

figures may also be seen; (5) nucleated red cells are usually found. From this it is to be seen that the distinguishing features are not only the presence of myelocytes, but also the increase in the mononuclear cells of all three varieties of granulations, with atypical forms, and with nucleated red cells.

Lymphatic leukæmia may be acute or chronic and in either of them the leucocyte count is usually less than in the myelogenous form. The characteristic change in the blood is the tremendous increase in the lymphocytes; while in healthy blood they constitute less than 30 per cent. of the whole number of the white cells, in lymphatic leukæmia they form over 90 per cent. of the total leucocyte count. There is also a slight increase in the polymorphs, and myelocytes may be present in rare cases. Nucleated red cells are not so abundant as in the myelogenous type.

In regard to the staining of blood specimens for examination under the microscope, while each stain, such as eosin and methyl blue or eosin and hæmatoxylin, Ehrlich triacid or Ehrlich neutrophilic and the others, have each a special advantage, I find that for ordinary routine work—principally on account of the rapidity of the fixing required and the uniformly good slides produced—that Jenner's stain is the best. It is a solution of eosinate of methyl blue in absolute methyl alcohol.

If I have succeeded in interesting you for a time the object of my paper will have been attained, the attempt having been to give you a general view of the part taken by the white blood cells in disease.

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Original Communications:

THE SMALLPOX EPIDEMIC—PERSISTENCE OF THE CONTAGIUM OF SMALLPOX.

By A. P. REID, M. D., L. R. C. S., Middleton, N. S., formerly Secretary of the Provincial Board of Health.

In common with the states and provinces to the east and west of us, we have had an invasion of smallpox that bids fair to become endemic unless more stringent efforts are made towards having the community protected by vaccination.

The chief reason for this attack continuing so long is chiefly due to two causes—the mildness of the malady, and the desire to believe that it is not smallpox—so that there is a habitude in adopting those measures that would be promptly applied if different conditions prevailed.

Even some of our confreres have abetted the dilatoriness and indcision by assuming that it was chicken-pox or some other eruptive disease.

This is no doubt due to a want of familiarity with the conditions under which variola presents itself. These are four:

1st. *Variola discreta*—mild smallpox where each pustule is independent. Constitutional symptoms in no case severe, in some even trivial, and in which death is very, very rare.

2nd. *Varioloid*—similar in every way to the above, but with a previous history of vaccination, or perhaps a mild attack of smallpox.

3rd. *Variola confluens*—the ordinary severe type of the disease, where the pustules on the face and sometimes on other parts of the body tend to run together, with very marked inflammation and injury to the skin, with sometimes diffuse cellulitis and constitutional symptoms so severe that death in from 20 to 40 per cent. of cases results, owing to debility showing itself on the heart's action, on the kidney, on the lungs, or from profuse suppuration, etc., etc.

4th. *Variola hemorrhagica*—where pustules are rarely seen, their place being filled by petechiæ, hemorrhagic effusion, death taking place very early in the attack, a case of recovery being so extremely rare as to be denied by many authorities.

From what I have seen of the disease here they were cases of the first and second type, which ran the ordinary course and were in no

way different from the peculiarities of the type. I saw two cases of confluent, one died and one recovered after a close call, and several more were reported with two other deaths. But what I would particularly desire to note is that each confluent case was the result of contact with other cases that were of the mildest type, and in some cases so mild that even the disease was not suspected, and it was difficult to trace the origin of the infection. The question of diagnosis has apparently been the crux of the situation, but I think a little observation would have solved the difficulty. I am not aware of a single well authenticated case where the disease was contracted by any one who had been successfully vaccinated, and we know that vaccination only protects from the variola toxine or infection.

A medical friend who had doubts of the attack being smallpox gave me his reason—"he had successfully vaccinated a family of five, and one of these cases had, as he supposed, contracted the prevailing malady after vaccination, and pustules appeared on shoulder and one leg in the vicinity of an old ulcer." I asked him if he had noticed that the supposed invasion was or was not coincident with the vaccination. He said it was coincident. This solves the enigma, because we know that as a result of vaccination we now and then see a crop of pustules break out at a distance and not directly connected with the vaccination marks. In the case in point very likely some inherent debility in the parts near the ulcer determined the locality of the pustules, which were an indication of the influence of the vaccination on the economy of the patient, the thing which we desire to bring about in every case, but not often so clearly visible. There were many other symptoms that clearly differentiated the malady, but as these are well known, I need not take up space with a recapitulation.

There is one view that I would specially desire to be made prominent in reference to vaccination. When I was urging on the people the necessity of vaccination, I was informed they considered vaccination more painful and annoying than the disease; that in the one case they were often two and three days sick and with a sore arm, and in the other they could go about all the time.

Looked at from a purely personal aspect there was reason in the objection, but from the point of view of the community or the public health it was lamentable. Good vaccine should cause but little annoyance, but in any case, protection of the community by the

disease means not only that it becomes endemic and keeps some of the people always sick, but they are a menace to every one with whom they come in contact, and would be quarantined wherever they went—sick or well. Again, any case of smallpox, mild or otherwise, may be a continuous source of disease for a period of two months.

Vaccination, while protecting, can not convey disease unless by direct inoculation, and it matters not how many cases of vaccination may be concentrated in a locality for they cannot become a source of disease to others.

Had we a severe type of disease every one would be scared, and there would be a rush to adopt any means of protection. As it is, the rush is the other way, and a general vaccination does not exist in the province, though some communities are much better protected than others. It looks very much as if it will take the sacrifice of many lives and a complete stagnation of business before argument will convince the people that it is in their power to avoid both, or that they can absolutely ward off an epidemic which, if it appear of a serious type, will leave a trail of death and affliction in its course.

The persistence of the contagium of smallpox is a question about which there is difference of opinion. And this is a matter of import, because on its correct knowledge depends the proper method of disinfection and the period at which a patient recovering from smallpox is safe to be given liberty of free association with others.

The following paragraph shews that under favorable conditions—darkness, dry air, and a confined locality, it is capable of retaining its virulence for twenty-seven years.

This is copied from the *Indiana State Board of Health Bulletin*:

PERSISTENCE OF SMALLPOX INFECTION.

Miss Minnie Peterson, 39 years of age, died last Monday, April 6, 1903, near Scipio, of smallpox. Her remains were brought to Brookville for interment, the funeral taking place yesterday.

The manner in which Miss Peterson contracted the disease is curious and shows that people can not be too careful in destroying contagion. We are told that her father died of smallpox twenty-seven years ago at Yung, this county, where the family then resided. The clothes he wore while ill were put into a trunk, which was locked and kept among the household effects all these years. After

her mother died, not long since, Miss Peterson set to work to clean up, and in overhauling the things about the house opened this trunk and handled the contents. In this way, it is asserted, she contracted the dreaded smallpox and lost her life.—*Brookville American*.

Coming down to every day experience I will give an instance that in so far as I can make out is reliable:

A Mr. T. — came from New York to Church Point, Clare, having a certificate from the infectious diseases' hospital in New York that he was admitted there on December 24th, 1900, and was discharged well, thoroughly bathed and disinfected (?) February 28th, 1901. He came home by Boston, and two weeks after his return, his brother, with whom he slept, contracted smallpox, and also every member of the family, but owing to strict quarantine, no other case of the disease occurred in the locality.

I wrote twice to hospital in New York, but got no answer.

A Mr. X— took a business trip to Boston from Kentville; was away two weeks and returned, never having, as far as he knew, any association with any source of the disease. However, he came from Boston in the same steamer with the above Mr. T. —, but had no special relations with him.

A fortnight after his return Mr. X— had malaise, but not confined to bed, and his doctor suspected nothing. His daughter also got sick, but with symptoms not sufficiently pronounced to cause suspicion. A friend, Mr. M—, with whom Mr. X— was very intimate, got sick, and Dr. M— asked me to see the case. On doing so I had no hesitation in diagnosing smallpox with great probability of its being confluent. This took place, and he died in ten days' illness with smallpox of most severe type.

Miss McC— taught school some miles from Kentville, where there had not been any of the disease. She, however, contracted smallpox of virulent type and died. The only explanation that appears in this case is that probably some protected child had attended the school and conveyed the disease. I can conceive that the harmless lead pencil which is so often carried to the lips may have been a vehicle by which Miss McC— contracted the disease.

A Mr. Y— was at work in the gravel pit on railway at Kentville, at which, as far as he was aware, no person with the disease was present. He went home to Bridgetown and had a very high temperature (105°) for three or four days. I was consulted. The face

was suffused, etc., but no appearance of papule or *shot under the skin*. The ordinary precautions were instituted as a matter of prudence. Next day granules could be felt under the skin of the forehead. A confluent case of smallpox developed and he barely got through.

Strict precautions and quarantine prevented any spread of the disease.

So I might go on with numerous examples, but they would all go to show that strict quarantine and disinfection are matters of business not sentiment, and that the custom adopted of requiring the strict seclusion of a smallpox patient for two months after the crusts or scabs fall off is as soon as it is safe to allow such a patient to have full liberty, and even then it is necessary that more than ordinary care be taken in disinfection of the domicile, clothing, bedding, etc., as well as of the person of the patient.

It is surmised that the exfoliation of the skin contains the contagium in its most virulent form; but, even when the epidermis has been removed, the next covering is still virulent though likely in a less pronounced form.

Each subsequent exfoliation is less virulent, but even two months after there is not the certainty there is no contagium, though it is not probably present in a dangerous form.

Very likely in the first case mentioned, had Mr. T— not slept with his brother the disease might not have been propagated, for we can conceive that such close contact would permit the inhalation of the exhalations from the skin and epidermic scales which were specifically contaminated, which under other circumstances might not have been productive of disease.

This department of the sanitation of smallpox is apt to be lax and may to some extent explain the wide distribution of the disease in the eastern part of the province.