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## EDITORIAL

### TETANUS IN SOUTH AFRICA

Tetanus has long presented a challenge to preventive medicine. For obvious reasons it looms large in military hygiene, and in civilian life also it is responsible for much preventible mortality. It is of special importance in South Africa, where the disease occurs more frequently than in most countries. In the 3 years 1946-48 the tetanus deaths in South Africa numbered 563, representing an annual death rate of 16·1 per million living, which is 10 times as great as in England and Wales, where the deaths from this cause in the same 3 years numbered 203, equivalent to an annual death rate of 1·6 per million.[1] No great improvement in this matter has taken place in either country since that time.

It is now many years since passive immunization against the exotoxin of *Cl. tetani* was introduced for use in persons who having received a wound were liable to tetanus infection. During the 1914-18 war the injection of all wounded with antitetanic serum reduced the incidence of tetanus in a few months from about 8 per 1,000 to 1 per 1,000, and later to a still lower level.[2] This form of immunization is extensively used in civilian practice, and no doubt, where it is applied, potential cases of tetanus are prevented. It is evident, however, from the figures given above, that the prevention of tetanus in the civilian population is a relative failure. A reason for this is that people with apparently trivial wounds are commonly left uninoculated, or are not seen by a doctor at all. Moreover, cases of tetanus are not uncommon in which no history of an external wound is obtainable. It is to be noted also that tetanus neonatorum is responsible for more than half of the deaths from tetanus; in the 5 years 1946-50, 57% of all tetanus deaths in South Africa were of infants less than a month old.[1] The prevention of neonatal tetanus presents a different set of problems to tetanus in older children and adults.

The use of antitetanic serum is attended with certain inherent disadvantages. The effective protection conferred by a first dose of 1,500 units lasts for less than 4 weeks, and the period may be as short as 3 days in persons who had a prophylactic injection in the past.[2,4,5] Moreover the potential anaphylactic effects of the

## VAN DIE REDAKSIE

### KAAKKLEM IN SUID-AFRIKA

Kaakklem verteenwoordig reeds lank 'n uitdaging vir voorbehoedende geneeskunde. Om klaarblyklike redes neem dit 'n belangrike plek by militêre higiëne in en ook by burgerlike lewe is dit verantwoordelik vir 'n groot aantal sterfgevalle wat verhoed kon word. Dit is van spesiale belang in Suid-Afrika waar die siekte meer dikwels as in meeste ander lande voorkom. Gedurende die 3 jaar 1946-48 het die sterfgevalle weens kaakklem in Suid-Afrika 563 beloop, wat 'n jaarlikse sterftesyfer van 16·1 per miljoen lewendes verteenwoordig. Dit is 10-maal groter as wat dit in Engeland en Wallis is, waar die sterfgevalle weens hierdie oorsaak gedurende dieselfde 3 jaar, 203 beloop het, wat gelykstaan met 'n jaarlikse sterftesyfer van 1·6 miljoen.[1] Geen noemenswaardige verbetering van hierdie saak het sedertdien in enigeen van die lande plaasgevind nie.

Dit is nou al baie jare sedert passiewe immunisering teen die eksotoksien van *Cl. tetani* ingestel is vir gebruik by persone wat, wanneer hulle 'n wond opdoen, onderhewig is aan kaakklem-besmetting. Gedurende die 1914-18 oorlog het die inspuiting van alle verwondes met antitetanus-serum die voorkoms van kaakklem binne 'n paar maande van ongeveer 8 per 1,000 tot 1 per 1,000 verminder en later, tot nog 'n laer peil.[2] Hierdie wyse van immunisering word op 'n groot skaal in burgerlike praktyke gebruik en daar bestaan geen twyfel nie dat, waar dit aangewend word, potensiële gevalle van kaakklem verhoed word. Uit die syfers hierbo gegee, is dit egter duidelik dat die voorkoming van kaakklem by die burgerlike bevolking 'n relatiewe mislukking is. 'n Rede hiervoor is dat mense met oënskynlik niksbeduidende wonde gewoonlik nie ingeënt word nie, of glad nie deur 'n dokter gesien word nie. Bowendien is gevalle waar geen geskiedenis van 'n uitwendige wond te vinde is nie, glad nie ongewoon nie. Daar moet ook opgelet word dat tetanus neonatorum vir meer as die helfte van die sterfgevalle weens kaakklem verantwoordelik is; van al die kaakklem-sterfgevalle wat gedurende die 5 jaar 1946-50 in Suid-Afrika voorgekom het, was 57% daarvan van suigelinge minder as 'n maand oud.[1] Die voorkoming van kaakklem by pasgebore kinders lewer 'n ander groep probleme op as kaakklem by ouer kinders en volwassenes.

Die gebruik van antitetanus-serum gaan gepaard met sekere inherente nadele. Die effektiewe beskerming verleen deur 'n eerste dosis van 1,500 eenhede, duur vir minder as 4 weke, en die periode mag so kort soos 3 dae wees by persone wat 'n voorbehoedende inspuiting

horse serum are not negligible. Reactions are not rare, and may be severe, or, occasionally, fatal. Moynihan[2,4] concludes from his investigations that the intradermal test for sensitivity, which is used at many hospitals before the antitoxin is injected, is unreliable, and that a positive reaction leads to the unnecessary withholding of the antitoxin from many patients who need prophylaxis. He advises that the intradermal testing for sensitivity to horse serum should be replaced by the 'trial dose' method of Laurent and Parish,[5] which consists of a preliminary subcutaneous injection of a small dose of the serum to test the patient's reaction before the full dose is given.

Active immunization with tetanus toxoid, if adequately practised, affords a more certain way of preventing tetanus, though probably not practicable against tetanus neonatorum. In World War II it was used with remarkably successful results. In the British Army 2 injections of toxoid were given at intervals of not less than 6 weeks, followed by a reinforcing dose at yearly intervals. If a man was wounded he was given antitoxin, but in the American Army a further dose of toxoid was given instead. The results by both methods were highly satisfactory.[2] The Army Pathology Advisory Committee[2,5] advises that a person who has received the 2 injections at an interval of 6-12 months is to be regarded as actively immunized for 6 months; and that one who has received 3 injections at a first interval of 6 months and a second of 6-12 months, is to be considered as immunized for 5 years. A reinforcing injection should be given every 5 years.

This system of active immunization is eminently applicable to the civilian population. Active immunization against diphtheria, though not yet practised in South Africa as effectively as it ought to be,[6] appears to be almost universally applied to the babies of the more intelligent classes and to a substantial proportion of the babies of all classes in some of our larger towns. Two or three injections are needed for effective initial immunization against diphtheria, and the immunizing doses may well be combined with tetanus toxoid so as to obtain an initial immunization against tetanus, which can be rendered effectively life-long by 5-yearly reinforcing doses.

The prevention of neonatal tetanus appears rather to be a problem of clean midwifery and neonatal care.

1. Slome, R. (1954): S. Afr. Med. J., **28,** 473.
2. Editorial (1956): Brit Med. J., **2,** 348.
3. Moynihan, N. H. (1956): *Ibid.*, **1,** 260.
4. Littlewood, A. H. M., Mant, A. K. and Wright, G. P. (1954): *Ibid.*, **2,** 444.
5. Barr, M. and Sachs, A.: *Army Pathology Advisory Committee Report*, W.O. Code No. 11262.
6. Bokkenheuser, V. and Heymann, C. S. (1954): S. Afr. Med J., **28,** 685.

in die verlede gehad het.[2,4,5] Bowendien is die potensiële anafilaktiese gevolge van die perde-serum nie onbeduidend nie. Reaksies is nie seldsaam nie en mag ernstig of, af en toe, noodlottig wees. As gevolg van sy navorsings het Moynihan[2,4] die tot gevolgtrekking gekom dat die binnehuidse toets vir gevoeligheid, in baie hospitale gebruik voor die antitoksien ingespuit word, onbetroubaar is, en dat 'n positiewe reaksie daartoe lei dat die antitoksien onnodiglik weerhou word van baie pasiënte wat voorbehoeding nodig het. Hy raai aan dat die binnehuidse toets vir gevoeligheid tot perde-serum vervang behoort te word met die *'trial dose'*-metode van Laurent en Parish,[5] wat bestaan uit 'n voorafgaande onderhuidse inspuiting met 'n klein dosis van die serum om die pasiënt se reaksie te toets, voordat die volle dosis gegee word.

Aktiewe immunisering met kaakklem-toksoïed, as dit doeltreffend beoefen word, verskaf 'n sekerder manier om kaakklem te voorkom, alhoewel dit waarskynlik nie teen tetanus neonotorum bruikbaar is nie. In die Tweede Wêreld Oorlog is dit met opvallend suksesvolle resultate gebruik. In die Britse leër is 2 toksoïed-inspuitings met tussenposes van nie minder as 6 weke nie, gegee, gevolg deur 'n versterkende dosis met jaarlikse tussenposes. As 'n man gewond was, is antitoksien aan hom gegee, maar in die Amerikaanse leër is 'n verdere dosis van toksoïed in die plek daarvan gegee. Die resultate verkry met beide metodes was hoogs bevredigend. Die Army Pathology Advisory Committee[2,5] raai aan dat 'n persoon wat 2 inspuitings met 'n tussenpose van 6-12 maande ontvang het, beskou moet word as aktief geïmmuniseerd vir 6 maande; en dat een wat 3 inspuitings met 'n eerste tussenpose van 6 maande en 'n tweede van 6-12 maande gekry het, beskou moet word as geïmmuniseerd vir 5 jaar. 'n Versterkende inspuiting behoort elke 5 jaar gegee te word.

Hierdie stelsel van aktiewe immunisering is besonder toepaslik op die burgerlike bevolking. Dit skyn of aktiewe immunisering teen witseerkeel, alhoewel dit nog nie in Suid-Afrika so effektief beoefen word soos dit hoort nie,[6] amper universeel vir babas van die meer intelligente klasse en vir 'n aansienlike proporsie van die babas van alle klasse in sommige van ons groter dorpe gebruik word. Twee of drie inspuitings is nodig vir effektiewe aanvangs-immunisering teen witseerkeel en die immuniserende dosisse mag net so wel met kaakklem-toksoïed gekombineer word om sodoende 'n aanvangs-immunisering teen kaakklem te verkry, wat lewenslank effektief gemaak kan word deur 5-jaarlikse versterkende dosisse.

Dit skyn nogal of die voorkoming van kaakklem by pasgebore babas 'n probleem van sindelike verloskunde en nageboortelike sorg is.

1. Slome, R. (1954): S. Afr. T. Geneesk., **28,** 473.
2. Van die Redaksie (1956): Brit. Med. J., **2,** 348.
3. Moynihan, N. H. (1956): *Ibid.*, **1,** 260.
4. Littlewood, A. H. M., Mant, A. K. en Wright, G. P. (1954): *Ibid.*, **2,** 444.
5. Barr, M. en Sachs, A.: *Army Pathology Advisory Committee Report*, W.O. Code No. 11262.
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