

tending to and around the apex, together with a slight widening of the space occupied by the peridental membrane itself. This finding is the premonitory sign of the inflammation of peridental membrane which precedes extension of the funnel shaped pocket to and around the apex. It is now only a matter of a short time till the entire depths of the root are surrounded by the liquefied products of the ulcerative periodontitis.

The limitations in the value of the Roentgen findings in any disease should also be mentioned. While the Roentgen findings in pyorrhea as a rule agree very well with findings elicited by a digital or instrumental examination, and are obtained with far less discomfort to the patient, there are certain respects in which they are disappointing. Let me mention a few of these: Sometimes a pyorrhea tooth is quite loose, and a well defined pocket is expected in the roentgenogram. Instead, it may require a stretch of the imagination to find in the roentgenogram more than a simple loss of the normal white line. This is undoubtedly because the atrophy which has occurred is diffuse and poorly demarcated. Again the tooth shows no looseness on examination, and the roentgenogram shows the deepest kind of a pocket. This apparent discrepancy is undoubtedly due to the escape from the disease of a limited portion of the investing structures, not recognizable roentgenographically, but sufficient in

amount to maintain the stability of the tooth for the time being. A very important point in the diagnosis may be entirely undemonstrable by Roentgen methods, and I refer to the activity of the disease at the time of examination. Quite frequently roentgenograms are essentially similar in cases in which gross amounts of infective material can be expressed from the jaw to those in which the disease in all its clinical manifestations is entirely quiescent or advancing at a very slow rate. It may be sufficient to mention the general roentgenographic fact that in an ulcerative process in which bone shadows show partial or poorly limited decalcification, the process is in an active or rapidly progressive stage, whereas in well demarcated cases, in which areas of complete liquefaction lie directly adjacent to areas of undisturbed bone, the process may be considered more chronic in type.

Conclusions

A general survey of the denture by a series of dental films is an important adjunct to the examination of a pyorrhea case. It is often a short cut to a diagnosis and is less disagreeable than an instrumental examination, but should supplement rather than displace other diagnostic methods. The most important diagnostic points are observable in the region of the intimate bony investments of the roots and are obtainable only from the most critical roentgenograms.

THE IMPORTANCE OF A CORRECT DIFFERENTIAL DIAGNOSIS OF THE PREDISPOSING CAUSES IN CASES OF INTERSTITIAL GINGIVITIS OR PYORRHEA ALVEOLARIS.*

By M. L. Rhein, M.D., D.D.S., Lecturer on Dental Pathology, Department of Dentistry, University of Pennsylvania. New York.

Periodically, we are told that interstitial gingivitis, pyorrhea alveolaris, is

caused by some special organism which the writer has just discovered. Specific investigation and attempts to corroborate these vaunted discoveries have always proved them to be erroneous. We are just

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beginning to recover from the shock of how little we know about the *Endameba buccalis*. The fact that a prominent research worker in medicine proclaimed to the world that the endameba was responsible for every case of pyorrhea, and that this disease was present in 95 per cent of our population, has been the direct cause of much confusion. Physicians lacking education in mouth physiology and pathology were especially imposed on by this dogmatic assertion.

Research work which I have conducted in the mouths of animals has corroborated the work of general observers to the effect that infection is impossible in an individual otherwise physically well. Considering, as we are, end-organ tissue, it must be admitted that unless prophylactic measures have been adopted, the so-called dental organs are the first to exhibit a diminution in immunity to infection, if any form of malnutrition is in evidence. If, by exercise, massage and other hygienic measures, the circulation in the ultimate capillaries is kept moving, the gums and peridental tissue will frequently retain their immunity, even the malnutrition is present.

Pyorrhea alveolaris is a result of malnutrition plus infection, and also most frequently plus irritation, and it is greatly intensified if arteriosclerosis of the ultimate capillaries sets in. Only daily observation of the dental tissues can make one familiar with the appearance of a normal mouth, and without this knowledge, it appears impossible for any one to differentiate the different appearances of these tissues in different diseases.

While all forms of pyorrhea must commence with some form of gingivitis, yet the tissues in this and all succeeding stages vary in clinical appearance as markedly as do the generic types of malnutrition which interfere with a proper equilibrium of the circulation. The blue line in the gums as a result of mercurial toxemia, and the mucous patches due to syphilis, are old landmarks in medical

diagnosis. In like manner the physician awaits the eruptive stage in order to make a correct diagnosis as between small pox and measles, or any of the other exanthems. It may, therefore, be asserted with assurance that the variations in clinical appearance of the gums and pericemental tissues point with unerring fidelity to the cause of the dyscrasia. When these are once read with the same assurance with which we now read the blue line, a great advance in the diagnosis of this disease will have been reached. When it is once duly appreciated that pyorrheal symptoms are a possibility at the very onset of any interference with the normal action of any vital function, and that a proper reading of their clinical appearance will disclose at once the nature of the trouble, the study of the dental organs will be properly comprehensible, and not until then.

The fact that pyorrheal manifestations are very frequently observed, without the investigator being able to obtain any confirmatory diagnosis of some form of malnutrition, is generally due to the fact that impairment of the vital organs progresses very slowly, and that frequently with our present day methods it is impossible to make a correct diagnosis until the disease has reached an advanced stage.

When, finally, as the organic disease increases, a correct diagnosis is made, it is not uncommon to find that this organic disease is believed to be caused by the pyorrhea. The poor diagnostic sense of the uninformed dentist is the cause of this frequent error in diagnosis, this placing of the cart before the horse. While an abnormality of some important organ or organs of the body is generally the predisposing cause, we see other types of pyorrhea where the predisposing cause is the decrease in functional power of the teeth themselves. Here loss of teeth by extraction, irritation under the gingivae from unpolished fillings, and every type of malocclusion become the predis-

posing causes instead of their being caused by some organic disease.

Every dentist will corroborate the great variation in the mouth picture which presents itself in different pyorrheal cases. We see the case without any deposit on the root in strong contrast with those in which these deposits seem to overwhelm all the exposed root structure. We see the gum abnormally dry and parched in contrast to those cases in which the mucous follicles are constantly excreting varying quantities of fluids. There is the pale anemic gum in contrast to the ruby red inflamed gum. We find pockets under the gums free from suppuration or exudation, in contrast to those cases in which there are purulent discharges, and the gums are so inflamed and spongy in character as to bleed on the slightest provocation. There are cases in which the gingival border is atrophied to a knife blade edge in contrast to every type of hypertrophied tissue. The gums at times will be found in all possible shades of color, and in certain cardiac diseases there is a sharp division line between a normal pink and dark blue in the gums in the same mouth.

We find no such variation in symptoms in any infectious disease. Small pox, tuberculosis, typhoid fever, measles, syphilis, yellow fever, diphtheria, etc., all possess well defined symptoms, which mark them unmistakably as the disease in question.

In interstitial gingivitis or pyorrhea alveolaris, the clinical appearance is but a reflection of the predisposing cause. Each different picture will always be found associated with one particular predisposing cause. A carefully recorded study of these different pictures will soon make the observant stomatologist familiar with at least some of the more common types of malnutrition, and after a time he can readily recognize them on sight.

It has been my good fortune, because of experience with these clinical pictures,

to have frequently been the means of directing the patient in the early stages of some serious ailment in keeping with rational treatment. It is impossible to estimate too highly the value of such a diagnosis being made in an early stage. It is wrong for us to discuss this subject as tho we were speaking of some specific disease instead of addressing ourselves to pathologic symptoms of one of many diseases.

The time will come, when the subject is under discussion, that it will be confined to the particular malnutrition causing a given type of pyorrhea. In 1894, I presented such a method of classification by prefixing or adding an adjective stating the name of the disease, which is causing the pathologic symptoms in the oral cavity, as "diabetic pyorrhea," "tuberculous pyorrhea," etc. Only under such a classification can rational discussion be held on this subject. Take, for example "nephritic pyorrhea" and "diabetic pyorrhea." While renal abnormalities occur in the predisposing cause in each type, nevertheless, the symptomatology and treatment should be entirely different in each type. When this point is conceded, due importance will thereafter be given to the necessity of making clear the nature of the predisposing cause of the cases under discussion.

It is well understood in general surgery that operative procedure is attended with great danger to life itself in patients suffering from diabetes not under control. Consequently, the same danger to life exists when surgical interference is commenced in pyorrhea when there is present an active condition of diabetes. The at one time well nigh universal habit of dentists using surgical intervention in diabetes without making any diagnosis of the predisposing cause has produced its quota of fatal consequences. In advanced stages of fatal diseases, it would be necessary brutality to subject the patient to the discomforts of surgery. On the other hand, when the disease is curable, it is of great importance that the

stomatologist should be given an accurate statement by the internist of every body disturbance, so that all local treatment should proceed in therapeutic harmony with the general treatment.

Prognosis of pyorrhea or givivitis must largely depend on the possibility of obtaining a cure of the malnutritional factor. It is for this reason that the results of all physical examination, etc., should be in the hands of the stomatologist, so that he cannot only work in har-

mony with the physician, but also keep accurate record of any tissue changes that may take place.

When the preponderating importance of an accurate diagnosis of the predisposing cause of pyorrhea is appreciated, an important factor in the maintenance of our point of view is established to the effect that the dentist treating these and all other mouth diseases should be as efficiently educated in general medicine as is the specialist in any other department of medicine.

SOME STUDIES IN THE TREATMENT OF PYORRHEA ALVEOLARIS.*

By George Bailey Harris, D. D. S., Sc. M., Detroit, Mich.

In the consideration of the treatment of pyorrhea alveolaris, as with any other disease, we must presuppose a knowledge of the disease. There are, however, so many conditions suggested as being causative factors in pyorrhea, that it is hardly possible to assume that any one of them is responsible for pyorrhea, to the exclusion of the rest. Among the conditions which have been advanced as being causative agents in pyorrhea might be mentioned syphilis, rheumatism, liver affections and autointoxication. These conditions and any other which will lower the resistance of the tissues must be considered as causative factors in pyorrhea, and their eradication, wherever possible, must be accomplished when the treatment of pyorrhea is undertaken.

Pyorrhea should be looked on as an infectious disease and treated as such. Its inception, then, is based on the resistance of the tissues to bacterial invasion, which must be lowered before the infec-

tion can be overcome. This means the building up of the resistive forces thruout the entire body, as it is difficult to perceive how the resistance, under these conditions, can be raised in the gum tissues alone. This must be done not only to throw off the present infection but also to guard against its recurrence. The lowered resistance to the tissues surrounding the teeth is due, in many cases, to the well known calcium deposits and irritations produced by faulty dental work. These conditions must be corrected.

If, however, we better understood the causes of pyorrhea and knew more about the tissues most vitally involved in making a repair, we would be able to treat this disease more intelligently, and there would result a greatly increased number of recoveries.

I have been greatly surprised at the wonderful recuperative power of the cementum. The literature relating to this tissue is confined, in the main, to its description and histologic structure, very little being said about its use. Cementum is the bond between the teeth and

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