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The Diagnosis of Small-Pox

Theses for M. D.

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The Diagnosis of Small-Pox

The importance of distinguishing cases of small-pox, as early as possible in their course, from those diseases with which they are liable to be confounded is very great and the more so as the science of preventive medicine progresses.

During my residence in a small-pox and general fever hospital I was very much struck with the number of cases sent in wrongly diagnosed as small-pox - The difficulty arises probably from the fact that small-pox is a comparatively rare disease - though unfortunately not quite so rare during the last few years - and so diagnosis is based on experience of those diseases with which it is liable to be confounded with none or little experience of small-pox itself.

The diseases most often wrongly diagnosed as small pox are the following, the frequency of mistake occurring in the order in which they are given —

Chicken-pox
Syphilis (Pustular)
Measles
Acne

I have also seen a case of Typhoid Fever mistaken for Small-pox, and one of Papular Syphilide diagnosed as ~~that~~ a case of that variety of Small-pox known as "Horn-pox".

Looking at the other side of the question viz. the diagnosing of cases of Small-pox as some other disease, I have only seen this occur once when a very discrete modified case was supposed to be a case of chicken-pox

The diagnosis of "Measles" from "Small-pox"

I would be inclined to consider measles at that particular stage when liable to be confounded with small-pox as the disease most difficult to distinguish from it. The appearance of the rash on the third day in small-pox and only one day later in measles, and often in measles it is impossible to get at the exact day on account of the gradual commencement of the attack; The appearance of the rash first on the face in both diseases; The close resemblance of the rash on the face, when fully developed, ~~in~~ in a papular case of measles with the rash at a certain stage in some cases of small pox — papular, red, swollen — differing only in degree and tint; The presence of catarrhal symptoms in both diseases; These facts together with the possibility of severe symptoms at the commencement of cases of measles lead to the difficulty of diagnosis

Measles is <u>most</u> likely to be confused with small-pox on the fourth day, that is, on the first day of the appearance of the measley rash, especially if the spots be very papular but a difficulty presents itself during the whole period from the first appearance of the rash till it begins to fade on the face.

In endeavouring to arrive at a correct diagnosis it is of great importance to enquire into the character of the commencement of the attack — Did it begin suddenly with a rigor possibly so that the patient had to "take to bed" within a few hours — This sudden onset

is very characteristic of small-pox - the patient is able to give the exact day and almost the exact hour when the attack commenced - it is not so in cases of measles, in those cases that I have seen confused with small-pox there was a decided indefiniteness about the onset of the disease so that it was different to tell the exact day of the disease on which the rash had made its appearance - The commencement of the attack then in measles is gradual the patient does not take to bed till possibly the third or fourth day.

A history of vomiting and diarrhoea during the initial stage would lend weight to a diagnosis of small-pox, though they may usher in an attack of measles they are ~~not~~ a very constant occurrence in cases of small pox especially in the adult - Vomiting is perhaps the more constant as constipation is often noticed.

Headache and backache at the beginning of the attack of such severity as to lead to special complaint from the patient are prominent symptoms in many cases of small pox. In cases of measles as in most febrile diseases there may be headache and backache but severe frontal headache and severe lumbar and sacral aching or pain are characteristic symptoms of small-pox though not invariably present.

Epigastric pain and oppression are often complained of by patients suffering from small pox before the appearance of the rash - if present they point to small pox

On the other hand there are symptoms occurring in the initial stages of measles which help in distinguishing it from small-pox - These symptoms arise chiefly in connection with catarrh of the respiratory tract.

Distinct croupy cough with marked coryza sneezing watering at the eyes, injection of the conjunctivae, puffiness of the eyelids would point strongly to measles, intolerance of light is also often marked in cases of measles. In small-pox these symptoms may be present but in a much less degree, sneezing and snuffling are not usually present at all, there may however be slight coryza and watering at the eyes and redness of the conjunctivae but not to the same degree as in measles.

Again the day of the disease on which the rash makes its appearance is of importance In small-pox the rash almost invariably makes its appearance on the third day - It may be delayed till the fourth day in mild cases but these are not likely to be confused with small-pox. In measles the rash makes its appearance on the fourth day i.e. one day later than in small-pox. In all cases of small-pox it is usually distinctly determined as to the exact day of the disease that the rash appears, if there is any doubt measles must not be excluded too quickly. In three cases of measles that I have seen diagnosed as small-pox it was extremely difficult to decide as to whether the rash appeared on the third or fourth day of the disease (The rash of measles is said to appear sometimes on the third day).

Again in cases of small-pox on the

, appearance of the rash all the symptoms are ameliorated, the temperature falls may be to normale and the patient feels better, while in measles the symptoms are at their worst, the temperature rises a little higher if anything and the patient feels no better.

The difference in the character and situation of the rash in the two diseases is helpful in the greatest degree. In small pox distinct spots will be found making their appearance on the mucous membrane of the mouth and pharynx, which spots contrasting with the red mucous membrane, in measles no such spots will be found.

With regard to the difference in the character of the rashes, it will be found that in measles the spots are not so distinctly elevated as in small pox and not so shotty to the feel, the face itself is not so swollen though the eyelids may be puffy and the colour is a darker red than in small-pox.

There is usually after a few hours distinct swelling of the face in small-pox and this gradually increases, while in measles any slight puffiness quickly subsides.

Again in measles typical measley patches will almost certainly be found on the chest or back patches of eruption with clear skin between; in small-pox the spots are more evenly distributed and more decidedly raised and shotty.

There are certain accidental points which often give valuable aid - Should the patient be a well vaccinated child the case is most probably one of measles and so also if the case be a recently well vaccinated adult - If the patient come from a district where small-pox is prevalent then small-pox must be repor-

In illustration of the confusion of measles with Smallpox the following notes of ~~two~~ cases may be given –

Case I.

M.W. a German, aged 24.

Admitted into Hospital as suffering from Smallpox.

On admission the face was covered with a red papular rash, the whole face was slightly swollen Conjunctivae red, there was lacrymation & photophobia Coryza and cough. Temperature 103°7.
The body was covered with a slightly papular red rash.
The history of the attack was that he had been ill 3 or four days – The rash appeared on the third day(?) He had not taken to bed at all though he had been feeling ill – He had not been revaccinated. He came from an infected district.

In this case the points leading to confusion were the close resemblance of the rash on the face with the rash of smallpox, the swelling of the face and the history of the rash appearing on the third day & his coming from an infected district.

On the other hand it brings out prominently the many differences from Small pox – The croupy cough coryza, photophobia & lacrymation – The high temperature on the appearance of the rash The vague history of illness before the rash the patient not having been in bed – In this Case it was extremely difficult to fix the exact day on which the rash appeared – again on the chest the typical measley rash was found

well in mind.

After consideration of all the foregoing points should there still be a doubt the last and unfail resource is to wait for twelve to thirty-six hours by that time if the case be one of measles the rash will have subsided on the face while if it be one of small pox it will have developed still further.

The diagnosis of "Chicken-Pox" from "Small-Pox"

The disease most often mistaken for small-pox is certainly chicken-pox if however the points of distinction be kept clearly in mind there ought to be little difficulty in arriving at the correct diagnosis.

At any stage in the course of a case of chickenpox it may be liable to be confused with small-pox - also case of very discrete modified small-pox may be mistaken for chicken pox.

It is of particular importance to inquire into all the course of the attack previous to the appearance of the rash —

In many cases of chickenpox the discovery of the spots is the first intimation that the patient is ill and in other cases the symptoms

before the appearance of the spots are slight and of only a few hours duration. In small-pox on the other hand the symptoms previous to the appearance of the rash are severe and prolonged through out-two days, there is rise of temperature, headache backache, vomiting, malaise and the patient has most probably been confined to bed — In an outbreak of chicken-pox among convalescent scarlet fever patients during my residence in hospital the temperature of all convalescents was taken night and morning and any with a rise of temperature were isolated immediately but in no case did we succeeds in detecting ~~a ca~~ chickenpox before the appearance of the spots and as a rule the patients seemed perfectly well till the spots appeared. The characteristic temperature of small-pox would not be observed in a case a chickenpox.

Again the distribution of the ~~rash~~ spots in the two diseases is different — In Chickenpox the spots are situated chiefly on the body, on the front and back of the chest, they also appear first in these parts, and though later in the disease they may appear even thickly on the face yet for the same number on the body in a case of small-pox you would expect a greater number on the face, in others words the spots are most abundant on the face in small pox while they are most abundant on the body in Chicken pox. It is also on the face that the spots in small pox first make their appearance. In Chicken pox the spots come out in distinct crops.

Passing on to the character of the spots in the two diseases -

In chicken pox the spots are vesicular in a few hours from their first appearance and probably are vesicular when first noticed, they then present the typical characters - tense, clear vesicles not flattened on top but rounded, unilocular, rising abruptly from the skin, not set on a raised base but with a narrow red circle of hyperaemia; In twelve to twenty four hours the spots begin to dry in.

In Smallpox on the other hand the spots remain papular for two days — the patient will not describe them as looking like little blisters — They then slowly become vesicular first at their apices — The typical smallpox vesicle is more opalescent than the chicken pox vesicle, it is flat topped, multilocular, set on a distinctly raised infiltrated base - this last characteristic is very important & becomes even more distinct as the spots become pustular. The vesicles become slowly pustular and do not begin to dry in for several days - the eighth day in an unmodified case, a little earlier if modified.

In Chicken-pox in twelve to twenty four hours from their first appearance any given spot begins to dry in, becoming yellowish then flaccid & drying in gradually after two or three days leave a thin scab - The spots appear in crops in Chicken pox and so at a given time in the course of the disease you may have spots in different stages of development - some vesicles some yellowish and flaccid & some scabbed - It will also be found that the spots vary very much in size

On comparing these last characters with the small pox spots we find that they gradually become pustular first on the face then gradually dry in without becoming so distinctly flacid they dry on from above downwards leaving somewhat thicker crusts than the scabs on chicken pox. Again it will be found that the spots at any given time all present the same characters, they are also more uniform in size on any given part of the body.

In chicken pox then scabs are present in thirty six hours from the first appearance of the vesicles while in small pox they are not present for at least eight days from the first appearance of the spots.

With regard to the general condition of the ~~rash~~ patient after the appearance of the rash, In chicken pox there is probably only slight malaise for a day or two with furred tongue & rise of temperature subsiding in a couple of days the patient is then practically well. In small pox the temperature falls perhaps to normal on the appearance of the spots and if the case be discrete & unmodified the patient may convalesce, if not the temperature will again rise with suppuration and the patient pass through a more or less prolonged illness. Thus chicken pox runs a much shorter course than small pox.

Accidental accompaniments are here of even greater import than in the case of diagnosis between measles and small-pox If the case be a well vaccinated child below five years it is almost certainly a case of Chicken pox - or if a recently revaccinated adult

The follow are notes of the case of chicken pox which was found most difficult to distinguish from ~~Chicken pox~~ Smallpox.

A.B. a tobacconist aged 37. admitted as suffering from Smallpox.

On admission patients face and body and limbs were found thickly covered by yellow pustular looking spots. His temperature was normal tongue slightly furred. He felt well. appetite good.

The history of the case was that the spots had appeared two days previous, he had never been ill & would have gone to work except for the unsightly appearance. On their first appearance the spots resembled small blisters. He had never been vaccinated.

In this case the misleading point was the remarkable resemblance of the man's appearance to a case of small pox on about the 13th day of the attack — but other points rendered the diagnosis of Chicken pox certain.

The diagnosis of "Syphilis from "Small pox"

There are two forms of Syphilitic skin eruptions that I have seen mistaken for small-pox. The commoner was the "Pustular Syphilide" and the less common a "Papular Syphilide" mistaken for that variety of Small-pox known as "horn-pox" - This later mistake could only have occurred to one well acquainted with small pox, as a matter of fact the case was sent into hospital by a former visiting physician to the small pox hospital.

The following are two cases of pustular syphilitic eruption sent in to hospital as small pox they serve to bring out the essential points of difference.

(1) A.B. a sailor, aged 21, was admitted as suffering from small pox -

On examination one or two red papules with an equal number of pustules - small, acuminated, on red raised bases —— were found on the face.

The body, front & back, was thickly covered with papules & pustules - There were also a few on the legs and arms. There were none in the palms of the hands or soles of the feet or on the fauces.

The throat was not inflamed - The tongue was slightly coated. Temperature 101° F.

The history obtained from the patient was as follows — He had been ill a couple of weeks with headache & pains in the limbs chiefly at night - also loss of appetite; Sometimes he felt very well for a whole day.

The spots have been present on the body for two weeks, they have come out in crops - He has had slight ~~th~~ sore throat.
He has been treated for a chancre.

(11) C. D. a Labourer - aged 37 - sent into hospital as suffering from small pox. Has felt ill for three days - two days ago the spots appeared on his face.
On examination - Three scabbing patches are seen on the face - one on the chin, one on the forehead & one at the angle of the mouth. Here & there on the body a pustule can be seen. The throat is slightly sore - Patient - looks anaemic.

These two cases serve to illustrate many of the points on which diagnosis is based.
There is a want of the definite small pox history & course - Sudden illness with severe symptoms of three days duration, with rash on the third day &c -
In the first case the patient has been ill at intervals for two weeks, at times he has been very much better. Again there are still papules present among the spots, were it a case of small pox we would expect to find scabs.
In the second case the patient has been ill three days only - the spots appeared on the second day & have already scabbed.
The rash in neither case has run the course of the rash in small pox viz. papule - vesicle pustule, scab.

The first case illustrates the multiple character of the rash in Syphilis - papule & pustule at the same time present -

Again the rash in Syphilis may come out in crops as in the first case noted.

The distribution of the rash in both cases is different from the distribution in Small pox.

In the first case there were abundant spots on the body with few on the face.

In the second case the rash was gathered into two or three groups on the face.

Again In the first case the spots appeared in crops thus differing from small pox -

also in this first case there was a history of Syphilis.

I would admit the possibility of the occurrence of a case of Syphilitic skin disease so closely resembling Small pox in history &c as to be with great difficulty distinguished from it -

The notes of the case of Papular Syphilide are briefly as follows.

E.T. widow. aged 40. admitted into hospital with the right side of the face thickly covered with small sized papules; there were no papules or any eruption on the body - The patient did not feel ill - The duration of the disease was four weeks - The papules made their appearance gradually but had maintained the same appearance after the second or third day except that the side of the face & the spots on it

resembled closely the appearance of the face with the spots in a case of "Lorn pox" there was no other feature which could have lead to confusion.

The cases of "Horn Pox" which I have observed may be described as modified cases of Small pox, the spots becoming pustular rapidly and ~~so~~ scabs form, these become detached quickly but leave solid papular bases chiefly on the face - they give the appearance of warty elevations - they disappear gradually without further desquamation becoming absorbed in about 10 days.

In all these Cases of syphilis

The History and Course differed from small pox -

The Characters & distribution of the rash and its development were different.

A history of syphilis - sorethroat, falling out of the hair, chancre &c may be obtained from the patient -

The want of the well recognised symptoms of small pox.

Again the accidental point as to vaccination would be important - a well vaccinated child below five years of age would point against - Small pox and Similarly a recently revaccinated adult.

Lastly the effect of treatment will be obvious in Cases of syphilis.

The diagnosis of "Acne" from "Small-pox"

In the case of a patient suffering from "acne" Eruption the history of the case is of importance – Here is altogether wanting the typical history of a case of small pox from the initial symptoms to the pustular stage, and instead a history of fair or good health without acute illness in a young adult with successive crops of papules & pustules, extending over a long period –

The distribution of the eruption in acne is often striking it may be most abundant on the face and shoulders with little any where else.

Again the typical black apical specks may be seen in some of the pustules or papules.

Also papules & pustules will be found existing side by side with each other; the papules gradually becoming pustular without any vesicular stage.