ZINC IONIZATION AS A DISINFECTANT IN LOCAL SEPSIS ILLUSTRATED BY ITS USE IN CHRONIC OTORRHOEA IN CHILDREN.

BY

A. R. FRIEL, M.D., F.R.C.S.I.,

AURAL SPECIALIST, MINISTRY OF PENSIONS BOARDS.

THE proof that zinc ionization is an effective treatment for surface or open septic lesions such as chronic otorrhea, abscesses in various parts of the body, ulcers, endometritis, pyorrhea, impetigo, etc., rests on considerations drawn from physics regarding the electrical current, the action of the zinc ion on albumin, the situation of the micro-organisms in the diseases in question, etc.; on laboratory experiments, designed to show that albuminous fluids as well as tissues can be sterilized by zinc ionization; and on clinical results. We owe its use to Professor Leduc.

In the last resort we found our judgement of the applicability of any method of treatment on the clinical results, but often it is difficult, on account of the complexity of conditions in disease, to present them in a convincing form. When we endeavour to do so it is desirable that we should specify the actual factor of the disease which we treat, and what is the actual effect of the remedy. If the disease in question presents one factor alone, or one factor preponderating greatly in its action over other factors, and if the remedy has only one action, or one action preponderating greatly over any other effect, we have a reasonable basis on which to form a judgement. The main factor in maintaining the otorrhea is septic fluid in the ear. Zinc ionization is an efficient method of sterilizing an infected cavity.

When we are presented with a case of this disease we ask ourselves whether (1) the whole of the septic area is accessible; whether (2) there is any other factor present which would make it not worth while to sterilize the cavity; and whether (3) there is any condition in the patient which would lead to speedy reinfection.

If the sepsis is confined to the tympanum, and does not involve the attic or mastoid, and the perforation in the drum is large enough to allow fluid, such as zinc solution, to enter the ear, treatment by zinc ionization results in rapid and complete cessation of the discharge; this result is consistently obtained.

If besides sepsis another factor is present maintaining the otorrhea, such as the irritation of a polypus or the exudation from large granulations, it is not worth while to attempt to sterilize the ear until the polypus is removed or the granulations have been treated. In these cases our first duty is to convert the complicated condition into the simple one of tympanic sepsis.

Under the third heading we may note that if the patient has inflamed tonsils, inflamed adenoids, purulent rhinitis or sinusitis, or pyorrhea, we cannot expect the otorrhea to cease until the infecting condition is removed.

Subjoined is an analysis of the cases showing the cause of chronicity and the results of treatment.

The clinical results obtained in cases of tympanic sepsis afford evidence of the efficacy of zinc ionization as a disinfectant suitable for applying to exposed tissues, or to mucous surfaces, as in addition to the results being rapidly, completely, and consistently obtained, the remedy (zinc ionization) is the sole or essential part of the treatment adopted.

The only treatment for tympanic sepsis employed at the ionization clinics is zinc ionization with or without the insufflation of boracic acid. In very slight cases the insufflation of boracic acid without ionization is adopted.

A word must be said about consistency. This implies similar, or identical, treatment in similar conditions. It is easy to use the same ionizing solution, but it is not possible to give each area of successive tympanic cavities an absolutely identical dose, as one tympanum may be larger than another and it is not possible to compare the size of each exactly. Again, with regard to similar conditions in successive patients: in one ear there may be a good deal of swelling of the tissues and in a second little, but with these provisos there is approximately similar treatment in similar conditions.

Of the 102 cases considered to be due to tympanic sepsis 83 were known to be cured, 14 were lost sight of, and 5 were still under treatment; 7 of the 14 only visited the clinic once, and 3 of the 5 had only made one visit. In none of the other

Cases of Otorrhea in Children.

Classification of the "Cause of Chronicity" in each Case.	Total.	Cured.	Lost sight of.	Still under Treatment.	Referred for operation or other treatment.
A. CHRONIC MIDDLE-EAR SUPPURATION.					
I. Treated by Ionization.					
1. Tympanic conditions:					
Tympanic sepsis	102	83	14	5	0
Tympanic sepsis + granulations ...	40	23	5	9	2
Tympanic sepsis + polypi	19	5	3	5	6
Tympanic sepsis + cholesteatoma in tympanum	3	1		2	
Tympanic sepsis + pocket formed by adhesion	1		1		
Tympanic sepsis + caries of malleus	1		1		
2. Tympanic conditions + involvement of the Eustachian tube, pharynx, or nose	10	3	3	2	2
3. Tympanic conditions + involvement of the mastoid:					
(a) Mastoid	59	9	6	8	36
(b) Attic	15		2	5	8
(c) Radical (operation already) ...	5		1		
(d) Operation already (not radical)	1	2	1	1	1
4. Tympanic conditions + cause undetermined	3		1	1	1
5. Tympanic conditions + external otitis	5	5			
II. Not Treated by Ionization.					
Tympanic sepsis	264	131	39	38	56
Tympanic sepsis + granulations ...	18	16	2		
Tympanic sepsis + polypi	8		1	1	
Tympanic sepsis + external otitis ...	1	1			
Tympanic sepsis + mastoid	1				1
Tympanic sepsis + radical mastoid cavity	7	1	0	1	5
B. EXTERNAL OTITIS.					
I. Treated by ionization	36	18	3	3	12
II. Not treated by ionization	3	3			
C. ACUTE OTITIS MEDIA.					
Not treated by ionization	1	1			
	7	7			
Totals	307	156	42	41	68

7 lost sight of or the other 2 still under treatment had the attendance at the clinic been of long duration. Of the 83 cases which were known to be cured 58 were cured with one treatment, and 12 more required only the insufflation of boracic acid on the second visit a week after the first treatment. The remainder required either a few more ionizations or insufflations of boracic acid, or both.

The remainder of the table represents (1) cases in which attempts were made by special apparatus to introduce the zinc solution into areas more or less inaccessible, such as the mastoid antrum or a mastoid cell; (2) cases in which an effort was made to reduce a complicated condition to a simple one; and (3) cases in which it was necessary to free the patient of a condition which would lead to reinfection, such as inflamed adenoids, or inflamed tonsils, or an inflamed external auditory meatus.

In all the cases of chronic otorrhea sepsis is the basic factor causing chronicity; it is for sepsis that the use of zinc ionization is desirable. Zinc ionization is, in my opinion, as a result of what I have seen and read, the remedy *par excellence* for the septic factor present in endometritis, abscesses, boils, pyorrhea, or accessible wounds. It should, I believe, be adopted in sepsis of the uterine cavity following infection in childbirth.

In treating the various conditions mentioned the doctor who intends to use this form of treatment should give the treatment himself. He alone knows the local condition, he alone has the requisite knowledge of the condition in his patient. The electrical knowledge requisite to practise ionization is easily acquired. The knowledge of the conditions in the patient takes much trouble to learn, and the only person who has a chance of gaining this knowledge is the person who is in charge of the case.

ACCORDING to a report received from the Health Section of the League of Nations there is a serious increase in the incidence of cholera in the Ukraine. During the last three days of May 360 new patients suffering from cholera were admitted into the Odessa hospitals, where 1,000 cholera cases were under treatment.