性器の炎症症例による不妊症の治療方針（抄録）

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著者は最近4年半に亘って不妊症500例中、性器の炎症症例による不妊症に際して治療の面及び効果を観察している。500症例中188例は一次不妊、312例は二次不妊で、最小10才、最高40才、平均31才である。主訴は健康であるにも拘らず2年以上の不安のものから最長20年のものまでを含む。平均11年。500例中急発、慢性の炎症症例は大体1/3に入っている。

起炎菌として、膣炎、大腸菌、結核菌、トリコモナス菌、四環素に大別出来る。結核菌によるものは無効である。又、頸管炎の炎はトリコモナス菌によると考えられているものもあるがこれに支障あるのでとし除外した。放射線治療薬の使用は稀な症例で500例中にはない。抗生物質療法及び手術による当院は開かなかったが、本人療法の効果を判定するに際しては実验的に観察したものを基にして取扱ったものである。子宮炎炎、大腸菌、場所的には子宮附属器炎を最多とする。

治療法としては、鉱泉、塩泉の外、鉱泉の飲用、温泉水の浸浴及び考えられる治療の便宜上、鉱泉及び塩泉だけで治療を行っている。鉱泉使用は錦泉、錦温泉及び塩泉温泉は温泉、及び塩泉浸浴である。施術として局部浸、全身浴、病患部に直接又は近きに応用するもの、遠隔部分を温めるもの等々の例に適当な方法を組合させて行った（調査的各方法の組合せ、温度、時間等詳細は紙面の都合で省略する）。

500例中治療前後症例中が194例ある。他の306例に妊娠の有無を問合せた。172例返事があり、139例妊娠していた。即ち500例中27.8%で大体3人に1人の間に有効である。従来の報告にみる15%よりは高い。尚本療法施行後から妊娠迄平均1年、最長3年である。

結論

（1）治療施術は既に治療されている炎症又は慢性炎症による不妊症に際して応用し得るのみならず、亜急性及び非常に難治な慢性症例にも応用し得る。殊に後者の場合その効果は極めて著明である。（2）慢性炎症例ながらも数を数えて治療法を制限しても難治症例が多数である。（3）治療は病院で師の監督下に行うべきで、師の反対に注意しつつ施術を重ね、回数を加減すべきである。（4）効果は施術の数により左右される。回数の多さならびに施術時の湿気の大きいに関係する。（5）何らかの治療法によるべきかまたは実験観察に待つべきものが多々ある。（6）治癒治療を図ると無期療法と考えては不可なる。この施術では師は非常に疲労するから2週間の休養が必要である。（7）本論文で論じた方法で施術としても施術期間は2週間を越えてはならぬ。（8）師は師の反対がなく且つ全身状態が回復してから指示し行うべきである。（9）炎症による不妊のあり方が一年に数か月より数年に多い。（10）師の反対は二次的不妊に対しての方が多い。（11）炎症治癒期間の短かかつた師に妊娠し易い。（12）師の治療法においても、又師の師に師が無くとも、妊娠期間数が安全に經過すると思わない。（13）患者には治療継続中は妊娠をさける様注意しておく必要がある。
SPA-TREATMENT OF STERILITY IN WOMEN DUE TO
INFLAMMATIONS OF GENITAL ORGANS

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Inflammations active or resolved of genital organs are a frequent cause of sterility in women. They may involve any part of the genital organs, i.e. vulva, vagina, cervix or corpus uteri, oviductus, or may occur in the form of adhesions around uterine tubes. With the exception of inflammatory conditions of the vulva and vagina, injuries to other parts of the genital organs are usually a consequence of the same infection involving the whole of the reproductive organ. Only after complete or almost complete resolution of the inflammatory condition, lesions of a particular part referred to above of the genital organs may manifest themselves more distinctly as the most essential cause of sterility.

The germs responsible for inflammatory conditions of the reproductive organs may be divided in four groups. These are:

1) cocci; 2) colon bacilli; 3) tubercle bacilli; 4) Trichomonas vaginalis.

Of course, I disregard rare diseases, as for instance actinomycosis etc. Inflammations in which tubercle bacilli or Trichomonas vaginalis are incriminated are not suitable for spa-treatment and, therefore, I shall not discuss them here in any detail.

Inflammatory changes in the reproductive organs may be arranged according to their incidence in the particular parts.

I shall deal with them in succession:

1. Vulva and vagina. Acute inflammation hinders sexual intercourse. Consequently, it is superfluous to discuss it in the paper.

Chronic inflammations lead to changes in the chemistry of the vagina by reducing acidity. This may have an adverse effect on the viability of the sperm. Bacteriological examinations make it possible to determine the germ implicated and lead thus to the application of suitable therapeutic methods. Vaginitis does not call for spa-treatment.

Scars due to vaginitis either represent an obstruction requiring surgical treatment, or do not hinder sexual intercourse and the migration of sperm.

2. Cervix uteri. Cervicitis with or without erosion may prove an essential obstacle to the migration of sperm. Increased amounts of mucus in the cervix cause a mechanical reduction of its lumen. Moreover, the decomposition of the mucus, brought about by pathogenic microorganisms, has a lethal effect on the sperm. Also the secretion of glycogen, necessary to create a suitable environment for the travelling sperm, is disturbed in the changed cervical mucosa.

When Trichomonas vaginalis infection is excluded, there remains treatment with antibiotics and stimulo-resorptive treatment.

In chronic cases resisting the above treatment—particularly when associated with cervical hypertrophy—surgery and balneotherapy may be considered. Since the morbid condition rarely represents discrete entity and is usually associated with post-inflammation residues in the upper sections of the reproductive organ, surgical treatment does not offer a satisfactory answer to the problem and may be applied only after resorptive treatment has failed.

3. Corps uteri. Chronic inflammatory condition of the muscularis and mucosa of the corpus, or
post-inflammation changes in the form of cicatrization of the muscularis and atrophy of mucosa, may make nidation impossible or lead to abortions.

In this condition we are not infrequently confronted with missed abortion. Post-inflammation changes in the corpus are difficult to diagnose. Trifling deviations in the type of menstruation and painful condition of the uterus can rarely be established. Diagnosis is more easy in the course of spa-treatment, when the focal reaction leads to oedema of the uterus and distinct pain. This condition is suitable for treatment in health resorts.

Atresia of the cervix uteri is suitable for surgical treatment.

4. Fallopian tubes. Chronic inflammation of the genital organs of post-inflammation changes affect in the first line the free passage of oviducts. The lumen is partly or completely obliterated making the passage of the sperm impossible. Occlusion of oviducts may obstruct free passage in one or in both directions. Atresia may involve the entire length of fallopian tubes or their proximal and peripheral ends alternatively.

With patency of the uterine tubes preserved, there may be nevertheless external perisalpingeal adhesions making impossible the functioning of the delicate mechanism involved in the reception of ovi by fimbria.

Hormonal disturbances do not come within the scope of this paper, but, nevertheless, it ought to be considered that inflammatory changes in the ovaries may lead to secondary hormonal disturbance mostly in the form of insufficiency of the corpus luteum.

TREATMENT

Inflammatory cases due to tuberculosis or Trichomonas vaginalis are not suitable for balneotherapy.

The part played by Trichomonas vaginalis in inflammatory conditions of the genital organs, particularly with regard to the upper parts, is still not sufficiently well known. According to some authors, the micro-organism is by itself capable of producing an inflammation while others believe it to be merely an additional infectious factor. In any case, prior to spa-treatment Trichomonas infection ought to be cleared, which may meet with very serious difficulties with regard to the upper organs of generation.

Tuberculosis of either cervix or corpus uteri is not easy to diagnose, and no reliable clinical or laboratory methods are available. Salpingography may serve as an ancillary method helping to establish changes in the uterine tube, but it is of no avail when atresia of the oviducts is complete, or in cases in which no characteristic features are revealed by the photograph. There are cases with such minute changes in the fallopian tubes that they elude detection by any of the diagnostic methods, except by an incidental opening of the abdomen (Cotte, Vigne, Palmar). According to literature, the frequency percentage of tuberculosis is in primary sterility between 10 and 20. Proper diagnosis is extremely important since tuberculosis of genitalis amounts to a contraindication for balneotherapy.

In view of the diagnostic difficulties, we may always be confronted with exacerbations of inflammations of genitalia in the course of spa-treatment. In this connection one is well advised to proceed particularly judiciously in qualifying post-inflammation primary sterility, and to direct to spas chiefly inflammatory cases in which cocci or coli bacilli have been incriminated.

There exist two views with regard to qualifying cases for balneotherapy. Some authors believe that clinically cured cases of adnexitis qualify for spa-treatment. Criteria applied to such cases are: normal ESR, normal proportion of white cells, normal body temperature, absence of a reaction to provocative stimuli in the form of protein shock therapy or diathermy. According to the experience of the Warsaw Clinic as well as of others, spa-treatment is suitable for subacute and chronic cases and for post-
inflammation conditions, provided, however, that the treatment is given in a sanatorium or an in-
patient department under the continuous care of a physician who surveys the reaction and modifies
the treatment according to the case.

In treating infertility following adnexitis also surgical treatment may be considered, but existing
results are not very encouraging (3-10-15 per cent).

**SPA-TREATMENT**

Dealing with spa-treatment we ought to take stock of all the factors available at a health resort.
These are: muds, salines, drinking mineral-water and climatic effects.

In addition, treatment not specific for spas may be given, as for instance diathermy and antibiotics.

Saline is applied in the form of baths and hot irrigations, and mud is used in the form of mud-
baths, wrappings and packs, and vaginal tampons.

A saline, being a solution of salts, rapidly gives off heat to the environment owing to convection
currents.

To radioactivity, anti-inflammatory effects are ascribed.

Mud as a colloid gives off heat at a lesser rate and can therefore be applied at higher tempe-
ratures than salines.

Do the effects of mud and saline consist merely in that heat is given off to the environment thus
increasing local hyperaemia and resorption? Undoubtedly not. It seems that there occurs a change in
the mutual relation of ions of potassium, sodium and calcium.

This view is supported by the following experiments. When a patient suffering from adnexitis was
given a mud bath or saline bath applied to the knee for instance, a distinct focal reaction could be
established in the adnexa. In the gynaecological ward of the Clinical Centre at Ciechocinek, we found
that low temperature (so called low ceiling) mud treatment gave in the patient the same, or even a
more pronounced, focal reaction as was obtained by high-temperature mud treatment.

In addition to the properties referred to above, we should also mention that mud contains also
oestrogenic phytohormones which some authors believe to be very important in treating sterility due
to hormonal disturbances.

It can be well understood that the properties of mud and saline may depend on the health resort
and degree of physico-chemical changes in the mud. Consequently it is difficult to compare results of
spa-treatment since it is affected by a number of known as well as some unknown properties of the
mud and saline used. When treatment is planned, also climatic conditions possibly affecting results
ought to be accounted for (e.g., at Ciechocinek, which lies in a depression, blood pressure becomes
automatically reduced).

Separate space ought to be devoted to the form of treatment called columning which has in ad-
dition to thermal and physico-chemical properties also the advantage—which is simultaneously a
disadvantage in the eyes of a gynaecologist—of a mechanical action. The column of mud presses
through the fornix on the hyperaemic and loosened diseased site and stretches the adhesions. I described
this property as an advantage and simultaneously disadvantage since it renders invaluable service in
cured cases by distending internal perisalpingeal adhesions, whereas in latent cases it may exacerbate
inflammatory conditions. Consequently, the method has ardent followers as well as antagonists. In any
case one is well advised to proceed very judiciously with mud treatment. Details relating to the form,
duration, temperature and number of treatments will be given in the section devoted to a discussion
of results.
CLINICAL MATERIAL

The material comprises exclusively cases of the organic type of sterility due to atresia of uterine tubes, perisalpingeal adhesions and changes in the uterine mucosa. Hormonal disturbances in the form of underdevelopment of the genitalia, and insufficiency represented attendant factors.

Spa-treatment is generally assumed to be most suitable for clinically cured inflammatory conditions (residua post adnexitidem). The nature of spa-treatment lies in that it induces a focal reaction which activates the resolved, or almost resolved, inflammatory condition by causing notable hyperaemia at the site involved. Hyperaemia loosens the adhesions, and causes oedema and resorption. With this in mind, we decided to apply balneotherapy to subacute and chronic exacerbated inflammatory cases in order to induce an earlier resorption and healing of the active, or activated, condition. This procedure was justified by the fact that the Clinical Centre is organized as an in-patient department making possible a daily clinical survey of the course of the disease, basing on laboratory tests. This largely eliminated the danger of an exacerbation beyond the limits of a focal reaction of an existing inflammatory condition. On the other hand some risk is inherent in the type of work conducted in the Clinical Centre which is called upon thoroughly to investigate methods of treatment, Hitherto, spa-medicine did not enjoy the latter privilege and, hence, it is easy to understand the overcautiousness in selecting patients as well as therapeutic methods with regard to both quantity and quality. A further advantage of such organization of medical care lies in that it admits of a control of remote results which either justify or condemn the experimental methods applied. Bearing this in mind when approaching the problem, it will be appreciated that the cross section of the clinical material is different than heretofore, and that the material consists of cases more severe and unresponsive to treatment.

In the course of four and a half years we treated at the Centre 500 sterile women. As sterile we considered women who failed to conceive in the course of 2 years. The upper age limit was set at 40 years. This limit is high and exceeds by 2 years the generally adopted one of 38 years, above which there is a reduction in physiological fertility. We raised the limit since we did not want to exclude from our investigations material treated in the Centre. Average age of patients was 31 years, the youngest one being 19 years old. Duration of sterility was between 2 and 20 years, average 11 years.

Of the 500 cases we classed 382 in the group adnexitis chronica seu residua post adnexitidem, 1 in the group adnexitis subacuta, and 115 in the group adnexitis chronica exacerbata.

In 382 clinically inactive chronic cases we found in 63 patients fixed retroflexion, and in 22, displacements of the uterus in the form of retroversion or lateroflexion (together 85 cases). Of the remaining ones, 54 patients had been treated surgically for extrauterine pregnancy or fixed anterover-sion of the uterus, the treatment involving partly also adnexa. In 88 patients there were also functional disturbances in the form of scanty and irregular menstruation and underdevelopment of reproductive organs. Cytohormonal examinations revealed on the whole reduced activity of the yellow body. In 2 patients menstruation was suppressed.

It follows from the above enumeration of cases that prognosis was relatively poor with regard to the patients examined at the Centre, owing to displacements of the uterus, past operations and hormonal disturbances.

Considering primary and secondary sterility, the grouping of cases was as follows:

Primary sterility 188 cases, secondary sterility 312 cases of which 268 occurred after abortion and 44 after parturition.

I believe that the strikingly low proportion of sterility cases following parturition, as compared to
those after abortions, is due to the fact that women with at least one child resign themselves more easily to infertility. Moreover, secondary sterility cases are decidedly more numerous than these of primary one. It should be noted that in each doubtful case the semen of the husband was tested, which has by now become a matter of routine.

**METHOD of TREATMENT**

At Ciechocinek there are two therapeutic agents available: saline and mud. The saline was applied in the form of baths and hot irrigations, and the mud in the form of mud packs, mud baths and vaginal tampons (columning). Applied to a small area of the body these factors may give rise to a reaction in remote sites, and from this point of view there can be no division between local and general treatment. Nevertheless we adopted such division considering the size of the area to which treatment was applied. As treatments exerting a general effect we reckoned saline baths, mud baths and general mud packs, while saline irrigations and columning were considered as local treatment. This division was justified by the general reaction of organisms to the given kind of treatment.

Irrespectively of the effect of treatment on the local inflammatory condition we observed always some influence being exerted on the general condition, circulatory system and resistance of the organism. Each treatment weakens the patient. It might be said that the number of treatments ought to be in inverse proportion to the general condition of the patient. This becomes still more significant at Ciechocinek the siting of which automatically reduces blood pressure. Careful, qualitative as well as quantitative selection of treatments is of immense importance for the entire course planned. Also the rate at which treatments are applied is not without significance.

These reasons have led us to discriminate at the Clinical Centre between general treatments weakening the general condition of the patient and local ones (hot irrigations and columning) which are less strainful. When the patient is of a sturdy constitution and has a reasonably high blood pressure and low pulse rate, we have less reason for worry in applying general treatment. When, however, dealing with a fragile organism with a liable circulatory system we are rather inclined to apply local treatment.

Hence there are the following types of treatment at the Centre:

- **L-local**
- **G-general**
- **LG-local-general**
- **GL-general-local**

This division accounts also for the number of treatments applied in the entire course. The type of therapy in which emphasis is very definitely on local treatments we termed L₂G. When, however, also the number of general treatments is raised, the notation is L₂G₂. A further distinguishing feature of the course of treatment applied is the temperature of baths or packs.

The clinical course of action was as follows: immediately after we had taken over the Centre and adapted ourselves to new and unknown conditions, we decided to attain the upper limit (the so-called upper ceiling) of applicable temperature in order to evaluate the effect of temperature on the progress of treatment. When the upper limit was reached, we reverted in our investigations to the so-called low ceiling or cold treatments, in which the temperature applied was equal to, or less than, that of the body.

As regards frequency of treatments we also strove to attain the upper limit, both for general orientation and for cutting the duration of the full course. Beginning with one treatment per day we proceeded gradually until a rate of 2.5 treatments per day was attained. So far this has been the upper limit at the Centre. The one-day index is merely a quotient obtained by dividing the number of treatments by the duration of a full course which lasts at the Centre 28 days. Results are decided not by the frequency of treatments but by their total number. As regards the latter, there undoubtedly
exists an optimum and we are striving to discover it. We shall be able to find it after examining an entire gamut of treatment methods and intensity. It is certain that there exists also a maximum which ought not to be exceeded.

Let me quote as an example a highly illuminating case.

The patient L. stayed in the Centre in 1950, the diagnosis being residua post adnexitidem post abortum. The case was clinically completely cured. Consequently it was a classical example of generally adopted indications for prescribing spa-treatment. Sedimentation rate low, body temperature normal. Absence of reactions to stimulus treatment with milk and diathermy. No palpable local changes.

Intensive treatment of the type L2G was applied, i.e., about 2.5 treatments per day. The patient stood the course very well and approached the Clinic Assistant to have her stay at the Clinic prolonged to make the best of the continuity of treatment. Her treatment was prolonged by two weeks and she stood the rest of the intensive course without difficulties.

However, upon returning home she developed acute pelveoperitonitis-condition severe. The disease yielded within a relatively short time to antibiotics. The following year she visited the Centre and was given a 4 weeks course of medium intensity. Shortly afterwards she conceived and has now 2 children.

The patient was given originally a course of 6 weeks and took about 90 treatments. The weakened organism lost its resistance and the germs lurking in the recesses of adhesions instantly gained virulence and overwhelmed the exhausted patient. Hence the conclusion that we ought to find conditions of therapy representing an optimum in every respect.

Over 5 years the treatment we applied was as follows.

Initially we applied courses of the type LG (local-general) involving an average of 28-34 treatments in 4 weeks. The treatments included:

3-4 saline baths,
5-6 general mud packs or mud baths,
10-12 hot irrigations,
10-12 vaginal mud tampons.

Temperature and duration:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Temperature</th>
<th>Duration</th>
</tr>
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<tbody>
<tr>
<td>saline baths</td>
<td>37°C</td>
<td>10-15 min.</td>
</tr>
<tr>
<td>mud baths</td>
<td>40-43°C</td>
<td>10-20 min.</td>
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<tr>
<td>mud packs</td>
<td>42-46°C</td>
<td>10-20 min.</td>
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<tr>
<td>hot irrigations</td>
<td>41-46°C</td>
<td>15 min.</td>
</tr>
<tr>
<td>vaginal mud tampons</td>
<td>50°C</td>
<td>10-30 min.</td>
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This type of treatment was given to 165 patients.

With time we intensified the treatment, proceeding to type L2G; number of treatments 44-54:

3-4 saline baths;
5-6 mud packs or mud baths;
18-22 hot irrigations;
18-22 vaginal tampons.

The cases numbered 130.

Next, type L2G2 was initiated; number of treatments 58-68.

7-8 saline baths;
13-15 mud packs or mud baths;
20-22 hot irrigations;
20-22 vaginal tampons.

The patients thus treated numbered 174.

Furthermore, depending on the general condition of the patient and severity of inflammation, 19 patients were treated only locally, and 6 only generally. With regard to 6 patients we applied low temperatures.

Occasionally, one course of 4 weeks at Ciechocinek was therapeutically ineffective, and prolonged treatment proved risky owing to diminution of the defensive forces of the organism. Therefore we decided to initiate repeat-courses involving further treatment at the Centre immediately after cessation of the focal reaction and general recuperation. Unfortunately, for reasons independent of the Clinic, we were unable to send the patients for treatment at the time we chose to. Nevertheless, we directed to the Centre 69 patients for a second time, 15 for a third time and 3 more than three times.

RESULTS

Results of treatment are to be considered as positive above all in the case of successful pregnancy. Further evidence may be supplied by patency of oviducts which allows the patient to conceive and finally by clinical improvement or possible cure of post-inflammation complaints. The results are negative when patients fail to become pregnant and show no clinical improvement. They are adverse when there is a permanent or transient exacerbation of the inflammatory condition.

Of the 500 patients treated several cases have been excluded (age more than 40 years, loss of husband immediately after treatment 3 cases, azoospermis of the husband 4 cases and separation 2 cases).

Question forms were sent to 306 patients, and 194 cases were under continuous clinical survey which made question forms superfluous.

Replies were forthcoming from 172 of the 306 patients, some of whom reported personally. There was no reply from the remaining 134, and the cases were classed as failures, though some replies—occasionally reporting pregnancy—are still coming in after the calculations have been finished.

Of the 500 patients treated 139 have become pregnant which makes 27.8 per cent; consequently, almost every third patient conceived. I should like to draw attention to this fact since the best result I have met with in literature was 15 per cent of pregnancies.

As regards the testing of tubal patency or achieving it by tubal insufflation, the results were as follows:

In 73 patients tubal patency was achieved after treatment at Ciechocinek; earlier insufflation having been unsuccessful. In 77 patients no insufflation was attempted before treatment owing to adverse conditions (cases of bilateral inflammation), the result being positive after treatment. In 67 patients the Rubin test was positive before treatment and was not repeated afterwards. In 52 patients the test was negative before treatment and was not repeated after treatment at Ciechocinek. In 10 Rubin-positive patients the test was negative after treatment which we consider an adverse result. In 38 patients Rubin test was negative both before and after treatment, whereas 23 patients were Rubin-positive before and after treatment.

Complete clinical cure in the sense that a cessation of the complaints was achieved, concerned 32 patients.

In 284 patients there was an unmistakable clinical improvement.

In 194 patients there was a distinct focal reaction in the course of treatment; oedema of the diseased adnexa and increased pain with concomitant higher blood sedimentation rate, increased leukocytosis and slightly raised body temperature. The reaction resolved towards the end of treatment or
briefly after the patient left Ciechocinek. In 22 patients the reactions developed and led to a definite exacerbation of the condition resulting in acute adnexitis.

Analysis of the latter group of women is as follows:

In one of eleven patients with primary sterility there was an exacerbation of adnexitis due to gonococcal infection. In two of ten patients with chronic inflammatory conditions clinical observation suggested a very likely tubercular aetiology. The treatment applied in such instances was in 6 cases of the type LG involving the least number of treatments, and in 5 cases of the type L2G2 with a high number of treatments.

Of 11 women with secondary sterility, deterioration occurred in 4 and 7 patients respectively suffering from subacute and chronic adnexitis.

Consequently, in 17 of the 22 cases in which the condition was exacerbated, we were dealing with a chronic and clinically resolved condition. It should be noted that in 2 of the 2 exacerbated cases pregnancies were reported within a brief space of time.

It is highly interesting to analyse 139 cases of gestation. The pregnancies were reported in 37 cases with primary sterility (31 cases of chronic adnexitis and 6 subacute adnexitis cases) and in 102 cases of secondary sterility (79 chronic adnexitis and 23 subacute adnexitis cases). Within this group of 139 cases, retroflexion was diagnosed in 19 cases (total number dealt with at the Centre was 59), earlier operations involved 15 (total number 52) and ovarian insufficiency or underdevelopment of genitalia, 11 cases (total number 32). Of the total number of 69 patients who took repeat courses at Ciechocinek, 2 were given two courses. Pregnancies were reported in none of the patients who visited the Centre three times or more.

Focal reactions were established in 32 patients (194).

The group in question included also 32 patients in whom focal reactions had been established (total number 194) and patients who were treated at low temperatures (total 6).

The pregnancies were reported within 3 years, average 1 year.

Average duration of sterility was in the group in question 5 years, which is a striking figure when compared with the average of all cases treated in the Centre, i.e. 11 years.

The termination of the 139 pregnancies discussed is unusually interesting. In 93 cases parturition occurred at full term. In 4 of the latter patients abortion was undoubtedly threatening (the patients were in treatment in the Clinic). Judging by information obtained from patients, threatened abortion involved slightly more than ten cases. Abortions occurred in 17 cases these included 3 missed abortions and 1 artificial abortion (the patient interrupted gestation owing to changed family conditions). Immature or premature deliveries concerned 11 patients in two of whom placenta praevia was involved (2 viable infants).

There were 14 cases of extrauterine pregnancy which has to be considered as an adverse effect although as regards restoration of fertility the cases should be put, I believe, in the group of successful treatments. I believe it necessary to analyse the 4 extrauterine pregnancy cases with respect to tubal patency. In 6 of the patients no tubal insufflation was carried out, 1 patient proved Rubin-negative after treatment, 2 were negative before treatment and relatively positive after treatment (i.e., air passed with difficulty at a pressure of 150-160 mm Hg), and in 5 patients the treatment had a definitely positive result. Four patients were admitted to the Clinical Centre twice for treatment. It follows from the above that even when evident tubal patency is obtained the patients are not protected against abnormal nidation.

On the other hand, we know from experience that, to our surprise, gestation is relatively frequently
quite normal in Rubin-negative or but weakly positive, patients.

There is no unequivocal clinical criterion available which would guarantee to sterile women a correctly, sited pregnancy.

Nevertheless, I believe it is more reasonable and safe to advise a patient to avoid pregnancy before the treatment is finished and fully positive result of tubal insufflation obtained.

Evidence of successful treatment does not merely mean positive results of tubal insufflation but postulates also a healthy mucosa and, probably, a sound uterine muscle as is borne out by 15 cases of abortion, 4 of placenta praevia, and 7 of immature or premature delivery. In this regard we have absolutely no clinical data available which could supply evidence of a successful cure of the uterus, i.e. of the organ in which nidation and regular development of the ovum ought to take place.

Presence of lesions of the uterine mucosa and muscle can be legitimately assumed to represent focal reactions during which the uterus may be oedematous and tender.

**CONCLUSIONS**

1. Spa-treatment is applicable not only to cases of clinically resolved or chronic inflammations, but also to subacute and exacerbated chronic cases, since in the latter the results are even more favourable.

2. Restriction of spa-treatment to chronic cases only does not afford a protection against exacerbations.

3. Treatment ought to be given in sanatoria or in-patient departments under continuous medical supervision enabling the physician to modify the treatment according to the patient's reaction.

4. Positive results of the treatment depend on the type of treatment, the intensity of which may differ with regard to both the number of individual treatments as well as their temperature.

5. Further investigations are necessary in order to define optimum type of treatment.

6. Spa-treatment may not be regarded as a recuperative type of therapy; it is exhausting and, therefore, the patient ought to be accorded a fortnight's leave for rest.

7. As regards the type of treatment outlined in the paper, its duration should not exceed 4 weeks.

8. The treatment can and ought to be repeated after clearing of the focal reaction and general restoration of strength.

9. Secondary post-inflammation sterility is more frequent than primary one.

10. Results are more favourable in treating secondary sterility.

11. Women in whom the morbid condition is less prolonged are more likely to conceive.

12. Clinical cure and tubal patency do not safeguard normal course of pregnancy.

13. Patients must be advised to avoid pregnancy before the termination of the treatment.