1852

Nardie

On

Typhoid Fever
"Let us then be up and doing,
With a heart for any fate,
Still achieving, still pursuing,
Learn to labour, and to wait."

Longfellow
Synopsis

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Among the numerous subjects connected with the science of Medicine, there is probably none, possessing such great interest, or is of such practical importance, as the subject of Fever. There is no subject in Medical science, which has been more amply discussed, or upon which so much has been written. It therefore demands our careful attention and study.

I have selected Typhoid Fever as the subject of my Thesis, principally because a considerable number of cases of the disease have come under my own observation.

Typhoid fever was first accurately described by Louis, but before the publication of his admirable work on the subject, the disease had been fully described by several French Physicians, namely Prost, Petit, Serres, Bretonneau, and Poupart. After Louis' work appeared, several American Physicians
gave accurate descriptions of the fever, which
confirmed in a satisfactory manner the
observations made by Louis. Among the names
of those, may be mentioned, Dr Gerhard, Professors
Jackson and Bartlett. In Britain Dr Stewart
of London, and Kennedy of Dublin have written
admirable papers on the subject. But there is
no living author, who has devoted more time
and attention, to the study of this all-important
subject than Dr Jenner of London: his papers
are most elaborate and show with what immense
amount of trouble and research he has conducted
his investigations.

The nomenclature of this disease has
been a source of great perplexity. Petet and
Serres in 1813 gave it the name of Entero-
mesenteric fever; Cruveilhier calls it Follicular
enteritis. Bretonneau calls it Poliheinterte
from the peculiar inflammation of the
intestines. In Germany, it is generally known
by the name of abdominal typhus.
Intestinal fever is a name recently given
to it, but typhoid fever, the name given to it
by Louis, is the one that is most commonly
adopted, and by which it is generally
recognised in this country.

Typhoid fever is the common epidemic fever of France and the Continent generally, as typhus is the common epidemic fever of Great Britain. In Britain, however, typhoid fever is becoming more prevalent and it is remarkable that in Edinburgh, where its occurrence used formerly to be looked upon with surprise, it is now becoming nearly as common as our ordinary typhus. For the last two years the number of cases of typhoid fever admitted into the Royal Infirmary have nearly equaled those of typhus.

Typhoid fever seems to have occurred to some extent epidemically in Britain many years ago. For J. Kennedy of Dublin mentions that in the epidemic of fever there, from 1826 to 1829, he found the elliptical patches (Peyer) more or less dissected in a large proportion of cases. And J. Stokes states that in the epidemic of 1826 and 1827, he observed the follicular ulceration in the greater number of cases.

In many instances perforation took place and the whole group of vital and cadaveric phenomena corresponded almost exactly to the colthentic plague of the French. The epidemic fever...
at Inverness, which is related by Professor
Todds in the Edinburgh Medical and Surgical
Journal for October 1839. From the description
of the symptoms and morbid appearances, must
have been typhoid fever. Dr. Christie says
that in Edinburgh "the intestinal affection has
repeatedly presented itself in groups; the
"constellatio dothermenterica" has repeatedly appeared
and disappeared, as a subordinate or
"intercurrent epidemic in the course of the
"more general epidemic typhus."

I shall first give a general description
of the symptoms of typhoid fever, and afterwards
examine each symptom in detail and first

**Premonitory Symptoms**

The premonitory symptoms of typhoid
fever are by no means well-marked, con-
trasting strongly in this respect with
typhus fever. In the large majority of
cases, the invasion of the disease is insidious.
The individual being attacked when apparently
in good health, and following his ordinary
occupations; no symptom of uneasiness is
is complained of and alteration of the bowels may have commenced before the patient has confined himself to bed, but in some cases the accession of the disease is more gradual. The patient feels languid and depressed in spirits, and generally complains of slight headache, soreness of the back and limbs, and a feeling of universal discomfort. The appetite becomes defective, and the tongue is white and covered with a slight fur.

In the majority of cases distinct rigors are rare on the accession of typhoid fever. The patient has more commonly a sense of chilliness alternating with heat. With regard to the invasion of the disease Cholmel collected a hundred and twelve cases and observed them carefully. In seventy three he found that the invasion was insidious, and in thirty nine there were premonitory symptoms. After these initiatory symptoms the circulation becomes accelerated, the face is alternately pale and flushed. The skin is hot and dry, and the patient complains of excessive thirst. He has entire loss of appetite and sometimes irritability of the stomach. Pains in the
abdomen occur, followed by diarrhoea of a protracted and obstinate character, which is the most characteristic symptom of the fever, and almost constantly depends upon a local lesion of the intestines. This symptom is without doubt the most striking, and as regards the treatment of the disease, demands our utmost care and attention. Going along with the diarrhoea, there is generally some pain and tenderness accompanied by distension of the abdomen, which, when excessive, proves a source of great uneasiness to the patient. When gentle pressure is made upon the abdomen, especially over the region of the caecum, a peculiar gurgling movement is felt and gurgling sound elicited, which is due undoubtedly to the presence of fluid and gas within the intestine. I have generally observed this symptom in the advanced stages of the fever. The appearance of the patient, suffering from typhoid fever, is peculiar: he is pale and very often at times much flushed. The flush of the cheek is very similar to that of hectic: he is depressed and anxious and often appears stupid, dreamy and totally indifferent to objects around him.
There is often great restlessness during the night and want of sleep in the first week of the fever. About the beginning of the second week, the eruption, which is one of the distinguishing characters of the disease, and which I shall more fully describe afterwards, makes its appearance. In the majority of cases it appears on the seventh day, but is never very regular in this respect. Sometimes its appearance may be prolonged till the twelfth day of the fever, and sometimes, though rarely, it may be absent.

In a few days after the first appearance of the eruption, an eruption of cutaneous which consist of small vesicles filled with clear fluid, break out on the necks, chest, and abdomen.

Various nervous symptoms are manifested during the progress of typhoid fever. Delirium is sometimes a marked symptom and in severe cases is of the most active kind. When this is the case, the patient makes the most violent attempts to get out of bed, and is with the greatest difficulty restrained. On the other hand the patient is often morose, and is generally either singing or talking oddly. These different states of the
Mind evidently depend upon the particular habits of the individual. In persons of intemperate habits the delirium is often of the most furious and intractable kind, approaching almost to the nature of the maniac.

As the disease advances, the diarrhoea and febrile symptoms continue, the pulse increases greatly in frequency and weakness, the skin is hot and dry, and the tongue becomes often dry, fissured, and incrusted with a yellowish brown coating, and is with difficulty protruded. Haemorrhage from the bowels, along with the diarrhoea frequently occurs. Emaciation follows with great rapidity, and the patient is reduced to a state of extreme feebleness. In this prostrate condition, the patient lies on his back, sunk down in the bed. Involuntary discharge of faeces occasionally occurs: retention of urine, and owing to the great debility and continued pressure, stools are often produced on the sacrum and hips. When the disease is to end in recovery, all these unfavourable symptoms abate: the frequency of the pulse diminishes; the diarrhoea and abdominal distension gradually decrease and the alone evacuations daily acquire their
Natural consistence is a degree of coolness and moisture returns to the skin and the tongue gradually becomes moist and clean. Sordes of the teeth disappear and the appetite slowly returns. Along with these there is a marked change in the intelligence of the patient; the obscured intelligence gradually passes off and the patient becomes observant of objects around him. Very often this improvement of the intelligence is the result of a refreshing sleep. Returning sleep should always be looked upon as a very favourable condition at the close of a fever, as it rapidly restores the exhausted strength and weakened nervous system. The convalescence from typhoid fever is always slow and protracted and until the patient be far advanced in the convalescent stage, he cannot strictly be pronounced out of danger. The intestinal canal is highly susceptible of any irritation and a relapse of diarrhoea may ensue from the over-indulgence of the appetite. The muscular system is feeble and the patient is very susceptible of the action of cold, hence bronchitic and pleuritic attacks very frequently occur, retarding greatly the recovery.
The nervous system sustains a great shock after severe attacks of typhoid fever; the patient is often for days in a fatigued condition, and he has very frequently a partial loss of memory. This latter condition I have not unfrequently observed after severe attacks of typhoid and typhus fevers.

When the disease tends to a fatal termination, the condition of the patient becomes more prostrate and there is a gradual sinking of the powers of life: the tongue continues dry and fissured, and sordes remain collected about the teeth; the pulse becomes weaker and weaker and at last almost imperceptible; the skin is cold and beaded with a clammy sweat and the features acquire that pinched aspect which is the certain harbinger of death. Death rarely takes place before the end of the second week in typhoid fever. The patient may die comatose or be mayelectric or a gradual failure of the heart's action; he may die by syncope, caused by spontaneous haemorrhage from the bowels. But the most frequent cause of a fatal termination is secondary peritonitis, caused by perforation of the intestine, and escape of its contents into the
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cavity of the peritoneum; the patient has sudden rigors and is seized with violent pains in the abdomen, with excessive tenderness on the slightest pressure. Vomiting sometimes occurs. The pulse becomes small, frequent and wiry and the face is expressive of great agony. Rapid sinking almost invariably ensues.

I will now examine each symptom in detail and I shall first make a few observations on the

State of the Pulse in typhoid fever

The characters of the pulse in typhoid fever are somewhat remarkable: its frequency varies from day to day and even during the twenty-four hours; its state is constantly fluctuating. Dr. Jenner found that its frequency varied in different cases during the same period of the disease; during the first week, he found that the pulse ranged from 110—132; during the second week from 80—128; during the third week from 60—160, and during the fourth week, from 96 to too rapid to count. Dr. Jenner gives two cases.

In a man who came under observation on the
Thirteenth day of the disease, and whose pulse was at that time 120. By the twentieth day, it had fallen to 96. By the twenty-first day to 60, it then gradually rose again till it reached 120 by the thirtieth day. The fall of the pulse was in this case, accompanied by profound coma, which disappeared as the pulse rose again. "In another case, which was first seen by Dr. Jenner on the eleventh day, and proved fatal from haemorrhage from the bowels the pulse gradually rose from 80—96 and never exceeded the latter number in the frequency of its beats." These different conditions of the pulse often depend upon the state of the nervous system of the individual, for it is often remarked that the sight of the medical attendant tends to accelerate the pulse in nervous patients. I have repeatedly observed the pulse become accelerated from this cause among patients in the Royal Infirmary.

The pulse in typhoid fever is generally small and weak, sometimes full and soft. Sometimes there is a degree of irregularity in its beat and very often it has a back-stroke or double beat.

"Dr. Jenner, in reference to the state of the pulse..."
observed twenty one cases, and in two of them it was irregular; in one of the two which proved fatal on the twelfth day of the disease, the pulse was on the fifth day very weak but regular; on the ninth and tenth days it was so very weak and irregular in frequency and force; on the twelfth day it was too rapid to count. During the convalescence from typhoid fever, the pulse is often remarkably slow sometimes the beats are as low in frequency as 50 and consistent with this condition of the pulse there is a slow feeble action of the heart, the sounds of which are faintly audible, more especially the first sound. Dr. Stokes has directed particular attention to this condition of the first sound of the heart, and holds it to be an important indication for the administration of wine in fever. This slow feeble condition of the circulation was observed in some of the patients convalescent from typhoid fever in the Royal Infirmary during last winter.

It becomes of importance to attend to this symptom in the treatment of convalescents, as by undue exertion on the part of the patient, fatal syncope may be induced.
Medico-Chirurgical Transactions Vol 33 p 26
This weakened action of the heart, depends, as has been pointed out by Lows, upon a softened condition of the muscular tissue of the organ. He states that the texture of the heart was softened in eleven cases of seventeen examined after death, in whom the pulse during life was small, weak, irregular, intermittent, and resembling for a more or less considerable space of time.

Eruption of typhoid fever

One of the distinctive characters of typhoid fever is the peculiar eruption. This eruption, first accurately described by Lows and named by him, "Vaches roses lenticaulaires," has been since described in a correct and lucid manner by Dr Jenner of London.

The following is the description as given by Dr Jenner.

"The separate spots are circular, and of a bright rose colour; this hue passes insensibly at their bases into that of the surrounding cuticle. Their usual diameter is about two lines; they are somewhat elevated, but though perceptible,
to the finger pressed lightly over the surface; they possess none of the seedlike hardness of the first day's eruption of smallpox. Nor are they so prominent and perceptible to the touch as the papulae of lichen: their surface is rounded, lens-shaped, never acuminate.

No trace of vesication can be detected on their apices. If tolerably firm pressure be made on these spots, they entirely disappear, but they resume their distinctive colour and elevation as the finger is being withdrawn.

No one, who has examined with care this characteristic eruption, can contradict the accuracy of Dr. Jenner's description.

The seventh day of the fever is generally considered to be the period when the eruption makes its first appearance, but its appearance may be prolonged till the twelfth or fourteenth day very rarely, later. When it has once made its appearance, fresh spots come out in succession from day to day, till from the twenty-first to the twenty-eighth day—Louis mentions, that in three individuals in the fourth and fifth days of the disease the spots did not make their appearance.
Before the sixth and seventh days, sometimes the eruption is not well defined and sometimes, though very rarely, it is absent. Dr. Jenner says that a very delicate scarlet hue of the skin precedes the appearance of the eruption. The duration of each spot varies from two to six days: the number of the spots can sometimes be only one or two and sometimes there may be as many as a hundred.

The usual site of the eruption is the abdomen and thorax, rarely the extremities, almost never the face. Louis, however, mentions one case in which the spots appeared on the face. The abdomen and mammary regions are the most frequent situations. I have occasionally seen the spots on the superior extremities, but I do not recollect of ever having observed them on the inferior extremities.

The abundance or scarcity of the eruption as Louis' observations tend to show, have no relation with the severity or mildness of the disease. An eruption of undulana frequently occurs in the course of typhoid fever, more especially in the advanced stages of the disease.
The fourteenth day is generally considered to be the period of their outbreak. They consist of very minute transparent vesicles filled with a clear fluid; they are best seen on the chest and abdomen, and require to be viewed obliquely. They are generally preceded and accompanied by a warm skin and profuse perspiration.

State of the tongue in typhoid fever

The condition of the tongue in typhoid fever varies in different cases: in the greater number of cases, that have come under my observation, the tongue was generally moist, smooth, glistening and redder than natural, sometimes it was covered with a yellowish white film. In the advanced stages of the fever, it was often dry, fissured and incrusted with yellow matter. In mild cases, it was often moist during the entire period of the disease. Dr. Jenner says "that the small dry tongue with red tip and edges, smooth and furred, of a pale brownish yellow and fissured, the surface seen between the fissures, being of a red colour, may be considered differentially as a diagnostic sign..."
The appetite in typhoid fever is always defective, this symptom being generally the earliest manifested. Excessive thirst, as is commonly the case in all fevers, is also a marked symptom.

Abdominal symptoms

**Diarhœa**

Diarhœa is the most formidable symptom in typhoid fever, and the symptom of greatest moment in relation to the treatment of the disease. It is this exhausting and protracted diarrhoea that constitutes the great danger, attending cases of typhoid fever, as it almost invariably depends upon an ulcerated condition of the intestinal glands. Diarrhoea may occur from the very commencement of the fever, or it may be postponed till the end of the first or beginning of the second week. Diarrhoea often commences after the effects of a dose of laxative medicine, and it is remarkable that the bowels, when apparently
constipated at the commencement of the fever, are very susceptible of the action of purgative medicines, even in very small doses.

Diarrhoea attends typhoid fever nearly throughout its entire course, and is most weakening and exhausting in its effects. It varies in severity: the alone evacuations are generally from two or three to twelve in the course of the day.

Louis says that diarrhoea is almost a universal symptom in typhoid fever; with the exception of three it was present in all his fatal cases. In severe cases it is generally a long and protracted symptom, being nearly three weeks in duration (Louis). Of two patients seen by Dr. Jenner during the first week of the disease, one passed from two to six watery stools daily, the other from three to four.

In the second week the number of stools passed each day varied from one to four; of seven patients under observation at this time, five passed as many as three stools each, and one four stools in the twenty-four hours; of fourteen patients observed during the third week nine passed three stools each, and two as many as four and six in one day, while in the fourth
week fourteen out of fifteen patients passed three stools each in one day, and ten of fourteen from four to six stools."

The alvine evacuations are loose and fluid of a yellow ochre or sometimes of a dark colour, their odour is always insupportably fetid blood is sometimes mingled with them toward the advanced stage of the fever. With regard to the character of the alvine evacuations, Dr. Jenner observes "that their consistence was watery in twelve cases at some period of the disease, and soft, putridous, or almost fluid in four others in eight cases only were stools of natural consistence passed after the patients came under observation, and in five of these the stools were watery during some period of the disease; their color varied from pale brown to almost black when watery, they were usually pale yellowish brown, with a sediment composed of brown or yellowish particles" in the majority of cases I have observed, the alvine evacuations were almost constantly of a yellow ochre hue, and toward the advanced stages of the fever they were often mingled with blood. Dr. Watson states, that if this character of the evacuations persist from day
to-day, it is an equivocal sign that ulceration is going on in the intestine.

Pains in the abdomen either precede or accompany the diarrhoea; this symptom is always more or less present in typhoid fever, and is sometimes the chief source of complaint, or the part of the patient. The pains are never severe, and are principally confined to the umbilical and right iliac regions.

Flatus or distension and tenderness of the abdomen are characteristic symptoms, and generally occur about the beginning or middle of the second week of the disease; the tenderness is principally confined to the right iliac region, or region of the caecum, where it is invariably associated with a peculiar gurgling movement and sound, when pressure is suddenly made upon the caecum. As the tympanites increases, the abdomen acquires a peculiar tub-shaped form (Jenner); this peculiar shape of the abdomen Jenner ascribes to the large amount of flatus occupying the ascending, descending and transverse colon. In every case that came under my observation abdominal distension and tenderness were constant symptoms,
Louis Recherches de Fièvre Pyhroïde
In severe cases, the tympanites sometimes becomes excessive, and then proves a great source of discomfort to the patient, interfering considerably with his respiration.

**Haemorrhage**

Epistaxis is a frequent symptom, especially in the early stages of typhoid fever. It is generally moderate in amount, but sometimes so profuse as to require the interference of remedies. "Louis mentions that it occurred in twenty-seven of thirty-four severe cases of fever, but much less in mild cases."

"Dr. Jenner states that it occurred in one third of the cases or in five of fifteen, the particulars of which were obtained from the commencement of the disease; in neither of them was it excessive, and in one case, only a few drops of blood were lost; the haemorrhage took place in these five cases on the fourth, eighth, eleventh, and twelfth days of the disease."

Haemorrhage from the bowels very often occurs during the progress of typhoid fever, and is to...
be regarded as a most formidable symptom. It occurs principally in the advanced stages of the fever. It may arise spontaneously and sudden death by syncope may thus be induced. Hemorrhage from the bowels in typhoid fever is always a symptom of great peril and may be considered as an infallible sign of the alteration of the intestinal glands making rapid progress.

The aspect of the patient in typhoid fever is peculiar and characteristic. The expression of his countenance is dull, stupid and apathetic; he generally declines being spoken to, or in any way disturbed, and is apparently quite indifferent to things around him. The expression of the eye is heavy, languid and vacant. When pain is complained of, there is generally an expression of anxiety depicted on the countenance.

**Nervous symptoms**

**Headache**

Headache is an invariable symptom in
typhoid fever, and is generally present from the very commencement of the disease. The pain is never so severe as in typhus fever, but is more frequently dull and heavy. It is, in general, continuous but often varies in intensity according to the febrile state of the patient. The pain is commonly situated on the forehead and temples. Dr. Jenner mentions that in two cases, the histories of which were complete, and the duration of the disease lengthened, there was no headache.

In twelve cases, headache was one of the earliest symptoms; in five of these it disappeared respectively on about the sixth, thirteenth, eighteenth, seventeenth and seventeenth day of the disease; in six before they came under observation. In one case there was a little headache on the fourteenth day, but, from the subsequent mental confusion of the patient, it was uncertain when it ceased.

Dr. Jenner mentions that in eighty-seven cases, all of which recovered, there was headache in all but three. Its duration varies. Louis says that in severe cases, it may continue eight or ten days.
Drowsiness frequently occurs in the progress of typhoid fever and is, when profound a very unfavourable symptom. In fatal cases it continues to increase in degree and generally terminates in coma. Delirium often interrupts its progress before coma supervenes. Vigilance and great restlessness during the night are sometimes marked symptoms and more frequently occur in the early stages of the fever.

**Delirium**

This symptom is only manifested in severe cases of typhoid fever. The delirium is generally most active and attains its greatest height during the night. In some cases it is wild and maniacal. Patients repeatedly leave their beds and walk about their rooms, singing or talking loudly. In the advanced stages of the fever, the delirium is generally low and muttering.

De Verneu in speaking of this symptom, states "The delirium usually first showed itself at night. The patients sleeping during part of the day, it varied much in amount; sometimes being so violent, that the patients left their beds..."
and even ran screaming through the wards at others, showing itself by slight delirium only discovered to exist by accident, or again by almost constant chattering. Ten of eighteen patients who were delirious after they entered the hospital, and of whom notes on the point were made, left their beds to wander about the ward.

A frequent symptom of typhoid fever, is a degree of transient deafness. I have noted this symptom frequently in typhoid and also in typhus fever; in the latter occurring generally in the stage of convalescence. It may be preceded or accompanied by tinnitus aurium. "Doses "observed deafness occur in two thirds of his "fatal cases and in thirty three of forty five "of his grave cases terminating in recovery."

I have certainly observed this symptom more frequently occur in grave forms of the disease. Dr. Jenner observes that six of twenty three "cases had deafness more or less complete "after they entered the hospital and three "tinnitus aurium." One of these subsequently "became deaf. The difficulty in hearing made "its appearance on from the twelfth to the twenty
fifth day. In some cases the hearing is
perverted.

Vision is rarely imperfect or perverted in
typhoid fever. In some cases the conjunctivae
are injected and where the febrile excitement
is high there is often increased sensibility to
light.

Spasmodic twitches of the muscles sometimes
occur in typhoid fever, especially in persons of
a nervous temperament. They occur in the face
but are better marked at the tendons of the wrist
(subcutaneous tendons) This generally considered,
to be an unfavourable symptom and almost
always attends the latter stages of the disease.

Thoracic symptoms

Chest symptoms are not frequent in typhoid
fever; the respiration, as in all cases of
febrile excitement, is accelerated. There may
be slight cough, accompanied by some
mucus expectoration and moist rales heard
in the chest by the stethoscope.

Sometimes the chest symptoms may be more
serious. Pneumonia may set in with all its
prominent symptoms, namely, pain in the chest, shortness of breathing, cough, and rusty expectoration, and the physical signs of dulness and crepitation. This complication is more common in typhus fever. I have only seen one or two cases in which pneumonia supervened in the course of the disease. In reference to the thoracic symptoms, Dr. Jenner observes: "Nineteen of twenty-three cases had cough. Bronchial rales were heard more or less extensively in the chests of eleven of the twelve, in the majority mixed with a little mucous rhonchus. Two expectorated a little colourless mucous. These rales were present when ten of the eleven were first examined on the fifth, seventh, thirteenth, fourteenth, fourteenth, fourteenth, fourteenth, fourteenth, fourteenth, sixteenth, and twentieth day. In one case there were no bronchial rales till the twelfth day. The patient being first seen on the sixth."

Duration of typhoid fever

Typhoid fever is generally said to be prolonged till the thirtieth day, but it is very difficult to ascertain its exact limit.
partly on account of the insidious and sometimes gradual accession of the fever, and partly on account of the slow and protracted convalescence. Typhoid fever rarely proves fatal before the end of the second week. It may be prolonged beyond the thirtieth day, in fact no exact period can be laid down as to the duration of the disease.

Complications

One of the most formidable and distressing complications is the supervention of peritonitis during the progress of the fever. This is caused by perforation of the intestine and escape of its contents into the cavity of the peritoneum. This complication is the most frequent cause of death in typhoid fever. Its accession is sudden. The patient is seized with acute pain in the abdomen accompanied by excessive tenderness. Rigors precede or accompany these symptoms. Nausea and vomiting ensue. The pulse becomes rapid, small and thready. Great thirst is complained of. The countenance is pale, pinched and
expressive of intense agony. The surface of the skin is bedeased with a cold clamminess. Deep respiration and rapid sinking follows. Sometimes in consequence of the adynamic state and deficient sensibility of the patient. These violent symptoms are latent.

Sudden haemorrhage from the bowels is always a serious complication, as it rapidly exhausts the little remaining strength of the patient and death by syncope may suddenly supervene. It takes place in the advanced stages of the fever.

Sloughing of the integuments is another very important and formidable complication. The most usual situations of the slough are the sacrum and trochanters. The slough begins with a slight erythematous flush on the skin or sometimes with ecchymoses; this latter form is almost always followed by a fatal termination.
Diagnosis of typhoid fever

When the symptoms are well marked, the diagnosis of typhoid fever is generally simple. The most distinctive symptoms, and those that should be principally relied on in framing the diagnosis, are the rose-coloured eruption, and the eruption of undulamme, the peculiar appearance of the patient, the diarrhoea, and tympanites of the abdomen; the duration of the disease, also, and the absence of any decided crises are of importance, and aid materially in the diagnosis. At the commencement of the fever, before these characteristic symptoms are manifested, the diagnosis is uncertain.

Cases sometimes occur, in which the symptoms are very obscure, rendering the diagnosis doubtful, and perplexing, and even baffling, the skill of the most experienced observers.

The disease, with which it is most frequently confounded, is typhus fever. The distinction between typhoid and typhus fever has been clearly and satisfactorily demonstrated by the careful and elaborate researches of Dr. Jenner of London and Dr. Gerhard of Philadelphia.
From typhus fever

In the first place, the eruption in typhus differs markedly from that in typhoid fever. The skin is at first, irregularly and indistinctly mottled; the spots are of a pale purplish colour, which fades off into the adjacent mottling; they are very slightly elevated, their form is circular or oval, but sometimes very irregular; they do not entirely disappear on pressure.

The progress of the eruption is peculiar. The colour of the spots changes from a reddish purple, to a livid and afterwards to a rusty hue. The mottling, at the same time, deepens in colour. The eruption makes its appearance sooner than that of typhoid fever, and is pretty generally distributed over the body. The aspect of the patient in typhus fever is peculiar: The countenance is dark, dusky, and suffused and the eyes are generally injected. The bowels are for the most part, constipated and tympanites of the abdomen almost never occur. Chest symptoms are of more frequent occurrence than in typhoid fever. The fever is of shorter duration and crises are generally distinct.
From remittent fever

Remittent fever is not a common disease in this country, but when it occurs, it is liable to be mistaken for typhoid fever, especially if the characteristic symptoms of the latter disease be not well defined. The course of remittent fever is more rapid, blisters vomiting frequently occur, and remissions are generally regular and distinct. Diarrhoea and tympanites are rarely present.

From acute phthisis

The aspect of the patient in typhoid fever sometimes strongly simulates acute phthisis. When the symptoms of typhoid fever are some-what obscure, the diagnosis is sometimes very difficult. Profuse sweats, however, are characteristic of acute phthisis, whereas in typhoid fever they comparatively seldom occur. In acute phthisis there are the physical signs of disease in the chest, cough, and purulent expectoration.
Prognosis

Though typhoid fever cannot be considered a very fatal disease, yet the prognosis is at all times doubtful: in no one case, however mild in character, can a favourable termination be, with certainty, pronounced.

Perforation of the intestine, the source of greatest danger in typhoid fever, may occur even in apparently the mildest cases.

Diarrhoea, if severe and protracted, is a very unfavourable symptom, because it speedily reduces the patient's strength and brings on rapid emaciation.

If excessive distension of the abdomen occurs in the advanced stages of the fever, the prognosis is very grave.

Haemorrhage from the bowels, though a very formidable symptom, is not necessarily to be considered fatal in its results. I have seen cases recover after purgative haemorrhage from the bowels. When the haemorrhage is very profuse, the prognosis is very grave.

A symptom of very great danger, generally occurring in the first week of the fever, is a
feeling, on the part of the patients, of general ease and comfort, even although serious symptoms of the disease are manifested. This provision of the mind is very often followed by a severe attack of the disease. Louis mentions that cases presenting this symptom always prove fatal.

A case occurred in the Royal Infirmary (Edinburgh) last winter, presenting this symptom to a marked degree. The patient, for more than a week after admission into hospital, during which time the febrile symptoms and the other characteristic phenomena of the disease were distinct, used constantly to remark that he felt very well and was free from any unconsciousness. This case, subsequently proved to be one of a very severe character: the patient was reduced to a state of great prostration, and for two or three days all hopes of his recovery were abandoned. But after an unusually protracted convalescence, he ultimately recovered.

Delirium, when mild and violent in character and especially when occurring in the early stages of the fever, is a very unfavourable symptom.
Among the remaining symptoms that render the 
prognosis unfavourable, are profound stupor, 
restlessness and vigilance, spasmodic twitching 
of the muscles, or subcutaneous tenderness, sloughing 
of the integuments, and retention of urine.

The aspect of the patient aids greatly in foretelling 
the ultimate issue of the case. A sunk dull 
cadaverous appearance of the countenance indicates 
with certainty a fatal termination.

If the pulse become weaker and continue to 
increase in frequency from day to day, moreover, 
if it become irregular and jerking, the prognosis 
is exceedingly doubtful. The prognosis is grave 
when the first sound of the heart is weak and 
scarcey audible. Dr. Stokes has directed particular 
attention to this sign and states that it influences 
our prognosis to a great degree.

On the other hand, if the pulse become 
gradually slower from day to day, and acquire 
some strength and fulness, if the diarrhoea 
and tympanites of the abdomen abate, and the 
abdomen evacuations regain daily their natural 
consistence, if delirium subsible, and the clouded 
intelligence of the patient pass off, and his 
attention become more fixed on objects around,
around time, if the tongue become moist and clean and slight inclination for food returns, then the prognosis may be pronounced favorable. The age of the patient, to some degree, influences the prognosis. I am inclined to believe that the younger the patient, the more favorable is the prognosis. Season is believed, by some to influence the prognosis greatly. Chodrel states that the mortality is greater in the cold than in the warm season. In the year 1832 at the Hotel Dea. Paris, the mortality was one in three during the winter, and one in six during the summer; in 1834 the mortality was one in two and a half during winter and one in eleven during summer.

Treatment

In the first place, I believe that typhoid fever at its onset, cannot be cut short. The practice of eradicating the disease at its onset, used formerly to be held in high repute by many physicians, and is even in the present day, adopted by some. The two remedies generally employed for the purpose, are emetics
and cold affusion. Emetics, I think, are highly
dangerous, especially when employed in persons
of weakly constitution, as the great shock which
their action imparts to the nervous system,
exhausts the patient, and impairs his strength
for withstanding the effects of the subsequent
febrile symptoms.

Cold affusion is liable to the same objection.
It alarms the patient and imparts a great
shock to the nervous system.

I shall divide the subject of treatment into
four heads:
1 Dietetic treatment. 2 Regimen. 3 Remedies
for the disease. 4 Management of the convalescence
first, then, as to the
Dietetic treatment. This of course includes
food and drink.

Too little study is devoted in the present day
to the all-important subject of dietetics in the
treatment of diseases. In the treatment of fever
a careful attention to the subject is of the utmost
importance.

The general maxim is to reduce the diet in
fever, because the assimilating powers of the
the patient are defective. It must be our object, therefore, to obtain the food that is most easily assimilated.

The diet, in the first instance, should be light and unstimulating, but at the same time nutritious. Milk and the farinaceous must be the basis of the diet. Gruels and animal jellies weak solutions of sage, arrowroot should be given. If symptoms of debility are manifested, as the disease advances, the diet must be more nutritious but not over-stimulating in quality. Stronger solutions of arrowroot and perhaps some weak essence of meat may be given.

In the advanced stages of the fever, when the patient is in a state of great weakness, the diet should be both stimulating and nutritious; strong essence of meat, animal jellies, thickened arrowroot, should be carefully administered.

A moderate allowance of cold drinks should be granted in fever. Cold water I think is the best of all drinks; diluted butter milk and the juice of oranges are generally very grateful to the patient.

Regimen

Attention to proper ventilation should be
strictly enforced. The atmosphere of the patient should be kept cool. Cleanliness is also strictly enjoined; the patient's body linen should be often changed and his frequently sponged.

Remedies

If the bowels be constipated at the beginning of the fever, purgative medicine is to be given especially in small doses, as it is to be remembered that the bowels in typhoid fever are highly susceptible of its action.

The simplest and safest purgatives should be selected and among the best is castor oil which should be given in doses varying from two drachms to half an ounce and guarded by ten or fifteen drops of mixture of opium. If medicine be rejected by the mouth on account of some irritability of stomach, mild laxative enemata should be employed. Violent purgatives are carefully to be avoided in typhoid fever. Blood-letting should never be performed in typhoid fever. The employment of the remedy is totally contraindicated as the disease, nearly
tends to debility. Cold effects in the form of cold or tepid sponging of the skin is very serviceable for abating the febrile heat.

When the skin is hot and dry, mild refrigerant diaphoretics should be administered. The liquor acetis ammoniaci in the dose of two drachms to half an ounce during the day; if there be no tendency to headache or stupef, a few grains of Dover's powder should be given at bedtime.

For the diarrhoea, astringent remedies should be employed, and these, in the first instance, should be of the simplest kind, e.g., lime water, mixture of catechu and chalk mixture. If, notwithstanding the employment of these remedies the diarrhoea still persist, opiates must be had recourse to. Opiates are particularly serviceable where debility, restlessness, and spasm prevail, but are contraindicated when there is any tendency to dryness of the tongue, and when headache and stupor predominate. When there is much pain, tenderness, and distension of the abdomen, warm fomentations or large linseed poultices afford great comfort to the patient, and in extreme cases, enemias are often attended with considerable relief. If the patient complain
of much headache, his hair should be cut closely, and cold cloths applied to the head. The former expedient is a source of great comfort to the patient and generally mitigates the pain; the cold cloths require to be constantly renewed, as their moisture is very rapidly absorbed.

In the advanced stages of the fever, where great debility ensues, the employment of stimulant remedies is absolutely essential. The indications for administering wine or fever are highly important and require great tact and experience on the part of the physician.

If the patient be pale and to all appearance in a prostrate condition, if the nervous system be exhausted, above all, if the pulse be soft, weak and very compressible, and particularly if the first sound of the heart be feeble, the stimulant should most decidedly and speedily be had recourse to. But its effects must be attentively watched. For, if the countenance became much flushed and the pulse harder and increased in frequency, if the patient be restless and excited, it should be diminished in quantity or even withheld.

When the prostration is extreme, carbonate
If ammonia should be given in from three to five grain doses combined with five drachms of cardamoms (compound).

If perforation of the intestine occurs, and peritonitis results, there is very little hope of recovery, but as a last resource, large doses of quinine are to be administered, warm fomentations applied and rest on the horizontal posture strictly enforced.

If haemorrhage from the bowels, I have been great benefit result from nitrate of silver and also the peritoneum if from the doses of the solution varying from fifteen to twenty drops.

If there be any tendency to eurhythmia of the skin over the depth of the lacrimal and trochanter, consequent on the continued pressure and debilitated state of the patient, the water pillow should be used and change of posture if possible effected. The eurhythmia parts should be bathed with weak spirits and if ulcers occur any simple dressing may be employed.

Attention to the state of the bladder is of great importance. Patients, owing to sleep and inactivity to the desire of relieving the bladder after allow it to become greatly distended, causing
series danger from retention of urine.
Examination of the hypogastric region should be made daily, and the catheter used when necessary.

Management of Convalescence from Typhoid Fever.

The treatment of patients convalescent from typhoid fever is of great importance and requires great care and watching on the part of the medical attendants. In the first place, it is of the utmost consequence that the patient's appetite be not over-indulged. Excess of food is fraught with the greatest danger, as it is extremely apt to irritate the mucous membrane of the alimentary canal in its still weakened condition. If there be tendency to constipation of the bowels, the mildest laxative medicine should be employed to counteract it.

The more active purgatives should be carefully avoided, as an accession of the diarrhoea may result from their effects, or perforation of the intestine, resulting in fatal peritonitis, from the injury inflicted on the ulcerated surfaces. The diet, during the convalescence, must be light and nourishing, and above all easily
deteriorated. Solid animal food must be avoided, and the patient should be restricted to the
strong essence of meat, milk and the farinaceous
until the convalescence be far advanced.
Wine should be continued for a little time,
but afterwards, its daily quantity should be
gradually diminished.

Some remedies are absolutely essential;
among the best are the various preparations of
barks — especially the sulphate of quina.
Quinine should be given in moderate doses.
When the sounds of the heart are feeble,
and the general circulation is unusually slow, the use of
cod-liver oil may be given with advantage, as it rapidly replaces the strength.
If at occasion nausea and vomiting, it should at
once be discontinued. Fatiguing exertion is
particularly to be guarded against during the
convalescence and the mental faculties of the
patient are not to be over taxed.
Morbid anatomy

From the symptoms manifested during life in typhoid fever, we naturally look to the abdomen as the seat of morbid action and in that cavity, we do almost invariably discover remarkable and interesting morbid appearances, satisfactorily explaining many of the symptoms of the disease.

The mucous membrane of the small intestine is an immense absorbing surface, and as is well known, largely supplied with glands and follicles. There are varieties of these glands: a certain variety called Brunner's glands. From the name of the anatomist who first described them, are situated in the duodenum and are peculiar to that part of the intestinal canal. Another variety are scattered over different parts of the intestine called the solitary glands. But the most important in relation to the morbid anatomy of typhoid fever, are the "glands of Peyer," or the "glandulae aggregatae," so called from their being collected in groups.

Their shape is elongated or oval, their position
0.2 capsules
In the intestine is directly opposite to the attachment of the mesentery; their situation is entirely confined to the ileum.

They gradually diminish in size on approaching the jejunum, and increase greatly both in size and number toward the caecum. They exist on the surface of the ileo-caecal valve belonging to the ileum, but do not pass beyond that point. The structure of these glands, as described by Dr. Quain, is the following. They consist of groups of small round flattened vesicles, usually filled with a whitish semi-fluid matter, and situated beneath the mucous membrane. The surface of which is depressed into shallow pits, at or rather under the bottom of which the capsules are placed. They are similar in structure to the solitary glands, except that they occur in groups and the vili of the intestine generally cover the solitary glands.

The function of these glands is still a subject of great obscurity. Dr. Todd thinks that their function is connected with the further reduction of the alimentary matters as they pass through the intestine.
He says, that they are larger and more developed during the digestive process than during fasting. Dr. Carpenter believes that they are the instruments of the elimination of decomposing matter from the blood, and that it is their function to discharge this excretory product into the alimentary canal. Brucke and Kölliker, on the other hand, are of opinion that these glands are appendages to the absorbent system, and state that the chyle passes through these glands before entering the lacteal vessels.

The changes that take place in the glandulœ agminatae, or Peyrœs patches, (stating these in a general way) are the following:

They become, at first, enlarged and distinctly elevated above the surface of the mucous membrane. Inflammation ensues, and a peculiar substance is infiltrated into the tissue of the glands. This substance, along with the texture of the glands, afterwards softens, though its form which becomes detached, leaving the characteristic ulcer beneath.

The changes that take place in Peyrœs patches
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are divided by Retziusky into four stages.

First, the congestive stage — second, the stage of the typhonic product of typhonic infiltration, and the crude state of the deposit — third, the stage of softening and rejection of the typhonic deposit, and fourth, the stage of the genuine typhonic ulcer.

In the first stage, he says that the glands and mucous membrane of the small intestine are swollen, congested, and of an opaque gray colour. In the second stage, this congestion is diminished. Peyer's patches become firmified and a peculiar matter is deposited in their tissue. This substance, Retziusky says, is deposited under the mucous membrane and in the submucous tissue without involving the muscular coat. In the third stage, the mucous membrane of the small intestine again becomes congested. The patches soften and the morbid deposit becomes converted into a reddish-gray medullary mass: a slough either results and becomes wholly detached, or the deposit is degenerated into a vascular fungoid mass.

It is at this stage that haemorrhage is apt to occur. When the slough separates, the characteristic ulcer is left exposed.

The characters of the ulcer are the following
* character
Its form is generally oval; its position in the intestine is longitudinal, very rarely transverse. I only recollect of having seen one case in which its position was transverse; the edge of the ulcer is well defined, smooth and free from any miliary deposit; the base of the ulcer is smooth and formed by a layer of submucous tissue.

It is of great importance to distinguish the typhoid from the tubercular ulcer.

In the first place, the position of the latter in the intestine is always transverse. Its form is irregular, and it has a peculiar puckered appearance. Its edge is ragged and very irregular.

Perforation of the intestine may result from these two forms of ulcer, and the manner in which it is effected is an important distinguishing feature. In the typhoid ulcer, it is caused by the extension of the sloughing, thus giving rise to destruction of the coats of the intestine, and not by the extension of the original miliary deposit. In the tubercular ulcer, on the other hand, it is caused by the increased deposition of the original miliary product in the submucous and muscular coats, ending, latterly, in tubercular suppurative of the peritoneal coat perforation.
The mesenteric glands almost constantly undergo the same morbid changes as take place in the "glandulae alminatae". They become enlarged, congested and tumid; their tissue is at first tolerably firm, and the same peculiar deposit is infiltrated into their texture which afterwards softens and becomes converted into a grayish red medullary substance.

Their colour, owing to excessive congestion is bluish red. After the thigths are detached from the glands in the intestine, the mesenteric glands decrease in size, but, according to Pobitansky, they never attain their natural size. But sometimes somewhat larger, and their colour is generally redder than natural.

Spleen

This organ is always altered in typhoid fever; its volume is considerably increased, and its texture is soft, pulpy, and of a dark purple colour.
The liver is dark in colour and its texture is much softer in consistence.

Heart

The heart is soft and flaccid, and its muscular texture is pale or of a "dirty red colour" (Rokitansky)

State of the urine in typhoid fever.

The urinary secretion is always more or less altered in typhoid fever: the daily amount of urine is considerably diminished, and its specific gravity generally increased. It is generally high-coloured, and more acid than in the normal condition. The amount of urea is increased, and in the early stages of the fever, the urine invariably deposits a large amount of urate of ammonia.

The presence of albumen in the urine is very rare in typhoid fever. It is believed by some to occur only in very severe cases of the disease. Its presence, however, is
certainly exceptional. I have only seen it occur in two very severe cases. In one case, which recovered, the urine was slightly albuminous towards the very close of the fever, in the other case, which proved fatal on the twentieth day, the urine from the thirteenth day presented the following characters.

On the thirteenth day it was of an amber tint with a mucous haze through it. Specific gravity was 1.025. Reaction more acid than normal — not albuminous. On the fourteenth day the urine presented the same characters.

On the fifteenth, it was of a higher colour, but not so hazy. Specific gravity 1.026 — still very acid — also very faintly albuminous.

On the sixteenth day the urine was very high-coloured, with slight mucous cloud. Specific gravity 1.028. Acid, faintly albuminous.

Being to the patient afterwards passing his urine involuntarily, it could not be collected in sufficient quantity to test it in a satisfactory manner.