nia, laxatives, massage and warm irrigations of salt solution may be necessary to restore the tonicity and bring the bowel back to something approaching its normal condition.

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DANGERS INCURRED AS A RESULT OF THE NON-RECOGNITION OF ACUTE AURAL INFECTIONS, WITH STATISTICAL DATA.*

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THIS paper is read with a feeling of hesitancy for two reasons; first, because of its seeming egotism in that the writer is compelled to compare the work done in his immediate vicinity with that of other sections of his state; second, the paper may be deemed critical of the work of others. It is not, however, presented with any purpose of criticism, but to call attention to thoughts that have suggested themselves as a result of experience in southern New Hampshire.

The same criticisms undoubtedly would apply to any one of our group of states, more particularly to those sections away from the metropolitan centers where people have the privilege of free dispensaries and do not hesitate on account of expense to apply for aid for what they consider minor ailments.

In the record of deaths made by the New Hampshire State Board of Health for the years 1906, '07, '08 and '09 there were eight hundred and fifteen (815) deaths from simple meningitis and thirty-six (36) from encephalitis. These cases were about evenly divided between each of the four years. Those diagnosed as cerebro-spinal or tubercular meningitis were not included in the eight hundred and fifteen (815) mentioned. Deaths from brain abscess were reported under diseases of the brain, and those from septic meningitis were listed as simple meningitis.

In the records published for 1908 and '09 a summary for twenty-six (26) years is given of the deaths in New Hampshire, a state of about 400,000 people at the present time. There were during that period five thousand one hundred and forty (5140) deaths from simple meningitis. It is interesting to compare this number with deaths from other causes for the same time.

From diphtheria and croup.....	2,510
From pulmonary tuberculosis.....	17,122
From scarlet fever.....	675

* Read before the New Hampshire State Medical Society, May 9, 1912.

As you will note there were twice the number dying from so-called simple meningitis as from diphtheria and croup, and nearly half this period was before the use of anti-toxin, when diphtheria was extremely fatal; over seven times the number of deaths from meningitis as from scarlet fever; and about one-third as many as from pulmonary tuberculosis.

I have no record as to ages for the twenty-six years, but for the four years from 1906 to 1909, inclusive, there were 815 deaths from so-called simple meningitis.

Under one year.....	244
From one to five.....	234
From five to ten.....	71
From ten to twenty.....	93
Over twenty.....	170
Unknown	3

Of these 450 were males and 365 females. The number in strictly rural communities was a little less in proportion to the population than in the cities of the state. Over two hundred deaths a year from meningitis, not including cerebro-spinal or tubercular meningitis, seemed surprisingly large to me.

There are no means of determining the cause of infection in these cases or the character of any individual case but, as it is a well established fact that suppurative disease of the ear is by far the most frequent cause of septic meningitis, it is fair to assume that a large number of these cases were due primarily to middle ear infection. If this assumption is correct it would follow that many of these deaths were preventable had timely aid been sought and given to eradicate the cause.

From my own experience in brain abscesses and other intra-cranial complications arising from middle ear sepsis I was led to wonder if they were as common in other parts of the state as in the vicinity where I reside. All the hospitals in the state, of which record could be found, twenty-five in number, were communicated with and inquiries made as to the number of mastoid cases operated upon and the number of brain abscess cases recorded from January 1, 1906, to January 1, 1910. All but two small hospitals in the northern part of the state replied. There were ninety-four operations for mastoid disease reported for the four years. Thirty-five (35%) per cent. of that number were operated upon in the two hospitals where I reside, drawn from a comparatively small proportion of the population of the state.

To support my belief that many of these deaths from meningitis might have been due primarily to septic middle ear trouble and mastoid disease, I wish to compare the number of mastoids operated upon in the two hospitals with which I am connected, during the four years under consideration, with those of two other places and also to compare the number of deaths from meningitis in the same places.

During the four years mentioned, in Nashua, a city of between twenty-five and thirty thou-

sand people, there were thirty-three mastoid operations. There were fifty-three deaths reported in that same city from meningitis, including septic meningitis. In another city with three times the population, according to hospital reports there were twenty mastoid operations during that time and *Two Hundred and Fifty-three Deaths* from meningitis. This showing—five times as many deaths from meningitis, and two-thirds the operated mastoids, in a much larger center of population—is certainly suggestive. Another community of ten thousand (10,000) population reported two mastoid operations for the four years, and sixty-two deaths from meningitis. These are all three manufacturing towns or cities with a population largely of the same character.

These figures may mean nothing, but I cannot but believe they are very significant and that more frequent recognition of septic middle ear trouble with mastoid involvement, with operative relief for the same, would lessen the number of deaths recorded as from simple meningitis.

I realize there might have been cases operated upon in each of these places mentioned outside of the hospitals of which I have no report and many undoubtedly have gone out of the state to seek relief. But those factors would apply to any one of the three places mentioned. None of my cases operated upon outside of the hospitals are included in this report.

Were the recognition of septic conditions of the middle ear, including mastoid involvement, more frequent, and as prompt response made to the imperative demand for surgical intervention as is given in acute appendix cases, there would, I am convinced, be a much smaller number of deaths reported from simple meningitis.

The frequent similarity of the symptoms of meningitis and brain abscess; the fact that a localized meningitis often co-exists with brain abscess, and the fact that the general practitioners are usually unfamiliar with the latter condition, would presuppose that some of the deaths thought to have been due to meningitis were in reality the result of brain abscess.

The mortality following operations upon uncomplicated mastoid infections is low. In seventy acute mastoid cases, including those with intracranial complications, that I have operated upon from January 1, 1906, to the present date there were eleven deaths. Five of these were the result of brain abscess, four of which showed evidence of cerebral infection previous to the mastoid operation. The other six died from meningitis. Three of these presented marked meningeal symptoms prior to mastoid operation and three developed the complication at a later date, giving a mortality of four in sixty-three cases of apparently uncomplicated mastoid infections at the time of operation, or about six per cent.

It is at times very difficult to recognize the existence of an acute aural infection and the

beginning of an intra-cranial complication, as the following case will illustrate:

A little girl of six years, with a history of recent scarlet fever. Slight pain in one ear at the time, discharge for a day or two and no further symptoms of any aural trouble. The usual recovery was made from the scarlatina. Several weeks following, the child not being well, the physician was summoned and found a temperature of 100° to 101°. There was a slight rise of temperature for the next few days, the doctor seeing the case usually in the morning. No other symptoms of note. Happening in one afternoon he found temperature 105°. That day mention was made of an uncomfortable feeling in the ear. The following morning I was called in consultation. Found temperature about 100° and the child up and feeling pretty well. There was no earache and no tenderness over the mastoid. Drum was darkened and seemed to bulge slightly. Incision under ether released a few drops of thin fluid. That night, temperature went to 105° again and the next morning the mastoid was operated upon. It was diseased and contained pus in quantity. The child continued to grow worse and was later seen with me by a Boston specialist. Search was made for a thrombus but none found. The little one died a week later with every evidence of meningitis.

This case also emphasizes the importance of always keeping the ear in mind as a possible causative factor whenever any symptoms indicative of sepsis appear, especially when following a contagious disease.

There were, in my own immediate vicinity, from 1906 to 1909 inclusive, five known cases of brain abscess; one the result of a sphenoidal sinus infection, as shown by post-mortem; four of them complicating a middle ear infection; three demonstrated to be such by operation, two of which proved fatal, and one not operated upon but in which a post-mortem discovered a brain abscess. There was one suspected case with marked typical symptoms, operated upon and none found, but in which later symptoms would indicate the possibility of an encysted abscess.

Throughout the rest of the state, during the period mentioned, there are records of seven cases diagnosed as brain abscess; two proved such by operation, all fatal with no post-mortem.

Since 1909 I have seen three more cases, all fatal; one complicating an acute middle ear abscess and mastoid, and two infected by chronic middle ear without mastoid infection. I have also seen, since January 1st, 1910, several cases of septic meningitis resulting from aural infection, too late for operative measures.

There are no hospital cases of lateral sinus thrombosis reported other than my own, six in number, which were proved to be such by operation, only one of the number being fatal.

One very interesting case of the latter condition I will outline; that of a girl from a Massachusetts town, seven years of age, seen in December, 1910. History of having had slight pain in ear at intervals covering a period of between two and three years,

with scanty discharge at times. Ten days previous to my visit she had been having a little more pain than usual and a rise of temperature to 105°. This condition continued at intervals for ten days, temperature at times nearly normal. When I saw her in consultation, temperature was 101°, the previous evening it was 105°. She was a very frail, anemic looking child. There was no swelling over the mastoid and but a slight moisture in canal of ear. No neck symptoms. Seemingly no tenderness over the mastoid, though it was difficult to decide as to that for the child cried upon the slightest provocation.

Diagnosis was made of possible mastoid disease complicated with a thrombosed lateral sinus. Child was removed to Nashua and placed in St. Joseph Hospital and operated upon later the same day. Mastoid was found filled with punky bone and soft granulations which bled freely. Wall of the lateral sinus was partially uncovered and looked healthy. Even though the wide range of temperature and my better judgment led me to suspect a clot in the sinus, I hesitated about operating further. Three days later, the child's condition not having improved, I ligated the jugular, thoroughly exposed the sinus, opened the same and found a clot extending from about one inch posterior to the knee down very nearly to the bulb. Examination of the pus by Dr. Leary of Tufts College Medical School showed it to be a streptococcus infection. Frequent injections of an autogenous vaccine were given in this case. The child made an excellent recovery.

Judging from condition of the child and temperature chart, I suspect this sinus was thrombosed for a period of ten days at least. Moreover, this was a most difficult case for the practitioner to diagnose.

As to why all the cases of lateral sinus thrombosis, mastoids complicated with meningitis, and nearly one-half the brain abscesses reported in the state for four years should occur in a comparatively small section of the state, I cannot say, but I cannot believe otherwise than had a post-mortem examination followed each of those eight hundred and fifteen (815) deaths from meningitis, many complicated middle ear and mastoid infections would have been revealed.

The one safe course to pursue to avoid deeply seated aural infections, together with their intra-cranial complications is by means of preventive surgery. By this is meant prompt surgical treatment of the abscess in the middle ear. A free incision of the drum membrane made as quickly as possible following a diagnosis of probable presence of fluid in the middle ear cavity will in the great majority of cases prevent further difficulty. Spontaneous rupture of the tympanic membrane does not necessarily mean free drainage, and by no means contra-indicates further interference by the physician. Should pain continue, even to a slight degree, or there be any rise of temperature, it would mean impeded drainage, and there should be no hesitation in freely incising the drum. This procedure is not alone for the purpose of preventing a more dangerous condition, but it hastens conva-

lescence and may prevent a chronic running ear with its attendant discomforts. A clean linear incision heals promptly with no interference of hearing, while a spontaneous rupture through a swollen and ruptured membrane heals by cicatrization if at all and interferes with the normal function of the ear.

It is frequently difficult to diagnose an infection of the mastoid and to say whether or not an operation may be necessary. To one accustomed to the use of the head mirror and the aural speculum, much information may be derived by frequent inspection of the middle ear, noting the changes there occurring. This of course would necessitate some experience and the ability to properly interpret those changes. As a further and more simple means in assisting one's judgment, I can do no better than quote from a recent essayist:

¹ "Another important aid to diagnosis is the careful observation of the quantity and character of the discharge from the ear. A serous discharge, usually yellow, sometimes hemorrhagic, is always to be expected in the early stage of acute abscesses. So long as it remains serous, little danger is to be apprehended, although without much question where there is profuse serous discharge, the membrane throughout the whole mastoid is inflamed. It is when the discharge becomes purulent that we must be especially on the watch. Pus coming from the tympanic cavity in moderate quantity is probably manufactured in that cavity; if it contains a large mucous element, that is cause for congratulation, as this usually means speedy recovery; if it steadily increases in quantity and becomes very thick, it means that the mastoid is full of pus, even although there be no swelling over, or tenderness of that bone."

It will be well to remember that dangerously infected mastoids may be present without presenting the usual symptoms as formerly taught; that swelling posterior to the ear is present only late in the course of the disease; that marked tenderness usually subsides with acute inflammatory symptoms; that the temperature chart is similar to that of appendicitis, not always a safe guide—a temperature nearly normal not necessarily meaning absence of danger, while a high temperature should cause one to suspect some serious complication. I would further call to your attention the fact that the absence of free pus in the mastoid cells does not necessarily mean a case operated upon unwisely, for there may be present in the mastoid antrum and scattered throughout the cellular structure highly infective granulations. This condition is far more dangerous to life in an individual where the bone is dense and sclerosed with but very few small cells, than would be the case were a large quantity of free pus present in large pneumatic cells, the outer wall of the mastoid structure being thin. In the latter case the pus might easily rupture through the bony wall externally. In the former condition infection could more readily find its exit internally.

¹ "The Importance of the Early Recognition of Suppurative Otitis Media." By Philip Hammond, M.D., Boston, Mass.

I would say in closing—in all cases seemingly septic in character, where any doubt exists as to the seat of the infection, careful thought and attention should be given to the condition of the middle ear and adjacent structures.

Should a condition there be found that would reasonably account for general symptoms present, it should be as unhesitatingly treated as would any septic condition in the abdomen.

INVERSION OF THE UTERUS.*

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WHEN asked to read a paper at a meeting of this society I chose the subject of uterine inversion because the general surgeon knows comparatively little about the condition since it is relatively rare in communities which have well trained obstetricians and because it has been my fortune to see one case and learn the details of another, neither of which cases have been previously reported. Both cases occurred outside of Boston.

In the first case of uterine inversion, which was one of the acute type, the patient was a multipara 32 years old and it occurred after her third delivery. The first two labors were normal but this one was precipitate. The attending physician said that after the birth of the child he crested out the placenta which came away easily. Very shortly afterwards he noticed that his patient was suffering from shock and sent for assistance. When seen about two hours after delivery the patient had somewhat recovered from her shock but was bleeding more than she normally should. By a vaginal examination a diagnosis of inverted uterus was easily made and the uterus was reinverted without much difficulty by taxis, and then it and the vagina were packed with sterile gauze after a hot intrauterine douche. The puerperium was otherwise uneventful.

The other case was of the chronic type. It was recounted to me by a surgeon in another state who showed me the uterus. According to the history the patient had had one normal delivery. She got about in the usual time after confinement and thought she was perfectly well. Some months later when lifting a wash tub she had a bearing down feeling and felt pressure on her perineum. Because of that and because of some irregular flowing which she had she consulted the before mentioned surgeon who advised operation, and later performed a complete abdominal hysterectomy. The patient's subsequent history was uneventful and she was discharged from the hospital during the third week after operation.

By an inverted uterus we mean a uterus turned inside out, either partially or completely. Inversion of the uterus is divided into three degrees, simple depression of the fundus, depres-

sion of the fundus to the cervical orifice, and complete inversion. The last condition may be complicated by prolapse of the uterus and vagina. In this case the uterus will be entirely outside. When we have complete inversion a hollow pear-shaped mass projects into the vagina with the stem end up.

VARIETIES.

There are two kinds of inversion, acute and chronic. The diagnosis of the chronic form is harder, because adhesions may form between the tumor and the vaginal walls. Also the peritoneal surface decreases in size and the mucous surface increases. The acute form is far more common and is practically entirely of puerperal origin. It is usually caused by injudicious pressure on the fundus after delivery or by traction on the cord while the placenta is still attached. A uterus is predisposed to this when its musculature has been exhausted or lacerated during a severe and prolonged labor so that the contractions stop. They may begin suddenly again and assisted by intra-abdominal pressure cause the condition. Many authors claim that it is always preceded by paresis of some portion of the uterine wall. According to the literature it occurs more frequently in primiparae and generally after a full term labor, though several cases have been reported of its occurrence after a three months' abortion. Chronic inversion generally is simply a continuance of the acute form (for in some cases the condition is tolerated fairly well as in the case reported at the beginning of this paper) or it may be produced gradually by the expulsion of a fibroid polypus attached to the fundus of the uterus. This polypus may remain attached after inversion or may slough off, simply leaving a scar to explain the cause of the inversion.

FREQUENCY.

The acute form is rare in good obstetrical practice and therefore seldom seen in hospitals, but is more apt to occur when an inexperienced midwife attends a case. For instance, not a single case occurred in the St. Petersburg Lying-in Hospital in 250,000 deliveries, while in Dublin Madden noted it but once, complicating the third stage of labor, in 190,833 deliveries. Guidal²⁶ remarks that only three cases were encountered among 4064 gynecological patients at the Copenhagen Deaconess' Hospital. These patients were cases not delivered in the hospital, but sent there for treatment of the chronic condition.

SYMPTOMS.

In an acute case the chief symptoms are hemorrhage (generally profuse) and shock out of all proportion to the amount of blood lost; in the chronic cases, the symptoms of shock having disappeared, we note hemorrhage, irregular and more or less profuse; secondary anemia; syn-

* Read before the Boston Surgical Society, July 18, 1912.