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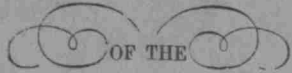
AN

INAUGURAL DISSERTATION,

*The Symptoms and
Differential Diagnosis
of the Greater Exanthemata*

SUBMITTED TO THE

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BY

E. P. Beeton

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CHARLES W. SMITH,

BOOKSELLER AND STATIONER,

NASHVILLE, TENN.



To

John M. Watson M.D.,
In Admiration of his High
Attainments in Medical Science,
and of his many virtues and
Excellencies, this Dissertation
is most Respectfully
Inscribed by
the Author.

Symptomatology and
Differential Diagnosis
of the Greater Exanthemata.

No disease or class of diseases demands more attention than the Exanthemata. The importance of a thorough knowledge of the various phenomena characteristic of these will at once be manifest when we take into consideration their extensive geographical area, the fatality of some of them, their sequelae, their contagiousness, and the fact that all ages, classes and conditions of mankind are

subject to their ravages. I have been induced to select the Exanthemata as a subject on which to write a Thesis not by the vain hope of advancing anything new, or adding to what has already been said, for indeed a Thesis on a subject purely medical is but a compilation of the writings and teachings of other men, but because I thought that the study and investigation necessary for the preparation of a Thesis would be as well, and perhaps better, bestowed here than elsewhere.

The diseases comprised in the term Greater Exanthemata are Varicella, Rubella and Scarlatina. In treating of these the symptoms

of each will be noticed separately, then the special or pathognomonic signs by which they may be distinguished from each other.

Before taking them up in this way a few things may be premised which apply alike to each of them. 1st They are essentially contagious, and although they sometimes prevail epidemically and sporadically, and we in many instances are unable to trace them back to their starting point, yet they begin, and are propagated by contagion and contagion only. There is a certain poison, peculiar to each, generated in the body of an individual;

This coming in contact with the blood of another, by inhalation, inoculation or cutaneous absorption, acts on this blood, causing it to undergo the process of zymosis, thereby generating more virus, and producing morbid phenomena analogous to those which existed in the first individual.

The potency of this poison depends not upon the amount or its concentration, but rather upon the "susceptibility of the blood" to its influence. 2d A certain period of time elapses from the exposure of the individual to the poison until the development of the disease; this is called the

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period of incubation, and
differs, of course, according as
the disease be Variola, Rubella,
or Scarlatina. &c. In each
there is a peculiar eruption on
the skin preceded by, and in
some accompanied with,
febrile phenomena; this eruption
appearing at a certain time,
running a definite course,
and disappearing at a certain
time; these stages differing in
each Exanthema. This
eruption at once distinguishes
them from the other idiopath-
ic fevers: &c. Persons having
had these diseases once, are,
thereafter, secure against their

ravages; to this however there
 are some exceptions; persons have
 been known to have a second
 attack, and cases are recorded
 of the third: about this there
 is all probability was some
 mistake; at all events, there
 was in these cases a greater
susceptibility than is usually
 seen, and at last, it may be
 stated as a general rule - that
 persons have Exanthemata but
 once. In this they differ from
 those contagious diseases which
 are communicable only by
 actual contact, as the venereal
 diseases, scabies, prurient
 ophthalmia &c; the former class

gives an immunity, whilst the latter, not only does not secure the individual, but also actually brings about a predisposition in this system to take the disease whenever he comes in contact with the virus.

The Exanthemata are self-limited diseases, and unless complications arise the "vis medicatrix naturae" is, in most cases, sufficient for the accomplishment of all that is necessary to restore the patient to health.

The first of these diseases claiming attention is variola. The period of incubation in

variola is usually fourteen days; during twelve of these nothing occurs which would induce us to suppose that the patient had been exposed to the variolous poison: at the expiration of this time rigors appear, then a chill followed by high fever with severe pain in the head and back, nausea and vomiting, sometimes coryza and excessive lachrymation. In the beginning there is sometimes delirium, and sometimes convulsions; the latter are of rare occurrence in adults, more frequent in children. When the pain in the lumbar region is very acute it is said

to be portentous of evil. The fever continues forty-eight hours, then the eruption makes its appearance, this consists of minute red points radiating from the center, arranged in a semicircular or circular form, appearing first on the forehead and face, then on the throat, and occasionally at the same time on the wrists, lastly, on the trunk and inferior extremities; this however is not always the case, the pimples are sometimes seen first on the trunk, and, in rare cases, on the extremities; but there is always a greater display of the violence of the poison on

The cranio-facial region than elsewhere. On the third day there is a deposition of lymph, and the granule is now converted into a vesicle; the vesicle now begins to undergo the process of maturation and is gradually converted into a pustule; while undergoing this process it increases in size and presents an umbilicated appearance.

This appearance is caused by the particle being bound down to the cutis vera by a small filament of areola tissue; the areola tissue around the base of the vesicle becomes inflamed. As the process of inflammation

goes on pus is formed in
 the vesicle; the little cord of
 areola tissue is disintegrated,
 and that which was an
umbilicated vesicle now becomes
 a projecting pustule. These
 changes usually take place
 between the first and seventh
 or eighth days of the disease,
 the fourth and fifth of the
 eruption. When the pustules are
 five or six days old they present
 two colors; "a central whitish
 disc of lymph, set in, or surround-
 ed by, a circle of yellowish graniform
 matter". It is thought that this
 "central disc" contains the most
 virulent portion of the poison.

About the eighth day a small black spot may be seen on the top of the joint, at this point the cartilage gives way; the granulated matter is discharged and desiccation begins; this begins first on the face and is said to be accompanied with a peculiar nauseous odor similar to that exhaled by the rattlesnake. There are two varieties of smallpox, the distinct and the confluent, these may be distinguished from each other by the following signs:— in the distinct variety the febrile phenomena subside upon the appearance of the eruption; in the confluent the eruption

appears earlier, and is confluent; the fever is greater in the beginning and continues after the rash has appeared, though in rather a modified form.

The fever of maturation is severer in this than in the distinct variety; the mucous membrane lining the mouth, fauces, larynx and trachea is frequently involved.

Rubeola. This disease was first described by Rhazes in the ninth century, but it is a remarkable fact that writers up to the time of Sydenham treated of it as but a form of scarlatina; by him it was

separated from the latter disease and its distinctive characteristics pointed out in the year 1680. This may be said to be a fever of a weeks duration; the first three days of which it exists in association with catarrhal phenomena, the remaining four with an eruption. The period of incubation in measles is from ten to fourteen days. The disease begins with the usual febrile phenomena, to which are super-added catarrh, a copious secretion from the Schneiderian membrane, sometimes excessive lachrymation, sometimes redness

and pain of the eyes without
lacrimation: this state of
things usually exists for seventy-
two hours, the first twenty-four
of which the fever is severer
than in the remaining forty-
eight; this time having elapsed
the fever, as a general rule, is
increased, and with this in-
crease comes the eruption.

According to some authors the
catarrhal symptoms now fade
out, according to others they,
not only do not fade out, but,
in some cases, are actually
increased. It however appears
that the weight of testimony is
in favor of those who say

that with the appearance of the eruption there is a subsidence of the cataract. There is a hollow cough and a peculiar brilliancy of the eyes, said to be, characteristic of measles. The

eruption comes out suddenly, the pimples are of various sizes, of a dark, dingy red color; somewhat elevated, more so in the negro than in the white man: these pimples may be seen on the mucous membrane of the fauces twelve or twenty-four hours before elsewhere; then a few spots appear behind the ears; then on the face and neck; and finally,

on the trunk and limbs. The papules in their progress enlarge, coalesce and form large, irregular, semilunar patches with healthy interspaces. In three or four days the fever begins to decline, desquamation begins and, if no complications arise, the patient soon recovers.

Scarlatina. Of this disease there are three varieties, Scarlatina Simplex, Scarlatina Anginosa, and Scarlatina Maligna.

Although scarlatina has been thus divided by authors yet each variety is dependent on a cause common to the others, and in this respect

all may be said to be one and the same disease. The period of incubation in scarlatina is from four to six days; this time having elapsed there are febrile commotion, gastric phenomena, inflammation of the mucous membrane of the mouth, fauces, pharynx &c. The tongue is red at the tip and edges, and, although covered with a white or whitish yellow fur, it presents numerous projecting red papillae. The rash makes its appearance first on the body, then on the face, and neck. Most authors say that the eruption appears first

on the face and neck, then on
the trunk and extremities, but
by an early and careful
examination it may be seen
on the trunk before elsewhere.
The eruption consists of
very minute, intensely red points,
thickly set, near, as in measles,
crascentic, is not elevated but
presents a smooth surface,
differing in this respect also
from measles. Sometimes mili-
ary vesicles are found in
connection with the ~~eruption~~,
~~but~~ their presence or absence
is a matter of no consequence.
A burning, itching sensation
also attends the eruption.

The color of the rash is most intense when the fever is highest. The fever in scarlatina does not subside upon the appearance of the eruption, but continues and often increases in violence; the pulse is more frequent than in other febrile affections of like character; the skin is remarkably hot, the temperature of the body is sometimes as high as 112° Far. In some varieties the throat is but slightly affected; in others frightfully so. The symptoms of scarlatina usually begin to decline in about a week; desquamation takes place,

and, if nothing unpleasant occurs, the patient is soon restored to health again.

Scarlatina Simplex may be distinguished from the other varieties by its mildness; in this variety there is simply a slight febrile reaction, slight inflammation of the mucous membrane of the mouth and fauces, and the scarlatinous eruption. Scarlatina Anginosa. In this form both the skin and throat are affected; but the prominent symptoms, and those most to be feared are, inflammation of the throat and adjacent parts; the

viscous membrane of the fauces,
larynx, eustachian tube some-
times extending to the tympanum.
Sometimes there is epistaxis,
sometimes an acid, fetid
deflexion from the nose. In
^{the} variety of scarlatina there is
swelling of the parts in the
region of the larger salivary
glands, either the parotid and
submaxillary glands them-
selves, the adjacent lymphatic
glands, or the surrounding
areolar tissue. The eruption, as
a general rule, does not appear
as early as in the simple
form, is less abundant, some-
times disappears, and then

reappears again; the febrile
~~and cerebral~~ phenomena
are more severe. Scarlatina
Maligna. This is the most
fearful and fatal of
all the varieties of scarlatina.
Sometimes the sufferer is over-
whelmed at once and dies
in the very beginning of the
disease; at other times persons
of a powerful constitution are
enabled to withstand even
this form of the disease and
at last recover. Often in
Scarlatina Maligna there is
no eruption at all, and
when it does appear it is
but partial. There is a great

tendency to gangrene and
 sloughing; the sub-cutaneous
 areola tissue is sometimes
 destroyed; sometimes there is
 destruction of the eyes and
 internal ear. The term malignant
 is very applicable to
 this form of scarlatina;
 either of the other varieties
 may terminate in this, though
 this, perhaps, is very rare.

From this imperfect con-
 sideration of the symptoms of
 the eruptive fevers I proceed
 to a brief notice of the signs
 by which they may be
 distinguished from each
 other. The subject of

Differential Diagnosis, not only of these but of all other diseases, is worthy of particular attention on the part of the student of medicine. Discrimination is one of the highest accomplishments of the young physician; indeed it is this that distinguishes the real physician from the mere quack. The fame and fortune of the young physician often depends on his powers of discrimination: he therefore while a student should cultivate those powers with assiduity and study diagnostic signs with untiring energy and unremitting perseverance. With an apology

for this digression I resume the
subject beginning with
Smallpox. The initiatory fever
of smallpox cannot be distinguish-
ed with absolute certainty from
any other fever. If, however, there
be severe pain in the back,
exceptive gastric irritability for
which no cause can be found,
and if the individual have been
exposed to the variolous contagium
some twelve days previous, we
may infer that he is laboring
under the breeding fever of small-
pox; but because of the little
charity shown the physician
by the unlearned he should
withhold his opinion, especially

if he is a young man, however,
 after the expiration of about
 forty-eight hours, during which
 the fever has continued, there
 should appear on the face
 and neck small red pimples,
 arranged in a circular or
 semicircular form, the fever
 at the same time disappearing,
 and if on the third day there
 should be a deposition of
 lymph, and the vesicle assume
 an umbilicated appearance,
 he may pronounce it most
 indubitably a case of smallpox.
 To the observant physician
 the arrangement of the pimples
 is, in many cases, a sufficient

diagnostic sign. The only one of the major exanthemata with which smallpox is likely to be confounded is measles.

The disappearance of the fever in the distinct variety would enable us at once to distinguish this form of the disease from measles. The confluent variety

may be distinguished by the following signs - in smallpox the eruption makes its appearance in about forty-eight hours after the beginning of the fever; in measles not until the expiration of about seventy-two; in measles there are catarrhal phenomena; in smallpox usually

more. The variolous eruption does not come out so suddenly nor so abundantly as the scarlatous; the pimples are confluent, more elevated, harder; from pimples they are converted into vesicles, and from vesicles into pustules; the scarlatous pimple undergoes no such change. By these signs they may at all times readily be distinguished from each other.

It now only remains to speak of the differential diagnosis of measles and scarlatina, and for the sake of brevity both will be considered at once. As in smallpox it is

difficult to diagnose the initial
fever of these diseases, yet there
are some signs which would
enable us to form, but in no
case to express, an opinion; these
are the length of time since the
exposure of the individual; it
however frequently happens
that the history of the case
cannot be had; then the
period of incubation of each
disease, be it of whatever impor-
tance it may, is of no avail:
but there are other more impor-
tant and much more reliable
signs given out in Linnæus;
these are, in measles, the catarrhal
phenomena, the nasal secretion,

the excessive lachrymation, the peculiar brilliancy of the eyes and the absence of the throat affection: in scarlatina the presence of the last named symptom, the frequency of the pulse, the great heat of the skin and the condition of the tongue and fauces.

When the efflorescence appears the diseases are easily distinguished. This in measles, as before stated, comes out in about seventy-two hours after the beginning of the fever; in scarlatina in twenty-four; it appears in measles first on the face and neck; in scarlatina first on the

trunk, than on the face and neck. The urticulous eruption is sudden and copious, the pimples are of various sizes, slightly elevated, somewhat eccentric, leaving healthy interspaces, one of a dingy red, redder where the part is exposed to the atmosphere than where it is covered. The scarlatinous eruption presents itself in minute extremely red points of uniform size, not elevated but presenting a smooth surface; the points soon become crowded together, are much redder than in measles, the redness is uniform on the surface, no healthy interspaces are

to be found; the spots are redder than the surrounding surface, and are of a deeper shade on those parts which are covered than those which are exposed to the atmosphere. There are other diagnostic signs such as the manner of disquamation, albuminous urine, destruction of blood disease, but these are seen too late to do more than confirm the diagnosis.

E. P. Beeton.