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BENIGN GONOCOCCAL SEPSIS

A Report of 36 Cases

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Abstract. A benign gonococcal sepsis with predominant skin symptoms has been seen with increasing frequency during the past few years. The diagnosis is usually easy and is based on the typical clinical picture of characteristic pustules, joint symptoms and fever. The genital symptoms of gonorrhoea are few, which is in keeping with the fact that the patients seek advice because of their skin and general symptoms and not because of any suspicion of venereal disease. Gonococci are regularly demonstrated in smears from the genitals and sometimes from the blood.

During the past few years an increasing number of patients with benign gonococcal sepsis and predominant, *almost pathognomonic,* skin lesions have been seen in the Department of Dermatology, Gothenburg, Sweden. It is striking that these patients went to the doctor because of their skin eruption and not because of any suspicion of venereal disease.

Gonococcal sepsis formerly used to have one of two clinical pictures. Some patients were severely ill with high fever and involvement of heart, meninges, pleurae, liver and skin. The prognosis was grave. In others the course was more benign with skin and joint symptoms predominating. The cases described in this paper correspond closely to the latter type.

PRESENT SERIES

Clinical picture

The series of patients includes 2 men and 34 women in the age of 17 to 45 years. They were seen in 1962–1969 at the Department of Dermatology, Sahlgrenska sjukhuset, Gothenburg.

Skin lesions were quite characteristic and occurred in 35 of 36 cases. In the remaining patient the rash consisted of nondescript papules. The principal lesion was a small yellow pustule surrounded by an intense erythema. Sometimes it was haemorrhagic. The pustules were solitary, few in number and most frequently situated over the joints of the extremities. After a few days the pustules dried, forming small crusts, which were shed, sometimes leaving small scars. The pustules were often painful. They occurred successively with one or a few new lesions each day, thus different stages of development could be seen at any one time.

Joint symptoms. Only 2 patients did not have joint symptoms and 2 had diffuse aching in their muscles. In the majority of patients the large joints of the arms and legs were affected and in a few cases the small joints were also involved. In none of the cases were symptoms confined to the small joints. Two patients had diffuse "muscle-ache". The symptoms were transitory and slight with few objective signs such as effusion or redness of the overlying skin. However, joint involvement was a prominent feature of the clinical picture.

Fever was noticed in all but one patient. In 29 patients the pyrexia was over 38°C, in 6 there was a slight rise in temperature and 3 complained of shivering.

Genital symptoms. Twenty-four of the 34 women had no genital symptoms. Only 8 had those symptoms which usually are considered as indicative of genital gonorrhoea, 3 had "cystitis" and 5 a vaginal discharge. The 32 first diagnosed women with gonococcal sepsis were, as regards genital symptoms, compared with an other series of 32 women randomly chosen from patients with genital gonorrhoea but without sepsis. The two series were matched for age. In the control group only 4 women denied genital symptoms, 5 had "cystitis", 12 a vaginal discharge and 1 acute bartholinitis. The difference in the group with "no symptoms" is significant. This means that the patients with benign gonococcal sepsis and genital gonorrhoea have fewer genital symptoms than women with "ordinary" genital gonorrhoea. The 2 males had no symptoms (Table I).

Provoking factors

Information concerning previous infection with gonorrhoea was obtained in 34 of the patients. It was denied by 31 and admitted by 3. In a few cases a gynecological procedure such as delivery or curettage preceded the onset of the pustular gonorrhoea and may have preci-

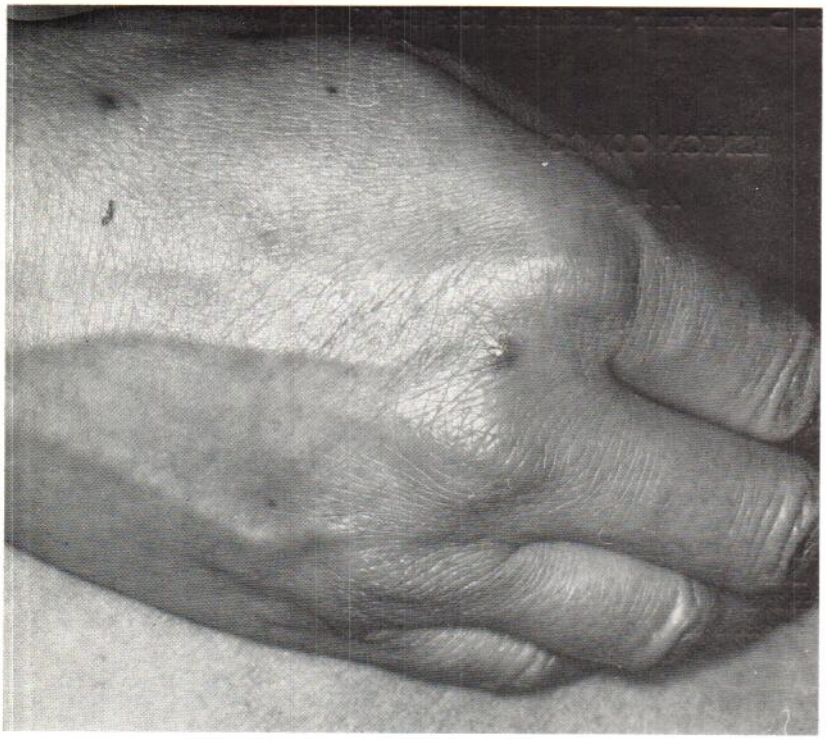

Fig 1. Typical solitary pustules over the joints in a patient with benign gonococcal sepsis.

pited it. Some of the patients were on oral contraceptives, but the proportion seems not to differ from that in the general population.

Laboratory findings

Demonstration of gonococci. Gonococci were demonstrated in culture from the genitals in all but one of the patients. In this exceptional case, the gonococcus was, however, demonstrated in the blood. The frequency of positive gonococcal findings from the different anogenital regions (urethra, cervix and rectum), were similar in these women to the frequency of the corresponding findings in the matched control series to the first examined 30 women. Gonococci were cultured from the blood in 6 out of 32 cases investigated but in none were gonococci grown from the pustules (Table II).

Sensitivity of the gonococci to antibiotics was estimated with the disc method (Ericsson) using penicillin, tetracycline, chloramphenicol and streptomycin. A slight decrease in sensitivity to penicillin and streptomycin was observed in exceptional cases. This pattern corresponded roughly to the "usual" resistance pattern in patients with uncomplicated genital gonorrhoea in Gothenburg during the period of investigation.

Complement fixation test was performed with heat-killed gonococci isolated from 20 patients as antigen. Twofold dilutions of the patient's sera starting at dilution 1/5 were made and the results registered by estimating the point of 50% hemolysis of the hemolytic indicator system. It was done on the patient's first visit to the hospital. At that time it was negative in 20 of the 31 cases investigated. In 4 patients reinvestigated later, the test became positive. In the control series of 18 women with genital gonorrhoea without sepsis the test was negative in 16 (Table III).

Other laboratory tests. Laboratory investigations were not carried out in all patients and some tests were done only occasionally. The following values were noticed: Wassermann reaction: negative 36/36. Kline reaction: negative 36/36. Meinicke reaction: negative 36/36. GPT:

Table I. *Genital symptoms in patients with benign gonococcal sepsis and in women with genital gonorrhoea but without sepsis (controls)*

	No symptoms	"Cystitis"	Vaginal discharge	Lower abdominal pain	Abnormal bleeding	Bartholinitis	No. patients
Men	2						2
Women	23	3	4	1	1		32
Controls women	4	5	12	7	3	1	32

Table II. *Demonstration of gonococci in culture in patients with benign gonococcal sepsis and in women with genital gonorrhoea (controls)*

	Urethra	Cervix	Rectum	Blood	Pustule	Breast milk
Men	2/2			1/2	0/2	
Women	20/32[a]	26/31	10/31	5/30	0/29[b]	0/1
Controls/women	22/30	29/30	8/30			

[a] All tests not performed in every patient.
[b] In 5 cases *Staphylococcus aureus* grown.

normal 6/6. GOT: normal 10/10. Antistreptolysine titre: normal titre 20/21, increased titre 1/21. Antistapholysine titre: normal titre 17/17. Agglutination of sensitized sheep cells: negative 13/13. Acute phase protein: negative 3/5, positive 2/5. Haemoglobin: less than 10 g%: 2/31; less than 11 g%: 5/31; more than 11 g%: 24/31. White bloodcount: less than 5000: 1/34; 5000–10 000: 24/34; more than 10 000: 9/34. Sedimentation rate: less than 20 mm: 3/33; 20–39 mm: 11/33; 40–59 mm: 13/33; 60–89 mm: 6/33. Proteinuria: 1/32. Urinary casts: pyuria 12/33; haematuria 2/33. EKG: normal 25/26; intraventricular block 1/26.

Histological findings. Biopsies were taken from a fresh pustule in 5 cases. The histological picture was similar in each case showing essentially the picture of a septic abscess. Gonococci could not be identified in the sections.

Result of treatment. All patients, except one, were treated with intramuscular injections of penicillin. The usual dose was one megaunit of penicillin *G* with 1.2 megaunits of procaine penicillin daily for 5–7 days. One patient, who was allergic to penicillin, was treated with tetracycline.

The patients symptoms subsided rapidly once treatment was started and the clinical signs disappeared in the next few days.

After completing the treatment course all the 33 controlled patients had negative smears and culture for gonococci from the urethra, cervix uteri and rectum. In the women this test was done once a week for 5 weeks and in the men for 3 weeks.

No signs of clinical nor bacteriological relapse were seen in any of the patients. All the patients were considered to be cured and there were no residual symptoms after treatment.

COMMENT

The characteristic clinical picture, which is usually easily recognisable on first seeing the patient, *thus consists of:*

1. A few isolated pustules over the joints on the limbs. They are often haemorrhagic, tender and surrounded by an erythematous halo. Pustules in different stages may be seen at the same time.
2. Joint symptoms, usually affecting the large joints. They are transient but may be troublesome to the patient.
3. Fever of variable degree.
4. Absence of symptoms of genital gonorrhoea.
5. Demonstration of gonococci from the genitals.
6. Positive blood culture for gonococci in some cases.

In each of the 36 cases the diagnosis was made initially from the clinical picture. It was con-

Table III. *Complement fixation-test to gonococci at the first visit to the hospital in patients with benign gonococcal sepsis and in women with genital gonorrhoea (controls)*

		Positive in the titre					
	Negative	1/10	1/20	1/40	1/80	>1/80	No investigation
Patients with sepsis	20[a]	4	2	4	1	0	5
Control women with genital gonorrhoea	16	0	2	0	0	0	2

[a] In 4 cases the test became positive subsequently.

firmed by positive cultures of gonococci from the genitals in all except of one case. In this case, although gonococci were not grown from the genitals, the blood culture later grew gonococci! The occurrence of a primary genital gonococcal focus and the demonstration of gonococci in the blood, the skin (5, 6, 8) and joints (7, 8) corresponds to a gonococcal sepsis.

The following points may be of interest:

1. *The increasing frequency*

Since the introduction of chemotherapy and antibiotics in the treatment of gonorrhoea very few cases of benign gonococcal sepsis have evidently been seen (11). In the dermatological department in Gothenburg no such cases seem to have been observed prior to the present series. During the past 10 years there have been reports from different parts of the world of cases with identical clinical picture: 37 cases from USA (1957–1968) (1, 2, 6, 8); 2 (1963) from England (10); 4 (1964) from Denmark (9); 12 (1966) from Sweden (3, 4, 5). The present series of patients comprises 1–2% of all cases of gonorrhoea seen each year in the department. The yearly distribution has been: in 1962 1 case; 1963 1 case; 1964 0 case; 1965 8 cases; 1966 7 cases; 1967 9 cases; 1968 7 cases; 1969 (April) 3 cases. (The 9 cases reported in references 3 and 4 are included in the present series.)

2. *Epidemiological factors*

The predominance of women in this series is in agreement with the findings of others (6).

The occurrence of benign gonococcal sepsis in two sexual partners has been observed by some authors (1, 2). In the present series two of the patients with this pustular clinical picture brought their two sexual partners for examination and they also had identical clinical findings. This, of course, raises the question whether a special strain of gonococci causes this clinical picture. Of the sexual (male) contacts of the women, 20 were examined. In 12, genital gonorrhoea was diagnosed: 2 had no symptoms, 5 had urethral discharge and 2 gonococcal sepsis! In 3 patients information was not obtained in this sense.

3. *The absence of genital symptoms*

The observation that patients with gonococcal sepsis do not go to the doctor because of a suspicion of gonorrhoea is due to the slight focal symptoms indicative of venereal diseases from the genitals despite the regular finding of gonococci from these sites. A control group of randomly chosen women with gonorrhoea without sepsis had statistically significant more frequent symptoms from the genitals.

This absence of clinical symptoms may be related to the finding that the gonococci in smears from the genitals in these pustular patients lay mainly extracellularily and there were very few leucocytes present. The leucotactic effect of the gonococci seems in some way to be defective.

Proctitis is often considered as a complication of gonorrhoea. The patients with gonococcal sepsis did not have an increased frequency of proctitis, as compared with the control group with exclusively anogenital gonorrhoea.

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