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transmission of leprosy by mosquitoes

Adolpho Lutz
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Seventeen years have now passed since I attempted to give a detailed explanation of the reasons which speak in favour of the transmission of leprosy by blood suckers especially the Culicidae which enter human dwellings. This point of view has not been discredited; on the contrary, there has been a considerable increase in the number of diseases of men and animals in which transmission is exclusively due to blood suckers, except when inoculation is willfully resorted to, for scientific experiments. Several diseases recently studied are ascribed to rickettsias, which are very akin to bacteria but cannot be cultivated in the common nutrient media. Besides plague there is now tularemia, which is due to true bacteria. More than a dozen infectious human diseases have been shown to be carried by mites and insects, especially by Diptera.

I have called attention to the fact that the absence of an infectious but not contagious disease from certain regions indicates clearly that the transmitters are absent or at any rate that they are very rare, whereas they are very abundant in endemic foci. This is the reason why leprosy does not spread in the large capitals of Europe. It is also the reason why one, or a few patients, can produce a considerable endemic focus within a few years in one place, whilst elsewhere a larger number of patients may live in contact with healthy individuals without infecting them.

This is quite clear in regard to yellow fever. I would say, however, that many people have not grasped the scope of the lesson provided by it.

Leprosy is in the same position as yellow fever with the sole difference that it is a very chronic disease with a long period of incubation, which should not however prevent one from seeing such clear similarities.

I have also mentioned before that in Hawaii, one of the most intense foci of leprosy, the only blood sucking insects which can be accused of transmitting leprosy are the two mosquitoes which are common in houses; other blood suckers are either absent or belong to such common species that they extend to regions free from leprosy. The great abundance of these mosquitoes is in agreement with the large number of lepers, and these are much more common among the natives, who do not use mosquito nets, than the foreigners, who protect themselves as much as possible.

When one knows leprosy well or observes it carefully, one cannot fail to understand that neither the mucus of the nose nor the secretions of ulcers transmit the disease, but that the mode of infection is less brutal and more insidious. I have quoted several cases among girls of good families which had immigrated to Brazil from leprosy free countries. These girls, who had never seen lepers, acquired the disease in S. Paulo, where there were non isolated cases. The same thing happened to a distinguished elderly man, who

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also did not know any lepers, after he went to live in a house near a leprosarium. The first spots were on the face.

I explained on former occasions that transmission is not easy, probably because mosquitoes are only infected by patients who have the germ circulating in the blood, which seems to coincide with periods of fever. In these cases it is not necessary that acid-fast bacilli be present in the blood, the granulations being enough. I called attention to these granulations in 1886 and considered them as conidia, giving the generic name Coccothrix to the germs of leprosy and tuberculosis, a name which has undoubted priority over the later one of Mycobacterium leprae.

I have never claimed that I was the first to think of the transmission of leprosy by mosquitoes. As in yellow fever, the theory goes back to the days when the role of insects in the transmission of diseases was almost unknown. I have however presented new arguments in favour of this thesis, which were approved of by a number of distinguished colleagues though the majority remained indifferent to them. Among leprosy specialists almost no one understood its possibilities, preferring to follow old methods which never gave any results. It is true that in some leper settlements windows are now screened, but this is the exception rather than the rule.

On the contrary, doors are closed on the lepers but the windows are left open for the mosquitoes to fly in.

At the present time, anti-mosquito prophylaxis is the most important task in the fight against leprosy, since not even the most extreme optimists can really hope to eradicate leprosy by the available therapeutics.

Nor is it necessary to await actual demonstration of the transmission of the bacilli, which is still difficult because of four main factors:

1. We are unable to distinguish whether the living germs are able to transmit the disease from the dead ones.
2. Good and easy processes of cultivating the germs are wanting.
3. We do not have an animal which is easy to inoculate.
4. Biological proof to allow the recognition of whether the disease is active in suspect cases and whether apparent cures are real is also wanting.

Until these desiderata are fulfilled we have to learn from the diseases which lend themselves better to investigation.

Nevertheless, anti-mosquito prophylaxis, already indicated as a rule because it protects against malaria, filariosis, yellow fever and dengue, is indispensable in countries where leprosy exists. The authorities who neglect this precaution are assuming a great burden of responsibility not only for the present time but also as to the future.