

GOITRE PREVENTION IN THE UNITED STATES.

BERG, R. 1925

Introduction.

Perhaps one of the most interesting phases of Medicine of the present day and age is that of the prevention and treatment of Thyroid disease. The influences which the gland exerts upon the various tissues, and organs of the body makes it almost imperative that some nation wide or at least country wide campaign be inaugurated to stem the tide of a malady, which for all intensive purposes can be wiped from the face of the earth. During the last few years there have been great strides in this direction but as yet the results are far from being satisfactory. Now Iodine has been knowingly used in the treatment of goitre since 1820, and in it's prevention since 1917. It is interesting to note that in old cases the Iodine treatment has not much effect, but in recent ones there is a marked reaction to the administration of the drug. Theoretically the dessicated thyroid gland is better for goitre prevention and treatment but practically it is too dangerous as yet to be administered promiscuously by the M.D. The ages and periods when Thyroid enlargement are noted are as follows..1. During foetal Life 2. During adolescence. 3. During pregnancy and lactation, 4. As a result of general endocrine unbalance.

Public education as to the cause of goitre will to a great extent help to eradicate the disease. As soon as the general public comes to realize that prevention of goitre means more than simply preserving the normal outlines of the

neck , namely that it means the prevention of idiocy,mutism, physical and mental degeneration,and gretinism ; then and then only will the nation be able to make progress in the termination of the condition. Of course most people greatly fear the Exophthalmic type of goitre with its often fatal consequences , but few are willing at the present time to bother themselves with a condition ,which in their minds is a problem for the individuals vitally concerned ..thus overlooking the real side of the question./ . the social side.

Distribution.

Goitre is a practically universally disrtibuted disease which is more common in certain localities than others , these localities being termed Goitre Districts. In general there is an absence of the disease along the seacoasts but in the case of the Pacific coast states this does not hold strictly true. In mountainous districts there seems to be more of the disease than in the inland valleys and plains., however it is very hard to put one finger on a certain locality and say this is a goiterous district , and that is free of the disease since there is so much travel from one section to another that this condition would be a physical impossibility. Perhaps if one were to say which areas were the most affected it would necessitate mentioning the followingthe states of Oregon ,Washington,Idaho, Colorado, Oklahoma, Michigan, Wisconsin, Ills. ,Tenn., Texas, Maine.

Etiology.

There have been several theories advanced as to the etiology of goitre some of which are obsolete now ,leaving a few which in the present state of knowledge seem to be most universally accept

Let us take up a few of these in brief .

First there was the Water origin of the disease which was refuted to a great extent by the fact that it was not the water but the deficiency of Iodine in the water which made it conducive to goitre formation. In this connection some work was done by Breitner to show that there was some connection between fecal contamination and the incidence of Goitre. To prove this he injected a suspension of the water which was contaminated definitely with feces into animals and produced goitres in these animals. Later he found a family of 9 who had in every case goitres who had been using water which was contaminated with feces. For a certain length of time he had them boil the water before it was used and the goitres disappeared, only to recur when the boiling was later omitted.

Then there was the infection theory and others, but perhaps the most universally accepted one today is the Iodine deficiency theory. This may be due to the lack of I in the water or in the foods raised in that region ...or it may be due to an improper absorption and metabolism of the I which is ingested. Cures are reported in cases which move away to an area where there is a plentiful supply of the element in the diet...

Lastly one has to consider the physiological causes of enlargement such as those due to...Puberty. Pregnancy, and in response to the added stress on the body in certain diseases ,such as Typhoid fever, Diphtheria, Scarlitina ,Measles, Pneumonia, Pertuss Rheumatic Fever, Syphilis and Influenza.

In finishing one might add that heridety does not seem to have a noticeable effect, and that in general there are more girls affected than boys of the same age. In trying to overcome the in-

sufficiency the thyroid gland itself enlarges expressing its futile attempt to compensate for the lack by an increased output of it's particular secretion.

Physiology.

The Physiology of the Thyroid gland may be stated in a very brief and superficial way since ^{THIS} ~~THE~~ paper is primarily concerned with the measures ~~connected~~ ^{CONNECTED} with the prevention of abnormal Physiology. The Thyroid is a ductless gland consisting of a number of secreting acinae lined with low columnar epithelium containing a colloidal substance in certain amounts. These are separated by a rather fine stroma of connective tissue containing the blood vessels, lymphatics, and nerves. From some very extensive research along this line it has been concluded that..

1. The active principle is an Iodine containing substance which was discovered by Baumen in 1895, and isolated in pure form in 1917 by Kendall.
2. That hyperplasia occurs with a deficiency of Iodine.
3. Small amounts of Iodine will prevent any enlargement.
4. That auto thyroid transplants elsewhere in the body react in exactly the same manner as the gland.
5. Thyroid tissue has an extreme affinity for Iodine in any form.
6. Finally that if the Iodine remain stored in the gland there will never be any hyperplasia.

From these facts one can readily see the path which is laid out for the eradication of the disease.

Classification.

We can for convenience divide the enlargements of the gland

into the following classes...

Simple goitre.
Endemic
Epidemic
sporadic
Colloid
Cystic.

Exophthalmic goitre.
Hyperthyroidism
Toxic goiters.
Toxic adenomas.

The first group is fairly well understood, while the second group includes a group of ill defined clinically cases, with an increased metabolism and a rather marked myasthenia.

Symptoms and Diagnosis.

1. Simple Goitre. (Non toxic parenchymatous.)

A slight fullness in the neck or a noticeable swelling. Often noted as collars which were previously loose become tight.

Pressure on trachea causing Dyspnoea- cough-cyanosis and headaches of a vague nature.

A mass that moves with deglutition and respiration.

2. Non toxic nodular.

The same as above except that there is a nodular feeling on palpation.

Colloid.

Uneven bosselated surfaces.

Hard and resistant areas.

More nodules in one lobe than another.

Do not yield to internal medication.

No symptoms except mechanical.

Non toxic fibrous

Not lobulated but hard thruout. Usually rather small

May lapse into Cretinism. or Myxedema.

May come on suddenly during a disease.

Produces -Dyspnoea- Stridor- Husky voice.

Yields readily to gland extract therapy.

Non toxic cystic

Soft -smooth - and globular- may fluctuate.

Contains cysts -either retention ,or hemorrhagic.

Often does respond to the gland extract treatment.

Non toxic intra-thoracic

Lodges in thorax due to -gravity - suction-pulls.

The symptoms are necessarily very severe and due to
the compression of important mechanisms.

Readily diagnosed by the X ray. And percussion.

Non toxic congenital.

Usually the Parenchymatous type in children of
definitely goiterous mothers.

Respiration is very difficult.

Dyspnoea - stridor - Crying - Intercostal breathing

Accessory non toxic .

Depends upon location- those in tongue cause inter-
ference with speech, breathing etc.

Toxic Goitre.

As to the signs and symptoms of this particular disease we need not say much ,since the treatment of these cases is not in the realm of medical treatment, but is purely a surgical condition. However it is generally readily diagnosed from the increased metabolism- nervousness- muscular weakness--heart symptoms --and exophthalmus.

What will be said for the prevention of simple goitre will hold true fo the toxic types also, in case it is not so specified in the discourse.

Thyroid Malignancy.

This condition has nothing to do with prevention of simple

goitre, and is a surgical problem from its beginning. It is often claimed however that the incidence of simple goitre is an index to the concomitant occurrence of malignancies. Perhaps the enlargements of the gland in some degree tend toward a malignancy.

Prevention.

In closing this paper I will endeavor to bring out the most important features of the growing movement to limit the disease. From a public health standpoint the prophylaxis of the disease can be meted out in the various sections where there is a marked incidence by a board, or the public health department of the state, county, or better still the city, which can work in conjunction with the Parent Teacher organizations, and other public clubs to further the knowledge of the process, and thus create the necessary interest to put the plan across. The first attempt at prevention on a large scale was made by Kimball in 1917, when he started on a large scale in the public schools of Akron Ohio, and made rather complete surveys of the status of goitre in the school children of that city. His treatment was very simple and consisted in the administration of 2 grams of sodium iodide over a period of two weeks. in the autumn and in the spring. This was carried out for a period of two years and then the results were compiled. He found that of 2190 children thus treated only 5 showed an enlargement...while of 2305 not taking the treatment 445 showed enlargements. This was enough to show the value of the treatment, but- of 1182 having definite enlargements 773 showed a marked decrease in size ..against a group of 1048 with enlargements and not taking the iodine only 145 showed any decrease at all.

Following the report of this work there were several similar campaigns started in the various localities where the disease was most common. Some of these reports are also very interesting but time and space prevent the tabulation of their results. One group of patients in one of these campaigns showed a 95% incidence in a group of 760.. Iodine 10-15 mg. per week was given and in 15 months the results were tabulated. .Now only 28% were goiterous! In Cleveland Ohio the method used in the schools consists of the administration of Dessicated Thyroid 1gr.TID over a period of 2 weeks... then the administration of 15-30 cc of Syrup of Hydriodic acid in lcc amounts daily. Once or twice a year this was done and marvelous results followed. One has always to be very careful to choose his cases in giving the Thyroid extract as some of them will be made very much worse. Colorado has taken great strides in the matter of prevention by starting a state wide campaign to get as complete a survey of the districts in the state, and what is being done in the way of prevention and treatment. This has led to a great deal of fine results in certain towns which responded to the state's effort, and now Colorado as other wide awake states is gradually getting closer to the ultimate panacea.

Oregon is gradually arising to meet the situation ,which can be estimated when one considers that 50% of all the school children in this state are affected with goitre at one time or another before they enter High School. Considerable has been done in and around Portland due to the efforts of some of the local Doctors who are vitally interested in the question of goitre, in the way of administration of Iodine to the school children of the city. The only criticism to the system is that it has not been carried far enough as yet. Clinics for the

treatment and prevention are held by the Medical School in the Free Dispensary.. These are doing a vast amount of good for the reason that the people who have not the means of financing regular medical treatment are given the necessary care:-free.

Since the administration of 60-120 mg. of Iodine a year will prevent goitre it should be a compulsory measure in the schools to be supervised by adequate medical bureaus. In this way the toxic cases can be given the alternative treatment instead of the regular Iodine treatment. It has been found that Oral administration as advocated by Kimball is the best way to saturate the Thyroid with the essential Iodine. The only drawback to the plan is that it will not reach all those who need the drug, hence it will require methods which will not only prevent the indiscriminate dispensing of the Iodine , but will also insure it's ingestion in proper amounts by those in need of the medication. The new Iodized salt is probably sufficient to supply the needs of the ordinary adult, but it is barely possible that there would be enough of the Iodine ingested in this form to supply the needs of a growing child. Hence the necessity for the proper administration of the Iodine in the schools or else where.

In conclusion there are certain recommendations which I think are worthy of consideration, and possibly adoption. They are as follows..

1. Frequent state wide Surveys (Thyroid) to stimulate interest in the population and incidentally to furnish very valuable data to the Medical Science.
2. General prophylaxis by means of table salt iodized, and systemic administration of the iodine to the school children
3. Medical treatment of existing enlargements.

4. Tabulation of the various Indemic foci thruout the country.
5. Further research along the lines of the data obtained in the surveys.
6. The abandonment of the idea that the water supply can be efficiently, or effectivly doctored with iodine salts so that it would be considered a complete prophylaxis measure.
7. That a society be organised to compile the results of the various sectional activities, and outline the measures to be carried out in the campaign.

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