

Treatment of Pelvic Inflammatory Disease in an Urban Emergency Service

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THE EMERGENCY services of urban hospitals are being increasingly used for nonurgent medical problems (1), despite the many disadvantages in this situation. Emergency care for nonurgent problems tends to be discontinuous, expensive, and often unsatisfying to patient and physician. Medical followup, important to the patient and frequently to the general health of the community, is often neglected.

Pelvic inflammatory disease (PID) is a condition seen frequently in urban hospital emergency services, and proper treatment is important to

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the patient and to the health of the community. Because the incidence of acute gonorrheal infection has been rising steadily by more than 15 percent a year (2), emergency services for PID will probably continue to be sought by even larger numbers of women.

Because of the interest in the treatment of episodic disease in an emergency service and the importance of PID to community health, we reviewed the management of patients with PID diagnosed in the emergency service of a large general hospital in Baltimore located in a racially mixed neighborhood.

The hospital's emergency service has averaged more than 50,000 visits per year for the past 3 years. In a recent study of this service, it was found that 60 percent of all visits were nonurgent, that 69 percent of the patients were black, and that 57 percent of the patients were female (3).

Almost 85 percent of all emergency service visits are made between 9 am and 10 pm daily. Patients with nonemergency illnesses, including most of those with PID, are seen in the screening clinic, a special area of the emergency service in the outpatient department. The clinic is staffed by board certified or board eligible internists and occasionally by senior medical residents. When indicated, the clinic staff can consult resident gynecologists.

Upon arrival, the patient's vital signs are checked by an attending nurse or aide, and the patient is then seen by the examining physician. Laboratory facilities are readily available for any diagnostic tests deemed necessary by the physician. Individual containers of charcoal transport medium, supplied by the Baltimore City Health Department, are available for temporary storage of secretions suspected of containing gonococci. The containers are picked up daily and taken to the city health department where the culture material is inoculated onto modified Thayer-Martin culture medium. Within several days, the health department sends a report to the hospital indicating the presence or absence of *Neisseria gonorrhoeae*.

Study Design

All emergency service charts on which the diagnosis of PID was noted during October 1971 and March 1972 were arbitrarily selected for this study. We recorded the age, race, and marital status of each patient, as well as the results of

all cultures, serologic studies, treatments, and referrals. We also noted followup information for patients in the hospital's gynecology clinic.

Results

During the 2 study months, PID was diagnosed in 138 patients (73 in October and 65 in March); 114 were black and 24 were white.

The distribution of the 138 patients by age was as follows.

Age group (years)	Number	Percent
15-19	24	17.4
20-24	57	41.3
25-29	31	22.5
30-34	16	11.6
35 or older	10	7.2

Forty-one percent of the patients were in the 20-24 age group, and only 17 percent were under 20 years old. Fifty percent of the patients were single, and the remaining 50 percent were married, separated, divorced, or widowed.

The care of patients was evaluated by reviewing the following activities: taking of cervical specimens, treatment, serologic studies, referrals, and subsequent followup of those patients referred back to the hospital's gynecology clinic.

Clinical specimen cultures and treatment. Of the 138 patients with clinically diagnosed PID, cervical specimens were cultured for 94. The results of the cultures for these 94 patients and the recommended therapy for all 138 patients are shown in table 1.

Cultures of 10 patients were positive for *N. gonorrhoeae*, and 8 of the 10 received the treatment the Public Health Service had recommended up to March 1972 (4). The other two patients were treated with less than adequate doses of recommended drugs as measured by standards suggested by the Public Health Service.

The cultures of 55 patients were reported to

Table 1. Distribution of 138 patients with pelvic inflammatory disease, by culture of cervical specimens and recommended treatment

Cervical specimens	Number of patients	Recommended treatment		
		Anti-biotics	Other	None
Cultured.....	94
Positive.....	10	8	2
Negative.....	55	46	1	8
Lost or out of date.....	29	26	1	2
Not cultured.....	44	34	4	6

be negative for *N. gonorrhoeae*; 46 of these patients were treated for gonococcal PID as recommended by the Public Health Service; one was treated with a drug not recommended; eight were not treated at the time of initial diagnosis.

For 29 patients, culture reports could not be used for diagnostic information because the culture results were lost or because the inoculated transport media reached the health department too late to be cultured. Twenty-six of these patients were treated with appropriate medications, one received a drug other than that recommended for PID, and two were not treated.

Cervical specimens were not cultured for 44 patients. Of these patients, 34 were treated as recommended by the Public Health Service, four received treatment other than that recommended by the Public Health Service, and six were not treated.

Serologic studies. Serologic tests for syphilis were performed for three patients; two of these patients were considered at risk because one had a history of syphilis and the other was known to be a drug addict. The tests were negative for all three patients.

Referrals and followup. The disposition of the 138 patients with PID is shown in table 2. Followup care was advised for 103 patients; 77 of these were referred to the hospital's gynecology clinic, 26 were referred elsewhere, and 35 had not been referred for further care.

Followup information could be obtained only

Table 2. Disposition of 138 patients with pelvic inflammatory disease

Disposition of patients	Cervical specimens		
	Cultured	Not cultured	Total
Referral to hospital gynecology clinic.....	54	23	77
Referral to private physician...	15	3	18
Referral to other hospital clinics ¹	3	1	4
Admission to other hospitals...	3	1	4
Total referred for followup treatment.....	75	28	103
No disposition for followup treatment.....	19	16	35
Total patients.....	94	44	138

¹ These patients lived outside the area served by the hospital clinics and were referred to facilities closer to their residence.

on those patients who were seen in the hospital's gynecology clinic. Of the 77 patients referred to this clinic, 38 kept their appointments. Of the 39 who did not, three had cervical cultures that were positive for *N. gonorrhoeae*. Although all three patients had received treatment, only one received treatment conforming to the then current Public Health Service recommendations.

Discussion

This study was undertaken to review the management in the emergency service of a large community hospital of a group of 138 females diagnosed as having pelvic inflammatory disease. The patients were examined for the most part by physicians who were board eligible or board certified in internal medicine. The patients in the group were predominately black, and 59 percent were age 24 or younger.

Classification of PID. Pelvic inflammatory disease can be divided into the following broad categories: (a) disease caused by *N. gonorrhoeae*, (b) nongonococcal, pyogenic PID—most commonly seen as postsurgical and postabortal infections, (c) chronic tuberculous infections, and (d) fungal infections—rare (5).

Identification of the infecting organism gives some indication of the etiology of the patient's disease, as well as indicating a possible course of initial therapy.

Only disease attributable to *N. gonorrhoeae* was determined bacteriologically by the city health department. There were, however, no indications on the clinical charts that any of the patients were suffering from the other types of PID.

The diagnosis. Jacobson and Westrom, in a comparison of the accuracy of clinical diagnosis of PID with that achieved by laparoscopic visualization of the fallopian tubes, have demonstrated the difficulty in making an accurate clinical diagnosis despite the use of a detailed list of subjective and objective criteria (6). We found it difficult when reviewing these hospital records to determine exactly what evidence led the physicians in the emergency service to the diagnosis. Nevertheless, we believe minimal appropriate diagnostic tests should have been performed before making the diagnosis, and an appropriate treatment regimen should have been followed after the diagnosis was decided upon.

Cultures. The Public Health Service has advised that the cervix is the single best site of

recovery of *N. gonorrhoeae*. Cultures of anal canal specimens made at the same time increase the yield of positive cultures in infected females (7, 8).

Cervical cultures were taken for only 94 of the 138 patients with a clinical diagnosis of PID. No rectal cultures were taken. Of the 94 cultures, 29 were interpreted as being "too old to read," or the results sent from the health department were lost; this situation represents a serious waste of time, effort, and money for hospital and health department personnel, as well as for the patient. Investigation revealed that often the media were not collected by the health department laboratory within the specified period. Frequently, forms supplied to accompany each specimen were incorrectly filled out by the hospital staff; thus, the results from the health department could not be entered on the proper charts. Illegible writing of the patient's name on the health department forms was the most common error.

Only 10 of the 94 cultures taken were positive for *N. gonorrhoeae*. Cave and co-workers, in a study of 432 visits to a gynecology clinic, found an infection rate of 11.1 percent (9). In the present study of females diagnosed as having PID, a 10 percent rate of positive cultures is a remarkably low yield. However, if the 29 cultures unsuitable for reading or lost are excluded from the total, the yield of positive cultures increases to 15 percent.

Treatment. The Public Health Service currently recommends giving 1 gram of oral probenecid 30 minutes before injecting 4.8 million units of aqueous procaine penicillin intramuscularly in at least two different sites during one visit as optimal therapy for uncomplicated urethral, cervical, pharyngeal, or rectal gonorrhea in men and women. Alternate therapy should be 3.5 grams of ampicillin plus 1 gram of probenecid given orally and simultaneously. For penicillin-sensitive persons, 4 grams of spectinomycin for women (2 grams for men) are given intramuscularly or 1.5 grams of tetracycline HCl by mouth initially, with 0.5 grams taken four times a day for 4 days. To confirm a cure in females, a followup visit for repeat cervical and rectal cultures 7 to 14 days after treatment is recommended.

Initial serologic studies are adequate to detect syphilis (other than incubating) if penicillin is the drug of therapy, but repeat serologic studies

every month for 4 months are needed if other drugs are used. Drugs other than penicillin may mask syphilis and have little or no proved efficacy in the treatment of incubating syphilis if they are used to treat gonorrhea (10). Our choice of these recommendations or, initially, of those made before March 1972, was to provide basic uniform, accepted, and generally successful means of therapy, albeit for uncomplicated gonorrhea. Therapy must become more individualized if the infecting organism proves resistant to the first treatment, or if the patient has allergic reactions to the antibiotic therapy.

Of the patients from whom cervical culture specimens were taken, 85 percent were treated appropriately. Of the 44 patients from whom culture specimens were not taken, 77 percent were treated appropriately. It does not appear that the culturing of cervical specimens was related to the probability that a patient would receive correct drug treatment.

One might suggest that in an emergency service situation, all patients thought to have PID be treated on the basis of clinical indication alone. Generally, the risk of allergic reaction to penicillin in the treatment of gonorrhea and syphilis is less than 1 percent, with severe side reactions (shock, anaphylaxis, and death) occurring in less than 0.1 percent of the persons treated (9). However, when we consider that the overall risk of allergic reactions to penicillin ranges from 0.7 to 10 percent and that the incidence of acute gonorrheal infections has been increasing, the possible hazards of this kind of blanket therapy cannot be ignored (11, 12).

Serologic studies. Serologic tests for syphilis were performed for only three patients. Because syphilis and gonorrhea often occur concomitantly in the same patient, such tests should be made at the time of treatment and repeated at later dates if a drug other than penicillin is used for treatment.

Followup. Only 38 of the 77 patients referred to the hospital gynecology clinic for followup kept their appointments. Nothing is known of the remaining 39 patients. Although these patients were reported to the local health department, the Baltimore City Health Department currently does not provide a casefinding service in the community for patients with gonorrhea. They do have one in operation for patients with syphilis and their contacts. A large number of the patients

who had used the emergency service may still be spreading gonorrhea or becoming reinfected by partners who were not identified as contacts.

We must conclude that patients with PID who were seen in this particular emergency service were sometimes not given optimal care. Cervical specimens for culture were not taken from many of the patients, and some patients were inappropriately treated and infrequently followed up. This situation occurred despite the high level of training of the physicians participating, the availability of information about this disease, and the high cost of treatment in the emergency service.

An important question is whether the disposition of patients thought to have PID in this hospital is representative of the treatment given such patients in other emergency services in Baltimore. Three other major teaching institutions in the city were contacted, but two of these could not give information about the incidence or management of PID in their emergency services. At the third institution, a study is currently being made to evaluate the treatment of patients with PID. Of particular interest in this hospital is that patients with infections suggestive of PID are routinely seen in the emergency service by a resident specializing in gynecology. This use of a specialist might have implications for proper management, treatment, and followup. No other sources of information on the treatment of PID in emergency services in Baltimore were found.

In an attempt to correct the situation in the emergency service studied, guidelines outlining approved methods of treatment of PID have been circulated among the physicians. Administrative policies have been changed to insure that culture specimens to be examined for *N. gonorrhoeae* are collected on time and that results of tests are attached to appropriate medical records.

The data in this paper indicate that there may be many problems associated with the treatment of pelvic inflammatory disease in the emergency services of busy urban hospitals. If emergency

services must continue to give primary health care to large numbers of persons, methods must be found to insure that this treatment is appropriate both to the patients' and the public's interests.

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