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CASE REPORT: LERICHE SYNDROME (AORTOILIAC OCCLUSIVE DISEASE - AIOD) IN "SAN JUAN" GENERAL HOSPITAL IN THE CITY OF RIOBAMBA

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ABSTRACT

Aortoiliac occlusive disease (AOIAD), also known as Leriche syndrome, is a pathology characterized by progressive occlusion of the abdominal portion of the aorta, the common iliac arteries from their bifurcation below the exit of both renal arteries. The incidence and prevalence of this syndrome are unknown since it usually does not present symptoms. Factors such as smoking, arterial hypertension, dyslipidemia, obesity and diabetes are predisposing factors for the development of this condition, which occurs as a consequence of atherosclerosis accompanied by a lesion at the arterial wall level plus a state of hypercoagulability. The clinical manifestations are variable, it is mainly an asymptomatic disease, but as the condition progresses patients may present intermittent claudication. The diagnosis is based on invasive and non-invasive methods and there is also an anatomical classification system that is important for the knowledge of the clinical manifestations and the choice of treatment. For EOAI, management includes lifestyle changes associated with conservative or surgical treatment, which will depend on the individualization of each patient.

Keywords: Leriche syndrome, aortoiliac occlusive disease, intermittent claudication, peripheral arterial disease, vascular occlusion, aortic diseases, atherosclerosis, hypercoagulability.

RESUMEN

La enfermedad oclusiva aortoilíaca (EOAI), también conocida como síndrome de Leriche es una patología caracterizada por la oclusión de manera progresiva de la porción abdominal de la aorta, las arterias ilíacas comunes desde su bifurcación que se produce por debajo de la salida de ambas arterias renales. La incidencia y prevalencia de este síndrome se desconocen, ya que por lo general no presenta síntomas. Factores como tabaquismo, hipertensión arterial, dislipidemia, obesidad y diabetes son predisponentes para el desarrollo de esta condición, la cual ocurre como consecuencia de la

ateroesclerosis acompañada de una lesión a nivel de la pared arterial más un estado de hipercoagulabilidad. Las manifestaciones clínicas son variables, principalmente es una enfermedad asintomática, pero a medida que avanza la afección los pacientes pueden presentar claudicación intermitente. El diagnóstico se basa en métodos invasivos y no invasivos y además existe un sistema de clasificación anatómica que es de importancia para el conocimiento de las manifestaciones clínicas y para la elección del tratamiento. Para la EOAI el manejo comprende cambios en el estilo de vida asociados a un tratamiento conservador o quirúrgico, que dependerá de la individualización de cada paciente.

Palabras Clave: síndrome de Leriche, enfermedad oclusiva aortoilíaca, claudicación intermitente, enfermedad arterial periférica, oclusión vascular, enfermedades de la aorta, ateroesclerosis, hipercoagulabilidad.

1. INTRODUCTION:

Leriche syndrome or aortoiliac occlusive disease is a rare disease caused by progressive atherothrombotic obstruction of the aortic bifurcation and bilateral common iliac arteries (1), which generally occurs below the exit of the renal arteries (2).

Its description is reported in the literature in a definite way in 1940 by the French surgeon René Leriche, who describes it as an occlusion of the terminal aorta and its branches due to the presence of atherothrombotic plaques; however, it is important to recognize that it was studied for the first time in 1814 by Robert Graham (2) and later mentioned in 1847 by the Irish anatomist Jones Quain (1) (3).

Because of this Leriche specified a triad of symptoms including claudication, sexual impotence and decreased femoral pulses, all of which may vary according to the position of the obstruction.

2. METHODS

The present study is a review of primary sources obtained from the databases: Annals Vascular Surgery, BIO (BioMed Central) Cardiovascular Disorders, BMJ (British Medical Journal), Clinical Scenarios in Vascular Surgery, Elsevier, Journal of Endovascular Therapy, Journal of Vascular Surgery, Mayo Clinic, Medscape, Pain Med, StatPearls - NCBI Bookshelf, etc., with research articles in specialty journals, addressing a great variety of cardiovascular pathologies and especially peripheral vascular diseases, prevention measures, evolution, complications and treatment. Aortoiliac occlusive disease (AOI) or Leriche syndrome is a rare, chronic and progressive pathology of known etiological causes; characterized by occlusion of the abdominal aorta, the common iliac arteries or both.

3. RESULTS:

Epidemiology:

In terms of epidemiology, the exact incidence and prevalence of the disease are unknown, because it is a disease that mostly has no symptoms, due to the generation of effective collateral vascular networks. (2) It is also more prevalent in male patients from the sixth decade of age and with a greater predisposition in those diagnosed with the peripheral arterial disease (PAD). (4) (5)

According to Medscape: "the incidence of peripheral arterial disease is known to increase with age, and it is estimated that by the age of 70 years up to 25% of the US population will be affected" (6)

Etiology:

Some factors predispose to the appearance of this condition, such as smoking, systemic arterial hypertension, dyslipidemia, obesity and diabetes,

but smoking and hypercholesterolemia are the most frequently seen in patients with the occlusive aortoiliac disease, in addition to a tendency to be younger and at lower risk of diabetes mellitus (6) (7)

Pathophysiology

Leriche syndrome occurs as a consequence of atherosclerosis in which there is a lesion at the level of the arterial wall accompanied by a state of hypercoagulability, after the damage at the level of the endothelium there is an inflammatory response in which there is the formation of the fatty streak (8), which is composed of cholesterol, cholesterol esters and triglycerides (9).

Some of these plaques suffer fissures, and damage to their surface which exposes the plaque and induces platelet aggregation, and accumulation of lipids and macrophages. As a result, they become unstable plaques and may turn into clots or grow enough to occlude more than half of the arterial lumen (10) (11).

Generally, at rest, the oxygen needs are low and even when there is moderate stenosis there is no increase in blood flow, but this is altered during exercise where the metabolic needs are higher and muscle ischemia occurs and cannot be restored leading to claudication characteristic of this disease (6)

Clinical Manifestations

The clinical manifestations are mostly variable, mainly at the beginning being an asymptomatic disease due to the collateral network that is formed progressively, but later as the condition progresses the patient may present symptoms such as claudication, which manifests itself during exercise, all this due to the poor functionality to meet the metabolic needs of the lower extremities (12) (13)

The location of muscular pain does not correlate with the severity of the obstruction; however, the more proximal the symptoms are, the more it is associated with a severe occlusive aortoiliac disease. (14) Pain may occur mainly at the gluteal level, since the branches that vascularize this area are the iliac arteries, besides being accompanied by episodes of erectile dysfunction (15).

Physical examination may show distal hair changes, nail changes, decreased muscle mass about the upper extremities, cyanosis and coldness (2) (15)

Diagnosis

The diagnosis of this disease is based on the following techniques:

Laboratory Studies:

The complementary laboratory tests should include a complete lipid profile such as total cholesterol, low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol, and triglycerides.

In young patients with a strong family history of atherosclerosis, homocysteine and lipoprotein should be quantified as well as in those with a history of diabetes mellitus, the level of glycosylated hemoglobin should be kept below 7% according to the American Diabetes Association (ADA) (6).

If the patient has a personal or family history of thrombosis, a study of hypercoagulability status should be performed, including prothrombin time, thromboplastin time, platelet count, factor V Leiden, anticardiolipin antibody, protein C, protein S and antithrombin III (16).

Image Studies

There are several methods for the diagnosis of Leriche syndrome, both invasive and non-invasive before the percutaneous intervention, but it is important to investigate the morphology, location and severity of the lesions in addition to a complete study of the risk factors (17)

Non Invasive Methods

- **Ankle-Arm Index:** Within the evaluation of these patients, it is recommended to measure the ankle-brachial index (ABI), which if the value is below 0.9 is abnormal and would confirm the diagnosis of peripheral arterial disease.
- **Continuous and pulsed Doppler ultrasound:** evaluates the presence or absence of blood flow as well as its characteristics.
- **Doppler ultrasound:** verifies the morphology of vascular structures (calcifications of the arterial wall, atheroma plaques, ulcerations, thrombi in the arterial lumen) and consequent hemodynamic alterations.
- **Computed Angiotomography:** the best technique for the characterization of peripheral arteries, since it has a sensitivity and specificity greater than 95% for the diagnosis of stenosis or occlusion of the aortoiliac and femoropopliteal segments. Magnetic resonance angiography can also be considered as an alternative (2) (18)

Invasive Methods

Arteriography is the method used in the diagnosis of this disease, it evaluates the extension, the topography of the lesions and the development of collateral vessels, however, its use is recommended for both diagnostic and therapeutic purposes.

Classification

The anatomical classification system is important both for the knowledge of clinical manifestations and for the choice of treatment, based on the anatomical location of the atheromatous lesion:

- **Type I:** involves the infrarenal abdominal aorta and common iliac arteries.
- **Type II:** involves the infrarenal abdominal aorta, the common iliac arteries, the external iliac arteries and the common femoral artery.
- **Type III:** involves the infrarenal abdominal aorta, common iliac arteries, external iliac, common femoral, bifurcation, popliteal, or tibial arteries (19).

Each of the atherosclerotic lesions mentioned constitutes the most prevalent group, type I being localized and more frequent in young people and smokers, type II is more extensive and type III is the representation of the most diffuse lesion and is found mostly in elderly people, diabetics and men (19).

There is another classification established by the Intersociety Consensus on the Management of Peripheral Artery Disease II (TASC II), whose criteria are based on the shape, distribution and severity of the lesions (2) (20).

Treatment:

Treatment in these patients is aimed at preventing disease progression and has two objectives:

- To reduce the risk of vascular events that occur in large numbers in patients with a history of peripheral arterial disease.
- Improve symptoms in patients with claudication and treat critical limb ischemia (21)

Pharmacological Treatment

Some vasodilators, antiplatelet agents and statins are described as part of the management. The clinical practice guidelines of the Society for Vascular Surgery have developed a series of pharmacological recommendations, which are as follows:

1. Comprehensive multidisciplinary smoking cessation interventions for patients with intermittent claudication (CI).

2. Statin treatment in patients with symptomatic PAD.

3. Optimize diabetes control (hemoglobin A1c objective of <7,0%).

4. Recommend the use of indicated beta-blockers (e.g., for hypertension and cardiac pain, heart pain).

5. Use of antiplatelet therapy with aspirin (75-325 mg daily).

6. Use of clopidogrel at a dose of 75 mg daily as an effective alternative to aspirin for antiplatelet therapy in patients with IC.

7. Suggest not to use warfarin as the only indication to reduce the risk of adverse cardiovascular events or vascular occlusions.

8. In patients with IC who do not have congestive heart failure, a 3-month trial of cilostazol (100 mg twice daily) is suggested to improve pain-free gait.

9. In patients who do not tolerate or have contraindications to cilostazol, they suggest the use of pentoxifylline (400 mg three times a day) to improve pain-free walking (22).

Surgical Treatment

Regarding the choice of surgical procedure, thromboendarterectomy (TEA) and axillofemoral bypass (AFB) are the traditional methods to surgically treat Leriche syndrome, but currently, with the advent of arterial stents and endovascular repair, it has become the most viable option to consider if the pathological anatomy allows it (6) (23).

Endovascular intervention with the use of a stent achieves satisfactory patency at 2 years, so I know that almost all TASC lesions should consider this intervention, as long as the patient is symptomatic (24) (25)

The stent is a small device that compacts the atherosclerotic plaque against the walls of the arteries to create a pathway for the passage of blood flow to the lower half of the body, this process is performed at the same time as catheter-directed angiography (21) (26) (27).

In addition, during a study comparing open versus endovascular surgical treatment in severe occlusive aortoiliac disease, the endovascular intervention has a high initial success rate along with a lower number of postoperative systemic complications, but there is a large number of re-interventions compared to open surgical treatment (28).

4. DISCUSSION

Leriche syndrome or aortoiliac occlusive disease is a rare disease caused by progressive atherothrombotic obstruction of the aortic bifurcation and bilateral common iliac arteries. (1) In terms of epidemiology, the exact incidence and prevalence of this disease are unknown, since it is a disease that mostly has no symptoms due to the generation of effective collateral vascular networks (2).

The location of muscle pain does not correlate with the severity of the obstruction, however, the more proximal the symptoms are, the more it is associated with a severe occlusive aortoiliac disease (14). Pain may occur mainly at the level of the buttocks, since the branches that vascularize this area are the iliac arteries, in addition to being accompanied by episodes of erectile dysfunction (29). On physical examination, alterations in distal hair, nail alterations, decreased muscle mass related to the upper extremities, cyanosis and coldness can be verified (2) (30).

The diagnosis of this disease is based on the following techniques: laboratory studies: complete lipid profile such as total cholesterol, low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol, and triglycerides. Non-invasive methods: ankle-brachial index, continuous and pulsed Doppler ultrasound, computerized angiotomography. Invasive methods: arteriography.

5. CONCLUSIONS

Aortoiliac occlusive disease (AIAD) or Leriche syndrome is a rare, chronic and progressive pathology with known etiological causes; characterized by occlusion of the abdominal aorta, the common iliac arteries, or both. It generally occurs below the exit of the renal arteries (2). It is more prevalent in male patients from the sixth decade of age and with a greater predisposition in those diagnosed with the peripheral arterial disease (PAD) (4) (5). Some factors predispose to the appearance of this condition such as smoking, systemic arterial hypertension, dyslipidemia, obesity and diabetes,

but smoking and hypercholesterolemia are the most frequently seen in patients with the occlusive aortoiliac disease, in addition to a tendency to be younger and with less risk of diabetes mellitus (6). Leriche syndrome occurs as a consequence of atherosclerosis in which there is a lesion at the level of the arterial wall accompanied by a state of hypercoagulability, after the damage at the level of the endothelium there is an inflammatory response in which there is the formation of the fatty streak (8), which is composed of cholesterol, cholesterol esters and triglycerides (9). The clinical manifestations are mostly variable, mainly at the beginning being an asymptomatic disease due to the collateral network that is formed progressively, but later as the condition progresses the patient may present symptoms such as claudication, which manifests itself during exercise, all this due to the poor functionality to meet the metabolic needs of the lower extremities (12). Treatment in these patients has two objectives: to reduce the risk of vascular events that occur in large numbers in patients with a history of peripheral arterial disease and to improve symptoms in patients with claudication and to treat critical limb ischemia (21).

CASE PRESENTATION

LERICHE SYNDROME (AORTOILIAC OCCLUSIVE DISEASE - AIOD)

SINDROME DE LERICHE (ENFERMEDAD OCLUSIVA AORTOILIACA - EOAI)

Female patient, 94 years old, born and resides in Riobamba, education: elementary school, occupation: housewife, ethnicity: mestizo, religion: catholic, blood group: unknown. Source of information: indirect (daughter).

- Personal Pathological History:

- Clinical: arterial hypertension, in treatment with Losartan 100 mg and Amlodipine 5 mg. Chronic obstructive pulmonary disease. Diverticulosis and rectal prolapse. Bilateral cataract. Polyarthrosis in treatment with capsaicin patch.
- Surgical: 3 c-sections.
- Allergies: no allergies.

- Family Pathological History: does not refer.
- Psychological background: no referral.
- Medication: digestive enzymes, acetylsalicylic acid, omeprazole, silymarin + coenzyme q10; occasional intake.
- Exposure to Biomass: smoke from wood combustion.

Reason for inquiry

- Abdominal and lumbar pain.
- Discomfort when urinating.
- Pain and weakness in lower limbs.

Current Illness: The patient's family member reports that since approximately 48 hours ago as a real and apparent date, her mother presents moderate to severe colicky abdominal pain located in the meso and hypogastrium, with irradiation towards both inguinal regions and lower extremities, accompanied by generalized asthenia, dysuria and bladder tenesmus; with no apparent cause. In addition, for the last 8 weeks, she has presented intermittent claudication, which appears and is exacerbated with ambulation and subsides with rest, accompanied by paresthesia and decreased strength, sensitivity and temperature in both lower limbs. Reasons for which the patient came to our health care facility and after evaluation, it was decided to admit her.

Physical Examination

TA: 100/60 MMHG FC: 80 LPM FR: 18 RPM SAT O2: 88% (FIO2: 21%) T: 36.7°C

Patient, conscious, oriented in time, space and person, afebrile, semi hydrated, algic, Glasgow 15/15.

Head: normocephalic.

Eyes: isochoric pupils, hyper-reactive to light and accommodation. Anicteric sclerae.

Nose: permeable nostrils.

Mouth: oral mucous membranes semihumid.

Oropharynx: not erythematous, not congestive.

Chest: symmetrical, expansibility preserved for age. No signs of respiratory distress. Capsaicin patch on the right scapula.

Heart: hypophonetic heart sounds, rhythmic, in synchrony with the pulse. Holosystolic murmur grade 1/6 in mitral focus.

Lungs: vesicular murmur preserved in apices, decreased in both lung bases. No superimposed noises.

Abdomen: soft, depressible, diffusely painful to deep palpation with predominance in meso and hypogastrium. No signs of peritoneal irritation. Presence of supra and infra umbilical scars from previous surgeries. Hydroaerial noises are present.

Dorsolumbar: positive bilateral fist percussion, predominantly on the left side.

Inguinogenital: female external genitalia, erythema in inguinal folds. Blackish lesion of approximately 3 cm in diameter in the right inguinal region.

Extremities:

- Upper: symmetrical, tone, strength and sensitivity preserved, no edema. Deformity in middle and distal phalanges.
- Lower: symmetrical, tone, strength and sensitivity diminished by age. Painful to finger pressure in the posterior tibial region. Reduced distal pulses. No edema. Decreased temperature. Violaceous coloration in nail beds.

Diagnostic Impression

- Hydroelectrolyte imbalance.
- Peripheral Vascular Disease (Venous Thrombosis vs. Arterial Thrombosis).
- Urinary Tract Infection.

Evolution Summary

Daytime internal medicine evolution 17-02-2022: patient with associated morbidities, admitted with pain in the lower abdomen and lumbar region, urinary symptoms and pain accompanied by weakness in the lower limbs. She remains hemodynamically stable, without supplemental oxygen support, with no signs of respiratory distress. Adequate oral tolerance. Strength and sensitivity decreased in both lower limbs; weak distal pulses and color change. She is complying with the antibiotic regimen.

Evolution of nocturnal internal medicine 17-02-2022: The patient presented with diuresis with hematic dye in low volume, accompanied by dysuria and urinary tenesmus, with a subsequent episode of urinary retention, so a catheter was placed in the bladder, obtaining a moderate volume of urine. She also reported paresthesia in the lower extremities. Due to hematuria, isocoagulation was suspended and renal ultrasound was performed, reporting left pyelonephritis, but no presence of lithiasis, but without ruling out obstruction.

Daytime internal medicine evolution 18-02-2022: the older adult patient who was admitted for abdominal, lumbar and lower extremity pain. Diuresis by bladder catheter, hematuria. She received antibiotic therapy. Due to macroscopic hematuria, renal ultrasound was requested, which showed left pyelonephritis with suspected ipsilateral ureteral lithiasis. It was suggested by the imaging department to perform an uro-tac, which was planned for today. The patient did not pass stool, so a laxative was added to the medication.

Evolution of nocturnal internal medicine 18-02-2022: The patient is hemodynamically stable, with vital signs within normal parameters. He reports that pain in the abdominal region has disappeared, however pain in the lumbar region and lower limbs persists but to a lesser extent, being more evident on ambulation. In addition to paresthesia and decreased temperature. A simple and contrasted uro-tac is performed, which

reports the most significant findings: left ureteropelvic ectasia. No lithiasis or perirenal collections were identified. Uterus: atrophic, with calcifications inside. Osteodegenerative changes in the lumbar spine, grade III scoliosis. ***Atheroma plaques in the abdominal aorta and bilateral iliac arteries***. Decreased sacroiliac spaces, greater on the left side with sclerosis of the articular surfaces.

Conclusion: patient with a diagnosis of Aortoiliac Occlusive Disease (Leriche Syndrome) Type I or Type D according to the TASC II classification, according to the results of complementary examination (imaging study).

Complementary Examinations

Laboratory

February/16/2022:

Hematology:

- Leukocytes: 8,400, Neutrophils: 69.5, Hematocrit: 33%, Hemoglobin: 11.1, Platelets: 392,000, Tp: 16 sec, Ttp: 46.5 sec, INR: 1.3, D-Dimer: 0.48.

Chemistry:

- Glucose: 84 mg/dl, Creatinine: 1.18 mg/dl. Na: 130.97 mmol/l, CL: 92.32 mmol/l, K: 4.60 mmol/l.

Immunology:

Ultrasensitive Quantitative PCR: 10 mg/l.

Uranalysis:

- Blood: 50.

February/18/2022:

Chemistry:

- Creatinine: 0.8 mg/dl.

Image:

February/16/2022:

Electrocardiogram: heart rate: 78 bpm, rhythm: sinus, axis: -45° (deviation to the left), PR: 280 ms. First-degree atrioventricular block, repolarization disturbance.

Simple Chest Tomography: Mediastinal adenopathies in 2R and 4R chains smaller than 2 cm of inflammatory aspect, atheroma plaques in the thoracic aorta and coronary arteries. The cardiothoracic index increased related to cardiomegaly of left cavities. Bronchial bibasal dilatations. Left hilar thickening. Right thyroid lobe growth with some calcifications. In pulmonary parenchyma, there is bibasal septal thickening with areas of pulmonary fibrosis in the posterior basal pulmonary segment of L II, with the compromise of the total pulmonary parenchyma of less than 25%. No areas of pulmonary consolidation or nodular lesions were observed in this study. Marked osteodegenerative changes of the dorsal spine.

February/17/2022:

Renal Ultrasound: the patient is difficult to examine due to his clinical condition, as well as a marked increase in abdominal gas pattern. Both kidneys were normal in size, position and echogenicity. The right kidney measures 67 x 31 mm, with parenchyma of 10 mm, good sinus-parenchymal relationship, no ectasia, no lithiasis, and adequate flow on color Doppler study. The left kidney measures 63 x 36 mm, with parenchyma of 11 mm, poor sinus-parenchyma relationship, and no lithiasis. However, it is noteworthy that the renal pelvis is prominent and measures 11 mm, with no obstructive image visualized. Bladder with adequate repletion, regular and thin wall, without images inside, no ureteroceles, presence of catheter inside.

To consider: left pyelonephritis, with suspicion of lithiasis in the left ureter. Simple Uro-Tac is suggested.

February/18/2022:

Simple and Contrast Uro-CT: simple axial tomographic sections of 5 mm thickness are performed at the level of the kidneys and in the trajectory of the simple urinary tract and after the administration of intravenous iodinated contrast, observing: Liver: alteration of its density related to diffuse steatosis. Cystic lesion of 8.5 mm in segment VI. Gallbladder: increased in size measuring 86 x 36 x 46 mm, Pancreas: normal size in all its segments. Right kidney: measures 72 x 42 mm. Left kidney: 67 x 37 mm, there are 2 cystic lesions of 6- and 7-mm parenchymal parenchyma in the upper pole. Left ureteropelvic ectasia, pelvis measures 11 mm and proximal ureter measures 9 mm. Traceable ureter in its proximal and distal portions measuring 10 mm at the ureterovesical junction. No lithiasis is identified. No perirenal collections. Right ureter: normal caliber, position and shape. After the administration of the contrast medium, no pathological enhancements are seen, the elimination and nephrographic phase is performed at usual times. Bladder insufficiently full, with an intravesical catheter, whose proximal end is in contact with the upper wall of the bladder. Uterus: atrophic, with multiple calcifications inside. Ovaries: not visualized by this study. No adenomegaly or free fluid is observed. Marked osteodegenerative changes in the lumbar spine with grade III scoliosis. ***Atheroma plaques in the abdominal aorta and bilateral iliac arteries***. Marked decrease of sacroiliac spaces, greater on the left side with sclerosis of the articular surfaces.

Conclusions: Vesicular Hydrops, Left Renal Cysts (Bosniak I), Ureteral Ectasia with Signs of Ureteritis (without Apparent Obstructive Cause), ***Leriche's Syndrome****, Marked Lumbar Spondyloarthrosis, Lumbar Scoliosis (Grade III), Left Sacroiliitis (Grade III), Uterine Calcifications, Hepatic Steatosis (Grade I).*

Patients with atheromatous plaques in the abdominal aorta and bilateral iliac arteries, finding compatible with a diagnosis of Aortoiliac Occlusive Disease (Leriche Syndrome) Type I or Type D according to TASC II classification.

Conclusion: *patient with evidence in an imaging study of atheroma plaques at the level of the abdominal aorta and bilateral iliac arteries, so the diagnosis of Leriche Syndrome (occlusive aortoiliac disease).*

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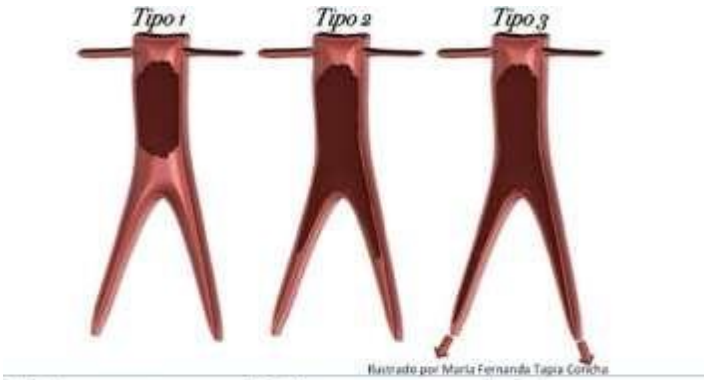
ANNEXES



Tipo 1	Tipo 2	Tipo 3
Compromete aorta infrarrenal e iliaca común, presente en un 5-10% de la enfermedad arterial periférica y ocurre más comúnmente en mujeres.	Compromete aorta infrarrenal, iliaca común y externas, puede extenderse hasta la arteria femoral común. Se ve en 35% de los pacientes con enfermedad arterial periférica	Compromete aorta infrarrenal, iliacas, femoral, poplítea y tibiales. Forma más severa y desafortunadamente más común.