

THE INCIDENCE OF *ENDAMOEBIA GINGIVALIS* IN A CENTRAL ILLINOIS COMMUNITY

WAYNE W. WANTLAND, SEIJI NAKADA AND HUBERT ENGEL
Illinois Wesleyan University, Bloomington

It was believed at one time that *Endamoeba gingivalis* was the causative organism of, or at least associated with, the condition known as pyorrhea. With the work of Dobell (1919), Craig (1926), and others who denied this claim, the organism has more recently been given a position of less importance as an etiologic factor in oral cavity disease. Investigators have repeatedly observed this protozoan in the mouths of humans, particularly at the base of the teeth. The present study was made on a group of dental patients (1) to supply further data relative to the occurrence of this organism in man and (2) to note further its relationship to different conditions of oral hygiene in persons of varying age levels.

According to Kofoid (1929) at least 75 percent of persons over forty harbor the organism *Endamoeba gingivalis*. The incidence of this organism found by L. W. Ritchie (1932) in the Chicago area ran as high as 80 percent in older age groups. Samples for the present study were obtained from 110 patients with the cooperation of a practicing dentist¹ in the city of Bloomington. Of the 110 samples examined, the following percentages of infection were obtained: Adults, 41.8 percent; teen-age, 11.1 percent; and children, 13.3 percent. The incidence of *Endamoeba gingivalis* in different types of mouths was: 100

percent in pyorrhea mouths, 78.3 percent in dirty mouths,² and 25.8 percent in mouths that showed evidence of good daily oral hygiene. The dentist was supplied with sterile cotton swabs, and scrapings were taken from the spaces between the teeth, around the region of the gum, and pyorrhetic abscesses. The condition of the mouth was classified as clean, dirty, or pyorrhetic. The patients were divided further into child, teen-age, and adult groups. Since the examination of the scrapings could not always be undertaken immediately, the swabs were placed in small vials containing 1½ cc. of 0.85 percent physiological saline solution. To insure against change of temperature the vials were kept in an incubator at body temperature. In most cases examinations were made from 3 to 24 hours after the specimens were collected. Most active forms of the organism were found when the examination was made within 12 hours after the sample was obtained. In one instance a very active organism was found after the specimen had been in the incubator for 72 hours.

In the microscopic examination of the samples, oil immersion was used. The slides as well as the cover slips were placed in the incubator to prevent sudden shock due to changes of temperature. The swabs were taken from the vials and smeared on slides.

The size of active organisms var-

¹ We are indebted to Dr. D. L. Winquist for his cooperation in providing us with samples for study.

² Mouths which indicated poor daily oral hygienic care—decaying food particles between teeth; yellow film deposits and stains on teeth.

TABLE 1.—INCIDENCE OF *Endamoeba gingivalis* FOUND IN THIS STUDY OF THE BLOOMINGTON, ILLINOIS, AREA AND RITCHIE'S FINDING OF THIS ORGANISM IN CHICAGO, ILLINOIS.

Age Group	No. Exam.	Sex		Pyorrhoea	Dirty	Clean	Percentage in Age Group	Age	Ritchie's %
Adults.....	86	Male	Pos.	4	6	7	41.8	50 and over	83.4
			Neg.	0	2	23		41-50	89.9
		Female	Pos.	1	11	8		31-40	80.7
			Neg.	0	2	23		21-30	72.8
Teen-age...	9	Male	Pos.			1	11.1	16-20	50
			Neg.			5			
		Female	Pos.			0			
			Neg.			3			
Children....	15	Male	Pos.		1	1	13.3	5-15	46.5
			Neg.		1	5			
		Female	Pos.			0			
			Neg.			6			
Percentage in type of mouth.....				100	78.3	25.8			

ied from 12 to 37 microns. The size may double in a matter of minutes and the shape varies constantly, at times being just an amorphous mass. The inactive organisms measured on the average 17 microns.

In appearance the endoplasm is usually crowded with food particles and granular material which seems to float in the center of fluid cavities. The ectoplasm is crystal clear. The pseudopodia are rounded and blister-like and flow out in the direction of movement, at times explosively and at other times very slowly. The granular endoplasm then flows into the transparent area. In active forms bacteria seem to adhere to the side opposite the pseudopodia, but in dead forms this adhesive force is lost. Bacteria were also noticed

within the cytoplasm. On the slides containing numerous organisms there were fewer free bacteria present. This gives support to the theory that the organism ingests bacteria. Active forms were fixed in Bouin's solution, stained in haemotoxylin, and permanently mounted.

Table 1 shows percentages of infection found in this study in different types of mouths, age groups, and sex groups with Ritchie's findings listed for comparison. Since the patients studied represent a cross section of the area with respect to occupation as well as economic status, we feel that the data are highly indicative of the incidence of *Endamoeba gingivalis* in the mouths of persons in this central Illinois community.

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