ENGELMANN (Rosa.)

A Contribution to the Study of the accidents of vaccination

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A CONTRIBUTION TO THE STUDY OF THE ACCIDENTS OF VACCINATION.

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This subject is especially interesting, in view of the present small-pox outbreak in the English provinces and its well distributed sporadic appearance elsewhere, and from the fact that a late number of the *British Medical Journal* has occasion to speak of " Militant Antivaccinators " and of the " Antivaccination Craze."

The communicability of variola is unquestioned. The contagium enters and is eliminated by an extensive epidermic and mucous surface; hence the disease is characterized by excessive tenacity and rapid propagation. Let the absorption and discharge of the virus be localized and minimized, and a harmless non-contagious affection is established.

Vaccination accomplishes this purpose and secures immunity from both disorders.

Pasteur explains immunity by the exhaustion of the soil for the future growth of this particular micro-organism.

Fraenkel and Chaveau ascribe it to the part retention in the body of the developmental products of the specific germ. Metchinikoff gives the credit of immunization to phagocytosis. The questions of identity, immunity and etiology in this connection are still under discussion.

Neither small-pox nor vaccine microbe, protozoon or toxalbumen have yet been isolated, although such men as Klebs, Voigt, Koch, Fraenkel, Weigert, Feiler, Klein, Cruikshank, Chaveau, Cohn, Guttman and Pasteur have been bringing a great fund of technical knowledge and patient investigation to bear upon the subject. They and others have found some twenty (20) or more germs in bovine and humanized lymph, cow-pox and variolous vesicles.

Sarcinæ, protozoa, countless bacteria, the bacillus of syphilis, tuberculosis and tetanus, the staphylococcus pyogenes, aureus, albus and cereus, the streptococcus pyogenes and the streptococcus of erysipelas represent but half of this number.

Thus we are forced to the conclusion that vaccination is ofttimes accompanied by extraneous infections, the dangers of which are universally acknowledged. A mixed infection is indisputably demonstrated. Its positive exclusion is rendered difficult from the fact that our lymph supply is largely bovine. Even in Europe, where the vaccine stations are under government control and ruled to the minutest detail by aseptic and antiseptic methods, contamination of the virus sometimes occurs. As early as 1888, however, Voigt's statistics for Germany show "the rarity of vaccinal ulcers and vaccinal gangrene," while pyemia is almost unknown. A report from us in this connection would not, I fear, compare favorably, since we cannot be praised for the intelligent securement of our vaccine supply nor its scientific application to the individual. Until the time shall arrive, when by reason of the isolation, cultivation and attenuation of the specific germ, a reliable laboratory product shall be at our command, it becomes our duty to follow the example of our foreign confrères with reference to the source of the virus and inoculative methods. When every precaution that surgical bacteriology can suggest, shall apply to vaccination as it now does to inoculation for rabies, anthrax and tuberculosis, then will the laboratory be held responsible for a mixed infection and the vaccinator for a secondary one. In the light of modern research such a title as the accidents of vaccination must disappear from medical literature, and it is now imperative that the induction of artificial immunity be stripped of its terrors.

Robert Steel reports three cases of accidents of vaccination. Jonathan Hutchinson mentions "aberrant vaccinia of special idiopathic idiosyncracy." Jenner, in his letter to William Dillwyn, Esq., says: "Those herpetic affections which so frequently appear among the children of the poor, which are evidently contagious, often prevent the vaccine virus from producing its correct action." "The danger of insecurity would be at once obviated, if on the appearance of an irregular pustule, the disease were subdued by proper applications and the patient reinoculated."

Dr. Beck of Chicago, tells me of a case in his practice where uræmia and death succeeded vaccination. The history disclosed a two years prior attack of measles that probably had been complicated by an unnoticed nephritis. Every physician recognizes the danger of awakening a latent eczema by so slight an operation as vaccination. Adenitis is of common occurrence. Bone disease, suppurative arthritis and pyemia are reported sequelæ.

An article in the *Centralblatt f. Chirurgie*, 1892, p. 152, cites vaccination as the exciting cause in a case of tetanus. These are but a few instances of an interminably deplorable record. Two years ago, during a small-pox endemic, I had various types of vaccinal manifestations under observation.

In the majority of the cases, the arms were ulcerated, although the operation was antiseptically done. The wounds were not, however, hermetically sealed. A recent visit to the stable from whence the virus was then procured, throws light on the source of this and every other possible infection; for neither knowledge nor effort is brought to bear upon the antiseptic preparation of the lymph. The cows bought at the stockyards, are brought to the stable fresh from a journey across the continent. After a brief rest the rumps are shaved, it is true, but here ceases any likeness to a surgical procedure. No further cleansing is deemed necessary.

Scarification is done with an old jack-knife and the wound left exposed to the excrementitious discharges and the continuous switching of the poor beast's tail. No dressing is applied to the wound. Upon the seventh or eighth day the sopping of a sponge wet in the stable pail expedites the removal of the scab that is considered ripe when pus is seen trickling through it. The exuding surface is next wiped with the ivory points, defiled by stable air. Thus loaded, the points are now deposited upon a dusty tray, and to facilitate the drying of the virus this tray remains for some time upon the stable table. When dry, the points are wrapped in absorbent cotton and gutta-percha tissue. This, worse than farcical proceeding, shields them from air and moisture, true enough; but likewise misleads you, as it did me, into the belief of an antiseptic lymph. While the conditions may be some better at other establishments, still there can be no certainty while throughout the breadth and extent of our country, vaccine establishments are left to private business enterprise, subject to no official supervision.

An immediate change in so pernicious a system must be instituted. Physicians should unhesitatingly organize to bring about legislation to this end. Government vaccine stations must be established and placed under the control of such competent officers that a lymph supply commensurate to the demands of bacteriological surgery shall be insured. In consideration of its present source and methods of obtainment, it is not surprising that the anti-vaccination cry and hue again breaks forth, and that I am obliged to contribute to the accidents of vaccination a case of co-incident variola and vaccinia, and a case of thrombophlebitis and pyemia.

A woman lately and successfully vaccinated developed a synchronously generalized syphilitic psoriasis, and, what I believe, was a concurrent course of varioloid. I make this inference because, unlike other vaccinal papular eruptions then under observation, this case was marked by the typical fever, papulation, vesicular umbilication and pustulation of variola.

Pourquier and Brinskey have written papers on "The Simultaneous Course of Smallpox and Vaccinia," and "Coincident Vaccination and Smallpox." In such an event, non-immunization may be dependent upon the presence in the vaccine virus of micro-organisms inimical to the life and attributes of the specifically protective organism.

A nursing babe, marasmatic, and of wretched stock, succumbed to thrombophlebitis and pyemia. The scarification wound was about healed, and I anticipated no trouble until the nurse called my attention to an abscess forming on the superior antero-internal aspect of the left arm.

Other abscesses appeared in rapid and orderly succession in the axillary, infrascapular and pectoral regions of the same side. Finally and lastly, another abscess located itself over the lower part of the internal saphenous vein. In each instance nodulation and ecchymosis, involving the affected vein and contiguous tissue, occurred. Nasal and aural hemorrhage, and the rapidly progressive prostration confirmed the original diagnosis of pyemia.

At the autopsy I found a thrombus in the cephalic vein but a few centimeters distant from the normally fovealated scar.

The relations of the cephalic to the basilic, subscapular, thoracic and axillary veins explains the course of the embolic process, with its final transmission through the heart and lungs into the general circulation. Pyemia is an unjustifiable contingency, but so is any pus infection, whether it arises from the more serious streptococcus invasion of the deeper structures and tissues, or the less harmful staphylococcus attack upon epidermal structures that offer satisfactory and innocuous lodgments for pathogenic guests until inflamed areas afford better ones. The need of rigid antisepsis applied to the making and care of vaccination wounds and variolous eruptions is not an unreasonable deduction.

Jenner in his "Inquiry" foreshadows modern biological principles when he says: "Untoward symptoms arise from the irritation of sores and not from the primary action of the vaccine virus."

Dr. John Bach, in the British Medical Journal, Feb. 1st, 1890, pleads for aseptic vaccination.

Dr. Ballard, in the Lancet, Feb. 9th, 1889, advocates antiseptic dressings in vaccination. In Virchow's Yahresbericht, Vol. II, 1887, Morriz Bauer is accredited with the same sentiment.

This subject has been agitated by scores of medical writers of all nationalities, and has heretofore produced but little effect upon the American mind. Nevertheless, I hope that my call for a more rational prophylaxis in so necessary and universal procedure will not suffer oblivion, but rather help to a speedy revision of our current methods.

To sum up:

1. Variola is communicable as an air borne, and air exit contagium.
2. Its specific virus has not been isolated.
3. Its identity with vaccinia is undetermined.
4. The failure and non-protective character of vaccination is due to vitiation of the vaccine supply.
5. This vitiation is (1) saprophytic, annulling the specific quality of the virus, or (2) pathogenic, inflicting injury upon the individual.
6. Consequently such change in the lymph supply is demanded as to exclude a mixed infection.
7. Vaccination confers immunity from smallpox, but not from other (1) synchronous or mixed, or from (2) secondary infections.
8. These secondary contact infections are avoidable.
9. Hence antiseptic methods applied (1) to the present vaccine supply, and (2) to vaccination, will make accidents of vaccination a thing of the past.
10. To procure which end it is desirable, if not necessary, to establish government vaccine stations.

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