

Isthmian nodosa salpingitis: histero-salpingography diagnosis of an infertility cause

Salpingite ístmica nodosa: diagnóstico histerossalpingográfico de uma causa de infertilidade

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ABSTRACT

Objective: to demonstrate the findings of isthmian nodosa salpingitis (SIN) through histero-salpingography and evaluate the site of involvement and its impact on female infertility. **Patients and Methods:** a total of 2,800 histero-salpingographies were reviewed in a retrospective study between January of 1987 and January of 2007 in patients with a clinical history of female infertility. Of these, four patients presented radiological diagnosis of SIN; their main radiographic aspects, sites of involvement, and impact on infertility were analyzed. **Results:** out of the four patients in which the studied disease was found through the histero-salpingography infertility research, three had a history of tubal pregnancy, all with cornual isthmian involvement; bilateral in three of them and unilateral in one. One of them showed evidence of positive bilateral Cotté, two showed evidence of negative bilateral Cotté, and one bilateral with right positive tubal and left negative tubal. **Conclusion:** the diagnosis of SIN is achieved based on histero-salpingography, characterized by the accumulation of contrast medium on the tubal wall, distributed in the cornual or ampolar isthmian portion, uni- or bilaterally, and accompanied by clinical history of infertility, tubal pregnancy, spontaneous abortion, and tubal obstruction.

Key words: Salpingitis; Histerossalpingography; Infertility; Pregnancy, Tubal.

RESUMO

Objetivo: demonstrar os achados da salpingite ístmica nodosa (SIN) por meio da histerossalpingografia e avaliar o local de comprometimento e sua repercussão na infertilidade feminina. **Paciente e Métodos:** em estudo retrospectivo foram revistas 2.800 histerossalpingografias realizadas entre janeiro de 1987 e janeiro de 2007 em pacientes com história clínica de infertilidade feminina. Destas, quatro pacientes apresentavam diagnóstico radiológico de SIN, sendo analisados seus principais aspectos radiográficos, como também os locais de comprometimento e suas repercussões na infertilidade. **Resultados:** das quatro pacientes em que foi encontrada a doença estudada a partir da investigação histerossalpingográfica da infertilidade, três tinham antecedentes de gravidez tubária, todas com comprometimento ístmico cornual, sendo três delas de comprometimento bilateral e uma unilateral. Uma delas apresentava prova de Cotté positiva bilateral, duas com prova de Cotté negativa bilateral e uma com tuba direita positiva e esquerda negativa. **Conclusão:** o diagnóstico da SIN é feito com base na histerossalpingografia, caracterizada pelo acúmulo do meio de contraste na parede tubária, distribuída na porção ístmica cornual ou ampolar, uni ou bilateralmente, acompanhado de história clínica de infertilidade, gravidez tubária, abortamento espontâneo e obstrução tubária.

Palavras-chave: Salpingite; Histerossalpingografia; Infertilidade; Gravidez Tubária.

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INTRODUCTION

Salpingitis isthmica nodosa (SIN) is characterized by small diverticula or nodular thickening of the isthmian portion and occasionally the ampolar portion of one or two uterine tubes. Chiari, in 1887, first described the disease that has since been the subject of discussion about its etiology and pathogenesis.¹

Its etiopathogenesis can be of a post-infectious nature, congenital or developmental defect, or the result of metaplasia of the endosalpinx. It can also be a morphological expression of tubal chronic spasm.²

Although its exact incidence is unknown, some reports in the literature estimate it in just between 0.6 and 3.9% of cases.^{3,4}

In regards to the terminology, the term salpingitis isthmian nodosa is the most known and appropriate, however, it may receive other synonyms such as: adenosalpingitis⁴, glandular productive salpingitis,⁴ epithelialmiosis,⁴ adenomio-hyperplasia,⁴ tubal²diverticulosis,⁴ endosalpingiosis,⁴ and tubal adenomyosis.⁴

The authors aim to demonstrate the main findings on SIN based on histerosalpingography to evaluate the involvement sites and impacts on female infertility.

PATIENTS AND METHODS

In a retrospective study, 2,800 histerosalpingographies, performed between January of 1987 and January of 2007, in patients with a clinical history of female infertility and assisted in a private clinic in the city of Belo Horizonte, MG-Brazil were reviewed.

The radiographic aspects found, involved sites, and impact on infertility were analyzed in four patients.

In our institution, histerosalpingography is performed between the 8th and 12th days of the menstrual period, using water-soluble iodinated as the contrasting media (meeglumine diatrizoate + polyvidone).

The instruments and materials used in the exam were: vaginal speculums, Cheron forceps, Pozzi forceps, hystrometer, and cannulas and cones spe-

cific for the histerosalpingographic examination, among others.

The exams were performed with a radiological apparatus with a Toshiba 850 DG model serigraph with an image intensifier.

RESULTS

Accumulation of the contrasting medium was radiologically found in four patients on the isthmian cornual tubal wall, uni or bilaterally, with the appearance of multiple small diverticula similar to "honeycombs".

Table 1 shows patients' data on age, marital status, clinical background, involvement site, and if the peritonization of the contrasting medium occurred (Cotté positive proof) or not (Cotté negative proof).⁵

In the four patients in whom SIN was identified in the histerosalpingographic infertility research, three had a history of tubal pregnancy. The affected tubal portion was the cornual isthmian region showing bilateral tubal involvement in three of the patients, and unilateral in one. Regarding the peritonization of the contrasting medium, one presented Cotté bilateral positive proof, two presented complete bilateral obstruction, and one presented positive Cotté in one of the tubes, being the right one pervious and the left one blocked (Figures 1 and 2).

DISCUSSION

Even with recent technological advances such as the use of ultrasonography and magnetic resonance in the study of diseases of the female pelvis that can lead to infertility, histerosalpingography remains as a fast, safe, and non-invasive method, being the best for the evaluation of tubal obstruction.⁶

In 1896, Von Recklinghausen² proposed that the findings about SIN resulted from wolffian remains in the region where müllerian and wolffian ducts intersect.

Table 1 - Characterization of patients

| Cases | Age | Marital status | Antecedent | Site | Involvement | Cotté proof (5) |
|-------|-----|----------------|-----------------------|------------------|-------------|-----------------------|
| 1 | 36 | Single | Without background | Cornual isthmian | Bilateral | Positive |
| 2 | 33 | Single | Right tubal pregnancy | Cornual isthmian | Bilateral | Negative |
| 3 | 27 | Married | Left tubal pregnancy | Cornual isthmian | Bilateral | Positive to the right |
| 4 | 45 | Divorced | Left tubal pregnancy | Cornual isthmian | Left | Negative |

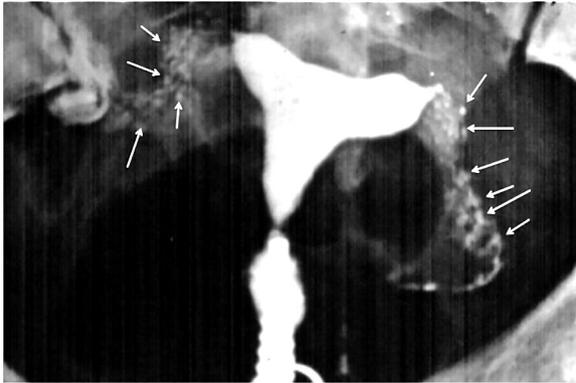


Figure 1 - Case 01 - It is observed that both tubas are fully opaque with positive Cotté proof, with multiple diverticular parietal formations in the isthmian cornual portion (white arrows).

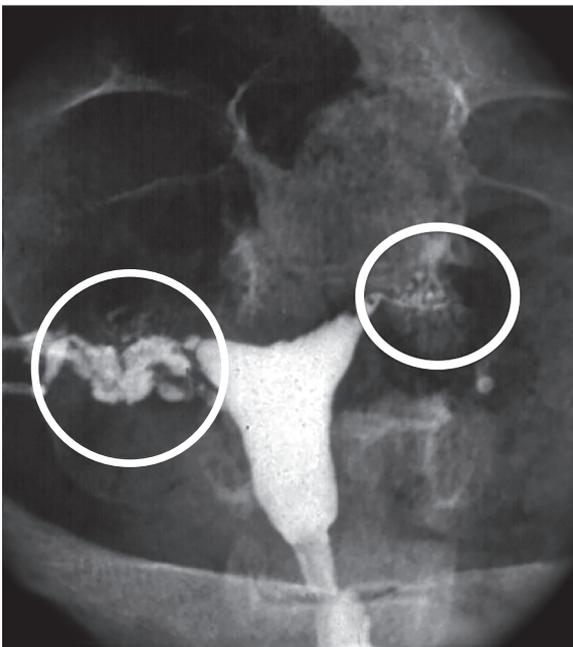


Figure 2 - Case 03 - Patient with a history of left tubal pregnancy. The radiography shows multiple saccular formations, in the isthmian cornual portion in both tubes (contained inside the white circle). The uterine tube is totally opaque with peritonization of the contrasting medium (Cotté positive proof), while the left tube is completely obstructed (Cotté negative proof).

However, the histopathological evaluation of tube tissues from embryos of girls and female adolescents has not shown the presence of wolffian remains. Among the various hypotheses to explain the possible SIN etiology, one of them is based on previous inflammatory processes that took place in the uterine tube with abnormal epithelial proliferation in the isthmian portion and slow penetration into the tube wall forming a maze of trails and cysts, and thus, leading to a second-

ary muscle hypertrophy.² According to Benjamin and Beaver, it would be an acquired anomaly, similar in all respects to adenomyosis. The subsequent metaplastic alteration is responsible for the transformation of the tubal epithelium in endometrial in the pseudo glands in the mesosalpinx. This epithelium, in turn, goes through hypertrophic and hyperplastic alterations in analogy to what is observed in the myometrium.¹

The analysis of the exposed theories suggests a multifactorial etiological concept as responsible for the pathogenesis of SIN.⁴

Radiologically, SIN is characterized by the accumulation of contrasting medium in the tubal wall, distributed in the isthmian cornual or ampolar portions; uni or bilaterally, with the appearance of multiple and small diverticula that may have the appearance of a “honeycomb”, as observed in our four described cases. According to Tulandi et al.³, these diverticular formations would be one of the causes of infertility or tubal pregnancy.

In the four infertile patients in which SIN was detected, with a prevalence of 0.14% in 2,800 hysterosalpingographies, three had a clinical history of tubal pregnancy, which is consistent with findings reported in the literature.⁷ The low incidence found in this study is due to the fact that we evaluated hysterosalpingographies performed in a private radiology clinic while the data reported in the literature were from examinations in radiological services within hospitals. This was demonstrated in a study published by Creasy et al.¹ where 45 cases of SIN were found in 1,194 hysterosalpingographies performed in a time span of six years.

SIN seems to be associated with the cause of female infertility⁸ due to anatomical and functional alterations in the tubal isthmian region. Tubal obstruction is not pathognomonic of this disease because most cases of salpingitis isthmian nodosa present pervious tubes with imaging aspect of multiple diverticula in the isthmian cornual portion of the tube, with or without associated hydrosalpinx. However, the patient with SIN is more likely to: tubal pregnancy in the isthmian and ampolar portions,^{1,7} infertility, and spontaneous abortion. The diagnosis is established through hysterosalpingography, differentiating it from endometriosis and tuberculosis of the uterine tube.

In the tubal endometriosis, coarse and irregular diverticular formations are observed not confined to the isthmian cornual and/or ampolar tubal region, associated with tubal obstructions and typical symptoms.⁹ Tubal tuberculosis is displayed with a fixed,

rigid, and obstructed tube, with irregular formations on its wall, sometimes alternating with stenosis and dilations in "rosary", usually associating with adnexal calcifications and/or that of lymph nodes in the pelvic excavation.^{9,10}

CONCLUSION

The diagnosis of SIN is made through hysterosalpingography, characterized by the accumulation of contrasting medium in the tubal wall, distributed in the isthmic cornual or ampullary portion, uni or bilateral, and may be accompanied by a clinical history of infertility, tubal pregnancy, spontaneous abortion, and tubal obstruction.

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