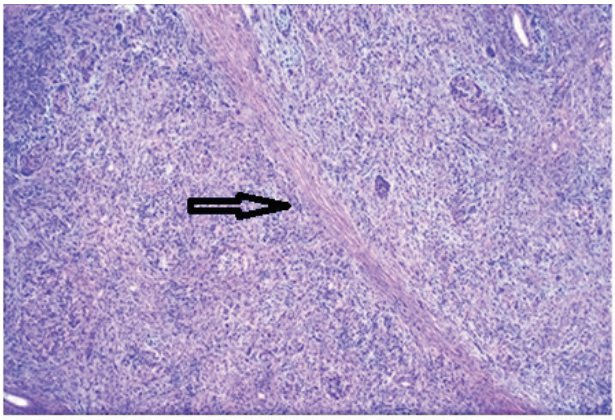

Figure 6: the lesion was well-demarcated with a capsule-like border.

DISCUSSION

Many cephalic duodenopancreatectomy could be avoided if a correct diagnosis is made. Indeed, many patients having focal auto immune pancreatitis might lead to confusion with pancreatic cancer. We deduce the interest of a careful clinical examination and advanced explorations before taking a surgical decision.

Autoimmune pancreatitis (AIP) is a rare benign fibro inflammatory disorder of the pancreas with a presumed autoimmune etiology [1].Although diagnosis of AIP has improved due to a growing awareness of the condition and proposed diagnostic criteria; there remains no practical strategy to differentiate PC from AIP.

The diagnosis of AIP requires a multidisciplinary approach including imaging studies, serology, histology, assessment of other organ involvement and the therapeutic response to steroid treatment. Several diagnostic criteria have been proposed, including the Korean diagnostic criteria, the Japanese diagnostic criteria and Mayo Clinic's HISORt criteria [2-4]. In 2011, international consensus diagnostic criteria for AIP were proposed[5].It appears in two different clinical entities, which are mainly differentiated by histological features: Type 1 AIP is also called IgG4-related pancreatitis and is part of a disease called IgG4-related disease (IgG4-RD) that often affects multiple organs including the pancreas, bile ducts, kidneys, salivary glands and lymph nodes. Type 2 AIP seems to affect only the pancreas. Both subtypes are treated with steroids, which in many people dramatically improve the condition [6].

Histologically, type 1 AIP is characterized by the following four features: periductal lymphoplasmacytic infiltrate without granulocytic infiltration; storiform fibrosis; obliterative phlebitis; and abundant (>10 cells /HPF) IgG4-positive plasma cells [5].

The diagnosis is challenging because of its rare occurrence and its clinical similarity to pancreatic cancer. And it is crucial to differentiate AIP from pancreatic cancer owing to the vastly different prognostic and therapeutic implications. Recognizing AIP through serologic markers, radiographic appearance, and histology is important as about2.5– 11% of patients undergoing surgery for possible pancreatic cancer are discovered to have benign inflammatory disease of the pancreas, including AIP.

Findings suggesting AIP rather than pancreatic cancer include a strategy based on a combination of clinical, serological, morphological, and therapeutic features.

The major presenting complaint of patients with AIP is painless obstructive jaundice due to associated sclerosing cholangitis (65%16 or 86%38 of cases). The jaundice follows a fluctuating course in one third of patients in opposition with jaundice secondary to pancreatic cancer which typically progresses steadily [7].

Elevated IgG4 levels were thought to be a specific diagnostic tool for AIP. However some patients are seronegative and about 10% of patients with pancreatic cancer or cholangiocarcinoma are positive. Tabata et al in their study including 39 patients with AIP found that the median level of serum IgG4 was 301.5 mg/dL and 30 (77%) had levels greater than 135 mg/dL. However the median level was 34.0 mg/dL in 114 pancreatic cancer patients' .Thus, elevation of serum IgG4 levels alone cannot rule out pancreatic cancer [8].

The tumor marker CA19-9 was considered to be specific for pancreatic cancer, but in 47–73% of cases with autoimmune pancreatitis CA19-9 is elevated [9, 10]. Chang et al postulated that combined use of serum IgG4 (over 280 mg/dL) and CA19-9 9 (below 85.0 U/ml) together increases the diagnostic accuracy to distinguish AIP from pancreatic cancer non-invasively, especially in focal type autoimmune pancreatitis [11].

Concerning morphological characteristics, a CT scan is often the first clue to the diagnosis of pancreatic carcinoma or AIP.

Typically, AIP is characterized by diffuse enlargement of the pancreas and effacement of the lobular contour, which is typically called "sausage-like" appearance, and is rarely seen in pancreatic cancer [12].However, diffuse morphological pancreatic parenchymal enlargement is seen only in 40–60% of patients with AIP [13-14], and three other morphological patterns have been described. These include focal enlargement of the pancreas; no enlargement or normal pancreas in a minority of the patients or mixed patterns .In these situations, hypo attenuating mass in the early phase and homogeneous enhancement of the pancreas in the delayed phase is highly suggestive of AIP. Wakabayashi et al [15] reported that only 2 of the 80 pancreatic cancer lesions exhibited homogeneous enhancement in the delayed phase.

For the endoscopic retrograde cholangiopancreatography (ERCP) and the Magnetic resonance cholangiopancreatography (MRCP), the filling of pancreatic duct may provide essential information complementing the results of non-invasive imaging techniques. An international study highlighted four important features that were highly suggestive of AIP on ERCP; long (>1/3 the length of the pancreatic duct) stricture; lack of upstream dilatation from the stricture (<5 mm); multiple strictures; and side branches arising from a segment with stricture [16].The sensitivity and specificity of ERCP in the diagnosis of AIP is 71% and 83% respectively [17].Unfortunately, ERCP is an invasive method which can cause adverse effects (pancreatitis, bleeding).Thus, the noninvasive MRCP is becoming the first choice examination. However, previous comparison studies have shown that MRCP is less sensitive in the differentiation of focal form of AIP and PC, therefore cannot completely replace ERCP for the diagnostic evaluation of AIP [16, 18]. MRCP is particularly useful for judging response to steroid therapy [19].

The endoscopic ultrasound may also be a useful tool to differentiate concentric bile duct thickening (more commonly seen in AIP) from strictures caused by extrinsic compression as seen in pancreatic cancer [20].

Endoscopic ultrasound-guided fine needle aspiration (EUSFNA) is useful to either diagnose or rule out pancreatic cancer. However, definitive diagnosis of AIP is sometimes difficult, because of the small sample size obtained. Positive IgG4-Immunostaining in biopsy specimens taken from the major duodenal papilla supports a diagnosis of AIP [20].Therefore, the EUSFNA is an indispensable diagnostic modality to differentiate focal AIP from pancreatic cancer.

As seen before, Type1 AIP involves other organs. 18F-Fluorodeoxyglucose-Positron Emission Tomography (PET), abnormal extra pancreatic uptake, such as lymph nodes or swollen salivary glands, is highly suggestive of AIP [17, 20].

Finally, there is reversible improvement of AIP with oral steroid therapy (prednisone 40 mg /day * 2 weeks). Decreases of 55% were seen in several liver test results at 4days after the start of steroid therapy, with most levels normalized within 2 to 6 weeks [20].

In summary, in front of a patient with fluctuating jaundice and antecedents of autoimmune disease or a risky ground, do not hesitate to make an IGg4 dosage. If invasive or non invasive imaging fails to resolve, pancreatic biopsy remains the gold standard for confirming the benign or malignant nature of pancreatic swelling.

It seems possible to perform percutaneous, echo or scanned-guided pancreatic biopsies, but also under endoscopic echo control. The trans gastric or trans duodenal

puncture reduces the risk of tumor swarming, moreover in case of pancreatic head duodenopancreatectomy for a tumor of the head of the pancreas, the puncture path will be resected. Nevertheless, there are several limitations such as a tumor size less than 5mm, a deep lesion with respect to the catheter and coagulation disorders. [20,21] Finally, a therapeutic test can in case of inconclusive biopsy help the diagnosis with a clear improvement under steroids.

The second most interesting question is whether focal AIP represents an initial stage of diffuse AIP or another entity. Few reports have described the natural course of focal AIP. Some cases of focal AIP may progress to more severe grades and exhibit mass formation, although remaining localized our results concord with those of Sojun HOSHIMOTO et al [20].

CONCLUSION

For patients with obstructive jaundice and a pancreatic mass, AIP should be considered as a differential diagnosis to avoid the performance of unnecessary surgery. Characteristic imaging findings, an elevated IgG4, the presence of other organ involvement, and mainly a response to a trial of steroids can often differentiate between the two.

Unfortunately although the different criteria, we cannot exclude the presence of PC in many cases. Further improvement of diagnostic strategies, such as core biopsy techniques, or development of new immunohistological diagnostic criteria from results of cytologic and tissue specimen analyses are needed.

Competing interests

The authors declare no competing interest.

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Bilateral external laryngocele: a case report

Laryngocèle externe bilatérale: à propos d'un cas

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INTRODUCTION

Laryngocele is a rare benign lesion of the larynx caused by an abnormal dilatation of the laryngeal saccule(1). It can extend internally into the airway or externally through the thyrohyoid membrane, and may be present at any age. Laryngoceles are classified as internal, external or combined according to their localization. Despite the few cases of bilateral external laryngoceles reported in the literature, this presentation should always be mentioned among differential diagnosis of upper airway problems(2). Through this case report we tried to understand the clinical aspect of bilateral external laryngoceles and to insist on the surgical management using the external cervical approach.

CASE REPORT

A 78-year-old man, with no significant past medical history, was referred to our department with the complaint of progressive hoarseness and bilateral neck swelling for 3 months after two days of intense coughing. He was a chronic smoker (20 cigarettes per day for 30 years). He was a farmer and did not play wind instruments nor have chronic constipation.

Neck examination showed bilateral painless soft mass, covered with normal skin, manually reducible, protrusive after Valsalva manoeuvre (figure 1).

Cervical CT-scan showed bilateral cystic lesions: the left one was 5cm large, associated with an hydroaeric level and the right one was 3cm large fully pneumatized (figure2).

Direct laryngoscopy under general anesthesia revealed a swelling in the left vestibular fold without suspect lesion. We performed systematic biopsies which did not show any evidence of malignancy at the histological examination. Surgical resection of bilateral laryngocele was performed by an external cervical approach (figures 3,4 and 5). Post-operative recovery was uneventful and the patient was discharged.

The final histological examination confirmed the diagnosis of bilateral laryngocele.

Neither complications nor recurrences were observed after 12 months of follow-up.

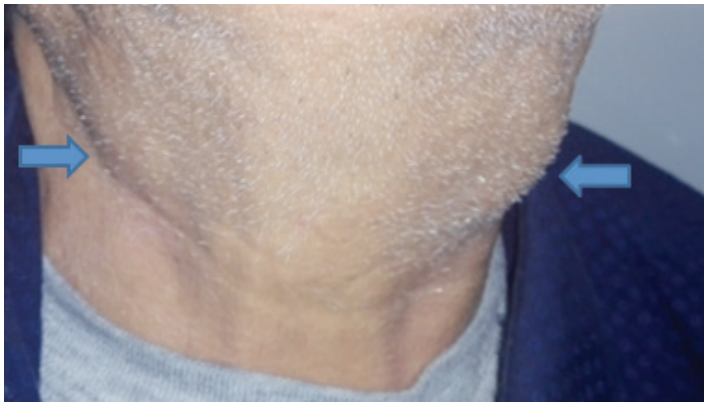

Figure1:bilateral neck swelling (blue arrows)

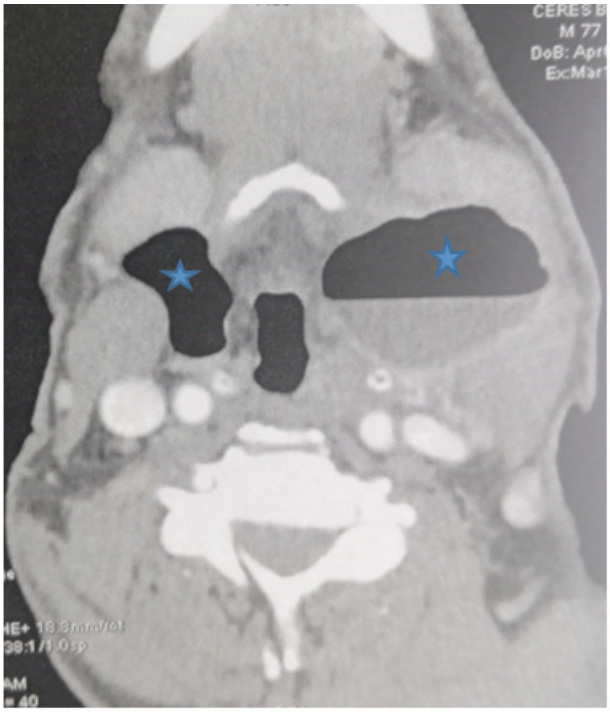

Figure2: An axial cervical CT-scan showing bilateral laryngocele (asterisks)

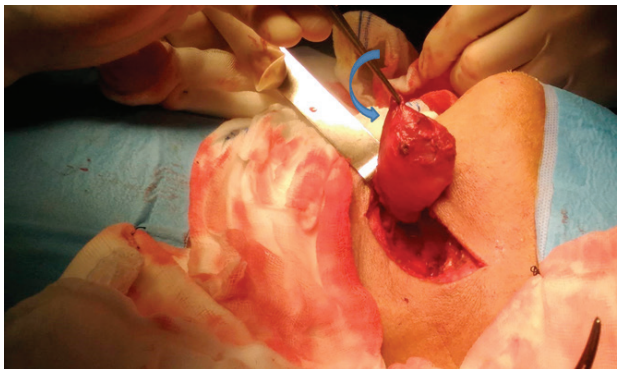

Figure 3: left side laryngocele (blue arrow)

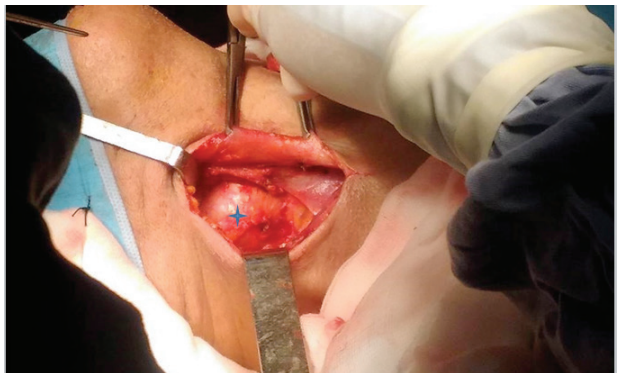

Figure4: right side laryngocele

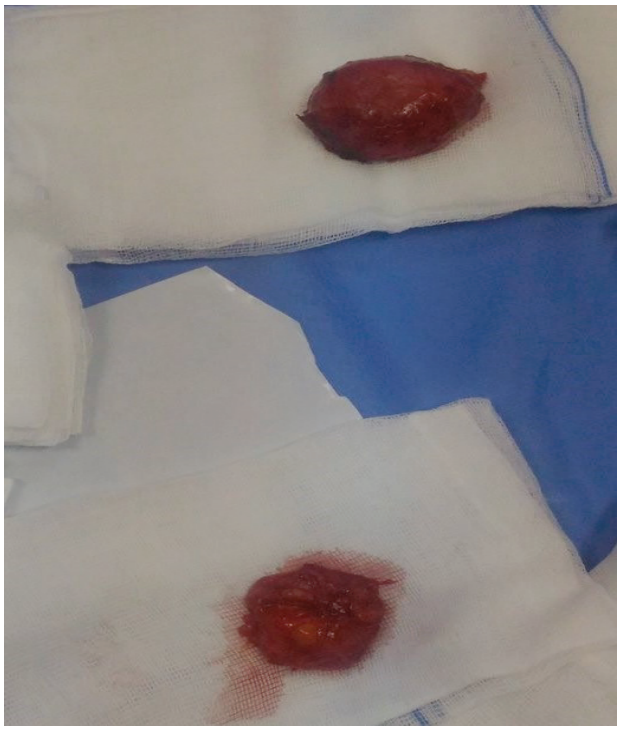

Figure 5: both laryngoceles resected

DISCUSSION

Laryngocele is an abnormal dilatation of laryngeal saccule which communicates with the lumen of the larynx(1). It was first described by Dominique Jean Larrey, Napoleon's surgeon in Egypt in 1829, who found it in muezzins(3), thereafter, Virchow introduced the term "laryngocele" in 18874.

The incidence of laryngocele is estimated to be 1 per 2.5 million of the population per year. **This disease is more frequent in men** with a peak incidence in the sixth decade of life(1,5).

Causes behind genesis of laryngoceles are not well understood. In adults, an increase in intraluminal pressure in the laryngeal saccule is frequently associated, such as wind instruments playing, singing, weight lifting or glass blowing, association with laryngeal carcinoma and atmospheric pressure changes during air travel(4,6,7). It may also occur in patients having congenital predisposition(8). Laryngocele can occur in the left or the right side. Combined type is the most frequent type (44%-50%) followed by the internal type (30%) then the external type (20%-26%)(2,8). About 85% of laryngoceles are unilateral(4,9)**.** The case presented is bilateral, which is a rare event.

Clinically, laryngocele usually manifest with hoarseness and neck swelling4. But most of them remain asymptomatic with a post-mortem discovery reaching 6% (2).

The main differential diagnosis includes saccular cysts, branchial cysts, neck abscesses, oncocytic papillary cystadenoma, and lymphadenopathies(9-11).

The diagnosis of laryngocele is based on clinical findings, endoscopic examination of the larynx, and imaging. It should be noted that all patients with upper airway problems should undergo endoscopic evaluation to ascertain the diagnosis. Cervical computed tomography is useful to diagnose and define the type of laryngocele. Internal laryngoceles are limited by the thyrohyoid membrane, while both combined and external laryngoceles lie superficial to the thyrohyoid membrane(10,11).

Treatment of symptomatic cases depends on the size and type of laryngocele. Nowadays, internal laryngoceles are treated in most cases via endoscopic approach using a CO2 laser, while external and combined types are treated usually via an external approach. Some cases of combined laryngocele are treated via endoscopic approach by drawing the lateral external component into the laryngeal lumen(1,9,10). Both laryngoceles were managed at the

same time in cases of bilateral forms reported in the literature (4,9,11,12).

CONCLUSION

Laryngocele is a usually unilateral disease, but some bilateral cases were reported. Malignancies should be always ruled out due to the fact of association between laryngocele and laryngeal carcinoma. Treatment must be based on the type and the size of the laryngocele and benefit from the advanced new surgical technologies such as laser and robotic surgery.

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