

The Diagnostic Indicia of Hysterosalpingography for Pelvic Endometriosis

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ABSTRACT

From June 1984 to December 1985, there were 109 patients admitted to TMCH under the impression of infertility and/or endometriosis. Of the 109 cases, 30 cases were subjected to this study. Four categories of radiographic diagnostic indicia of endometriosis could be found:

(1) fixation of falloian tube, (2) pooling of dye in peritubal area, (3) fleckering sign, and (4) stellate sign.

Present comparative study showed that the former two signs are not good diagnostic indicia of pelvic endometriosis, while both of the fleckering sign and stellate sign got a same positive diagnostic indicia rate of 77%, and the false positive rate of 41% and 33% ($P < 0.05$) respectively. However, the combination of the two signs as indica got the positive rate of 61% and the false positive rate of 16% ($P < 0.05$). This suggested that both of the X-ray morphological signs were significant as the diagnostic indicia for endometriosis.

Endometriosis is a condition in which functioning endometrium is found outside of the uterus. The process of the disease may take the form of implants, plaques, endometriomas or nodules; all of which respond to cyclic hormone changes in the same manner as uterine endometrium and may produce menstrual debris. Because of the inflammatory nature of the endometriotic growth or menstrual debris, pelvic adhesion is frequently associated with endometriosis and should be

considered as a part of the disease process itself⁽¹⁾.

Endometriosis is said to affect approximately 15% of all women in the reproductive age. In the study of infertility, endometriosis plays an important role⁽²⁾. On pelvic examination, the finding of tender nodular uterosacral ligament in conjunction with a fixed uterine retroversion is almost pathognomonic of endometriosis. These suspicious lesions in the peritoneal cavity can be diagnosed and con-

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firmed by laparoscopy or laparotomy. Meanwhile, hysterosalpingography (HSG), is frequently used in the investigation of infertility. It provides detailed information about the uterine cavity, tubal patency and intrapelvic disease. We evaluated its diagnostic indicia for the pelvic endometriosis in the routine infertility work-up.

MATERIALS AND METHODS

From June 1984 to December 1985, there were 109 patients admitted to TMCH under the impression of infertility and/or endometriosis. Of the 109 cases, 30 cases were subjected to analysis with complete admission history, detailed operation findings, histologic proof and satisfactory hysterosalpingography films. The HSG was performed in the proliferative phase with Spackman cannula, Vulsellum instrument and water soluble radiopaque medium (76% urographin 10 cc) under the continuous monitoring on television fluoroscopy. Antispasmodic drugs, Buscopan 20 mg, were administered intramuscularly in advance to prevent uterotubal spasm. Four films were taken in at least two different positions. The first X-ray film was taken after injection of 3 to 4 ml of contrast medium. We could get the contour of the uterine cavity and bilateral fallopian tubal lumina in this film. The second and third X-ray film were taken after injection of another 3 to 4 ml of contrast medium from the left and right sides at the angle of 45 degrees. The last film was taken at 10 to 15 minutes after completion of the injection^(3,4,5,6). On these films, the dye could have spilled out from the end of both fallopian tubes to delineate the serosal defects formed

by peritoneal implants of endometriosis foci.

RESULTS

In these 30 patients studied by HSG, the laparoscopy or laparotomy showed that 7 cases were normal, 5 cases had pelvic adhesion and the remaining 18 cases had pelvic endometriosis. Therefore, we divided these 30 cases into endometriosis group (N = 18) and no endometriosis group (N = 12). We grouped the shadow found in HSG to four kinds of pictures: 1) fixation of fallopian tube, 2) pooling of dye in peritubal area, 3) fleckering sign (Figure 1, 2) and 4) stellate sign (Figure 3, 4, 5, 6).

Concerning both (1) and (2) signs as the diagnostic indicia for endometriosis, the results showed that they could not differentiate lesions with or without endometriosis (Table 1). On the contrary, the correlation between fleckering sign and endometriosis showed that the positive rate was 77% and the false positive rate was 41% ($P < 0.05$) (Table 2). Meanwhile, the correlation between stellate sign and endometriosis showed the positive rate was 77% and the false positive rate was 33% ($P < 0.05$) (Table 3). Moreover, the correlation between both the positive "fleckering sign" and "stellate sign" and endometriosis showed that the positive rate and the false positive rate were 61% and 16% ($P < 0.05$) respectively (Table 4). "Fleckering sign" and "stellate sign" mostly appear at 2 to 3 cm around the frimbriated end. Therefore, we may locate the foci of endometriosis occurring at peritubal area, ovary and upper portion of broad ligament in HSG.

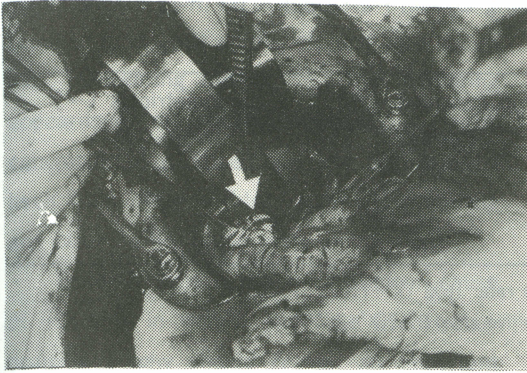


Fig. 1. In early stage, elevated clusters of endometriosis foci implant on the ovarian surface (↑).

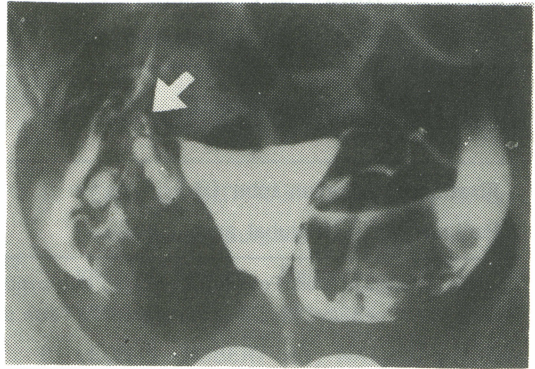


Fig. 2. "Fleckering sign" (↑) is formed by the residual dye on the elevated cluster lesions (same case as Fig 1).

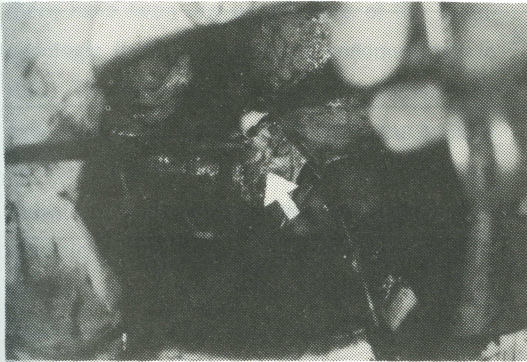


Fig. 3. In late stage, the endometriosis foci become dark blue or brown-black cysts surrounded by a zone of fibrosis and contracture like "puckering lesion" (↑).

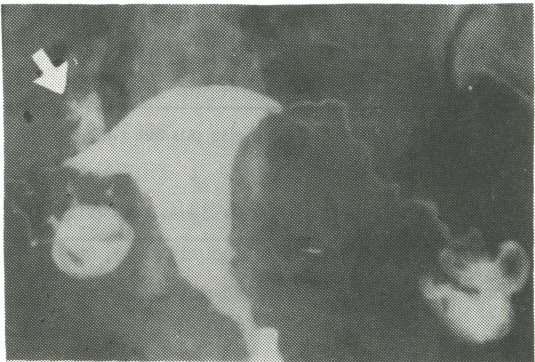


Fig. 4. "Stellate sign" (↑) is formed by the residual dye on the "Puckering lesion" of endometriosis foci (same case as Fig 3).

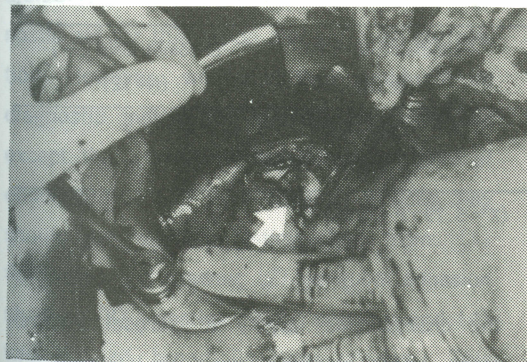


Fig. 5. A case of pelvic endometriosis. One large chocolate cyst of right ovary with superficial endometriosis foci (↑) without adhesion of right fallopian tube.

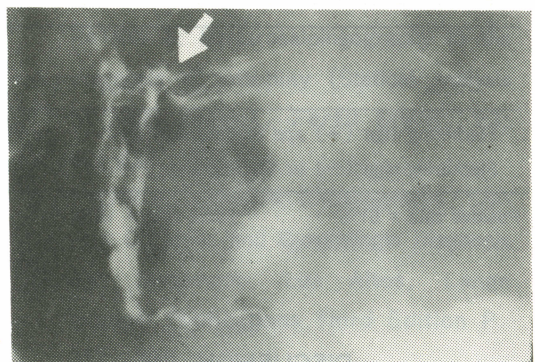


Fig. 6. The HSG shows fixation of right fallopian tube with "Fleckering sign" and "Stellate sign" (↑) near the fimbriated end (same case as Fig 5).

Table 1. Fixation of Fallopian Tube and Pooling Dye in Peritubal Area in 30 Cases With or Without Endometriosis.

	endometriosis (+) (N= 18)	Endometriosis (-) (N= 12)
Fixation of fallopian tube (+)	6	2
Pooling dye in peritubal area (+)	2	1

Fixation of fallopian tube: Positive rate: 33% False positive rate: 16% ($X^2= 1.023$, $P<0.1$)

Pooling dye in peritubal area: Positive rate: 11% False positive rate: 9% ($X^2= 0.062$, $P>0.1$)

Table 2. Fleckering Sign in 30 Cases With or Without Endometriosis.

	Endometriosis (+) (N= 18)	Endometriosis (-) (N= 12)
Fleckering sign (+)	14	5
Fleckering sign (-)	4	7

Positive rate = 77%

False positive rate = 41%

($X^2= 4.043$ $P<0.05$)

Table 3. Stellate Sign in 30 Cases With or Without Endometriosis.

	Endometriosis (+) (N= 18)	Endometriosis (-) (N= 12)
Stellate sign (+)	14	4
Stellate sign (-)	4	8

Positive rate = 77%

False positive rate = 33%

($X^2= 5.925$ $P<0.05$)

Table 4. Both Fleckering and Stellate Signs in 30 Case With or Without Endometriosis.

	Endometriosis (+) (N= 18)	Endometriosis (-) (N= 12)
Fleckering sign (+) and Stellate sign (+)	11	2
Fleckering sign (-) or Stellate sign (-)	7	10

Positive rate = 61%

False rate = 16%

($X^2= 5.79$ $P<0.05$)

DISCUSSION

Endometriosis appears in several sites but most importantly in the pelvic floor with

the change due largely to serosal involvement. In the earlier stages, the lesion of endometriosis often has the elevated clusters of peritoneal implants with the appearance of "Powder Burns". Later, these lesions

become dark-blue or brown-black cysts surrounded by a zone of fibrosis and contracture like "Puckering Lesion" ⁽⁷⁾. This puckering appearance of serosal changes is pathognomonic of endometriosis and distinguished itself from other entities, such as carcinoma and other hemorrhagic cysts of the ovary.

Endometriosis is the most common cause of infertility in women over age 25. Hysterosalpingography should remain an important diagnostic procedure for the investigation of the infertile woman. It is a safe, inexpensive, simple, rapid diagnostic test⁽⁸⁾. However there have been few descriptions of the roentgenologic findings concerning endometriosis in HSG. The findings of fixation of fallopian tube and pooling of dye in peritubal area in HSG as the diagnostic indicia of pelvic adhesion caused by endometriosis are found to be not valuable in this study, because it is very difficult to make a differential diagnosis of pelvic adhesion from other causes such as pelvic inflammatory disease or malignant lesion.

In this study, we used the pictures of "fleckering" and "stellate" signs formed by the residual dye on the foci of endometriosis in HSG as the indicia for the diagnostic aid for this lesion and got good correlation. However, we found they could not be diagnostic indicia for ovarian endometrioma except that concurrent peritoneal implants of endometriosis foci were present, besides they should be carefully distinguished from: (1) fimbriated end shadow; (2) peritubal adhesion shadow; (3) intestine flexion shadow; and (4) varicosis of broad ligament shadow. This study suggested that both of the X-ray morphologic signs were significant as the diagnostic aid for endometriosis singularly or in com-

bination especially in the vicinities of adnexa in the routine radiographic study.

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子宮輸卵管攝影術對子宮內膜異位診診斷之評估

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研究對象取材於 1984 年 6 月至 1985 年 12 月間，因子宮內膜異位症或不孕症而住院 109 個病例中 30 例作為研究對象，此次研究即是利用了宮輸卵管攝影劑散佈在骨盤腔內子宮內膜異位病變所形成的四種影像：(1) 輸卵管的固著(fixation of fallopian tube)，(2) 輸卵管周圍影劑的凝聚(pooling of dye in peritubal area)，(3) 雪花紋(Fleckering sign)，(4) 星狀紋(stellate sign)。

研究顯示前兩項由骨盤腔沾黏所造成之影像無法區別是子宮內膜異位症或其他炎症變化所形成。而以雪花紋或星狀紋的出現為診斷標準則陽性率同為 77%，偽陽性率則分別為 41% 和 33% ($P < 0.05$)。此兩種影像若共同出現則陽性率為 61%，偽陽性率為 16% ($P < 0.05$)。所以以子宮輸卵管攝影術的骨盤腔散佈所造成的影像來診斷子宮內膜異位病變，統計上顯示有意義，尤其此兩種影像同時出現時，更能提高診斷的準確性。

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民國七十六年十二月三十日受理