PREVENTION OF PUERPERAL SEPSIS

A CALL TO ACTION

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The tragic death of a friend's wife from puerperal fever moves me to submit some reflections which have long been simmering. The story of this death seems worth recording because it is typical of so many and because everything made it easy to get an exceptionally full and prompt investigation into the circumstances. She was a very healthy young woman (2-para), delivered with the utmost ease of a 5½-lb. baby at term. The confinement was in her own home, ideally situated, and adequate antenatal supervision had preceded it. There seemed to be the perfect setting for an absolutely normal parturition. On the third day there was fever and immediate admission to the Isolation Block of Queen Charlotte's Hospital. She did not appear to be very ill, but on the following day her blood grew forty colonies of haemolytic streptococci per c.cm.—that is, there were something like 250,000 cocci in the circulation. Seven times more during the sixteen days of her struggle for life the blood cultures showed similar or larger invasions of the blood stream. Necropsy was not performed, but there can be very little doubt—in view of past experience—that we should have found a large vein, ovarian or iliac, filled with disintegrating blood clot and teeming with countless millions of streptococci which were continually finding their way into the vena cava. Such a focus is presumably out of reach of any anti-bacterial agencies that the body itself or medical science can bring into operation. Happily such a development of a puerperal infection is not very common, but when it does occur—and to the wife of a friend—the question “How could the infection have been avoided?” becomes very insistent.

Search for Streptococci

Investigation in this case elicited the following data. Swabs from the mother's throat and nose yielded no haemolytic streptococci, and we are entitled to assume on the evidence of Dr. Hare's work (see summary in the *British Journal of Obstetrics*, April, 1936, p. 317) that this organism was not present in her birth canal before labour. The doctor's and the husband's throat and nose also contained no haemolytic streptococci, but the swab from the throat of the nurse yielded a growth of that organism (Group A), which proved to be serologically identical with that isolated from the patient's blood. How it was actually transmitted to the patient we cannot say. The nurse did not wear a mask while making her preparations for the delivery, nor during the very short first stage of labour before the arrival of the patient's doctor; and, although we have no reason to assume it, there is the possibility that her antiseptic toilet was not entirely adequate during that period or the forty-eight hours following delivery.

But here is the important point. She came straight to this maternity case from temporary duty in the children's ward of a small hospital where there were cases of tonsillitis.

We cannot state as a fact that the nurse acquired her throat streptococci from one of these cases of tonsillitis, but it may be regarded as very probable.

Averting Disaster

Assuming that it was so the disaster might presumably have been averted in three ways:

(a) If the matron of the nursing home to which the nurse belonged had realized the danger of her transfer

from a hospital ward to a maternity case—and had prevented its happening.

(b) If, in view of the potential danger, the nurse had been taken off her temporary duty at the hospital a few days before the confinement was expected and had had a throat swab examined to make sure whether she was free from haemolytic streptococci.

(c) If the antiseptic precautions taken by the nurse before, during, and after delivery had been perfect at every point.

With regard to (c) it may be said that the network of anti-microbial precautions commonly employed is probably adequate nine times out of ten—perhaps forty-nine times out of fifty—but since “to err is human” and the best of us are sometimes off our guard, it must occasionally happen (and perhaps more than occasionally) during the long course of labour and the puerperium that some chance mistake is made, and that mistake lets the streptococci through the network. For that reason we cannot afford to trust entirely to antiseptic precautions and ignore other safeguards. Equally it would be foolish to belittle the importance of antiseptic precautions, because there is clear evidence that puerperal infections may be transmitted by an apparently healthy carrier who has not been in contact with any streptococcal infections and whom, therefore, there is no special reason to suspect. The remedy (b) is obviously difficult to carry out in practice, except for the rich, since the onset of labour cannot be predicted with certainty.

I am therefore driven to the conclusion that the fundamental mistake in the arrangements for this particular confinement was that the precaution (a) was not adopted. Neither the nurse herself nor presumably those who were responsible for her engagements, were alive to the fact that highly dangerous streptococci might be transferred from the hospital ward to the private maternity case by the temporary lodgement of these streptococci in the nurse's throat or nose.

Sources of Infection

Perhaps one can hardly blame them because, although the danger of transmitting septic infection from surgical wards, post-mortem rooms, etc., has been known since the days of Semmelweis, few have realized that inflammatory conditions of the throat and nose (tonsillitis, scarlet fever, antrum infection, otitis media, etc.) are just as dangerous and much more insidious sources of trouble, both in obstetrics and in surgery. Again, it has long been taught that septic infections are directly transmitted by means of the hands, or instruments, or clothing. Now we have abundant evidence that they are very frequently transmitted, not directly from the primary source, but from an intermediate source—the throat or nose of a healthy attendant. The most important of that evidence is to be found in Dr. Dora Colebrook's recent *Report on the Sources of Puerperal Infection* (No. 205 of the Medical Research Council's Special Report Series, published by H.M. Stationery Office, price 1s. 6d.). The laborious and critical investigation there recorded gives us proof as complete as it is ever likely to be with regard to the predominant danger of these throat- and nose-carried streptococci.

How does our present-day practice appear in the light of this new knowledge? It must be frankly admitted that all over the country and in every class of obstetric practice we are running risks similar to that which led to the disaster described above. In a London hospital not long ago several cases of puerperal fever occurred because a nurse had been permitted to come and go between the maternity wards and a medical ward in which there had been recurrent cases of scarlet fever. In scores of hospitals, I believe, nurses are transferred

from surgical and medical wards to maternity wards without any throat swab being taken to make sure that they have not become carriers of haemolytic streptococci. Maternity cases are being received every day into nursing homes which take also septic surgical cases. Women are being delivered every day in their own homes where there is a child with a discharging ear following otitis media, or a husband with tonsillitis or an infected wound. And medical men and midwives who have, or have recently had, sore throat, laryngitis, a "cold," influenza, or an antrum infection are very commonly dealing with maternity cases without any attempt being made to find out whether there is any danger of haemolytic streptococci being conveyed to these cases.

Application of Knowledge

All these things—and it would be easy to multiply instances—seem to me utterly wrong in view of the knowledge now available. The urgent problem then is—How are we to bring this knowledge quickly into effective application so that these inexcusable things no longer happen?

Surely the time has come for a much more vigorous and enlightened preventive policy? I would suggest that we need, in the first place, wisely directed propaganda to awaken the medical and nursing professions, public health authorities, and also the lay public to a "streptococcus-conscious" frame of mind. We need, perhaps still more, carefully thought out arrangements which will make it easy for private doctors and nurses, as well as hospitals and public health authorities, to take the necessary precautions. At present it is not made easy, and so the precautions are not taken even by those who understand the danger. In all the discussions that are taking place about the development of maternity services I hear of nothing directed towards this particular end—the prevention of these most easily preventable deaths and illnesses.

Doubtless the provision of better-trained doctors and midwives and improvement in economic conditions will have some indirect effect in the course of years, but they will not suffice to prevent the most serious kind of puerperal infections if we do not focus our attack upon the essential cause—the transmission of the infecting microbe to the susceptible mother.

Sane Propaganda

The suggestion of propaganda will, I know, arouse considerable opposition on the ground that knowledge of these unseen dangers must inevitably percolate through to expectant mothers and frighten the more timorous of them. Perhaps that cannot be altogether avoided, but surely our women as a whole have hardihood enough to learn from what quarters danger threatens them and to meet it by intelligent precautions. Dr. Brown's argument that he would not dream of wearing a mask for Mrs. Smith's confinement because she would say "Is there something the matter with you?" is understandable so long as the public is not allowed to know that there is a very real danger from the throat- and nose-carried streptococci. Why should they not be told of this just as they are told of the danger from tuberculous sputum or contaminated milk or road accidents?

By all means let us keep our propaganda sane, and so far as possible within the medical and nursing professions, but it is certain that the necessary precautions cannot be taken without the knowledge and co-operation of potential and expectant mothers.

To those who are concerned about unduly alarming the public I would suggest that each death in childbirth, or serious puerperal illness, must in itself have a very disquieting effect upon the group of women who hear of

it. At a rough estimate there are some 18,000 such fatal or serious illnesses every year in England and Wales. Surely the personal knowledge of these 18,000 cases must make a deep impression upon a very large number of potential and expectant mothers, an impression much deeper than would be made by a carefully worded warning with regard to the possible sources of danger. Even personal knowledge is not necessary. An ante-natal officer has described to me the state of alarm among the patients of her clinic when the death in childbirth of Señorita Conchita Supervia was recently trumpeted throughout the country by the big headlines in the newspapers.

Practical Prevention

The practical arrangements which would be required to avert these dangers in all classes of maternity practice cannot be dealt with in any detail here. An outline of them was recently presented to the Congress of Obstetricians in Belfast, and will be published in a forthcoming issue of the *British Journal of Obstetrics*. It was suggested that we need:

(a) An organization of bacteriological services for detecting, *before they give rise to puerperal infection*, any potentially dangerous persons among those doing midwifery or in the household of the expectant woman—that is, those persons with inflammatory or catarrhal conditions of the respiratory tract due to the haemolytic streptococcus; for detecting at the earliest possible moment the cases of puerperal fever due to haemolytic streptococci, especially in maternity institutions; and for detecting a possible source of infection in such cases among the attendants, in order that they may not infect other patients.

(b) More provision for the immediate isolation of the streptococcus-infected puerperal fever cases when they occur.

(c) A definite policy of encouragement of certain types of maternity institutions and discouragement of others, according to the degree of safety from infection which each is judged to offer. Also perhaps, as part of this policy, the conferment of powers giving opportunity for stricter supervision of certain types of institution which are regarded as potentially dangerous.

(d) A definite policy with regard to instruction in the use of masks and the most effective antiseptic precautions.

Probably the adoption of some such positive practical measures all over the country would in itself constitute the most effective propaganda.

Wanted—A National Scheme

Pending the development of a national scheme for the provision of the necessary bacteriological services this laboratory has recently made arrangements for the examination of swabs sent in from public health authorities, hospitals, and private doctors or nurses with a view to the rapid detection of haemolytic streptococci in the throat, nose, or genital tract; and will also, when circumstances require it, ascertain whether the streptococci isolated belong to the specially dangerous Group A or not. The latter investigation, which is at present only practicable in the hands of those who have had a large experience of this kind of work, is often of great practical value—for example, when a midwife suspected of having transmitted an infection is suspended from duty. It is proposed to run this puerperal fever prevention service at the lowest possible cost in the hope that it may be widely used. Further particulars can be had on application.

Whatever view is taken as to the most appropriate preventive measures I hope it may soon be recognized that the majority of these occasional, yet all too frequent, disasters need not occur. Since the microbe is so peculiarly well adapted to the human organism midwifery will perhaps never be free from the threat of them, but there is already evidence that the threat can be successfully countered.