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Miscellaneum.

On Raillietiniasis in the Philippines.

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Raillietiniasis is a specific cestode infestation. The first cases which were thought to belong to *Raillietina* and were later found to belong to another genus (*Inermicapsifer*) have been described by GRENET in 1869 in the Antilles and in the Island of Reunion. Further cases have been described in the Island of Mauritius and in Bangkok (Thailand). BLANCHARD in 1889 reported eight cases in the literature. DANIELS observed the first case of this kind of parasitism in the American continent in British Guayana. ANGER in 1901 saw a case in Russian Turkestan and AKASHI reported in 1916 a case in Taiwan, Formosa. DAVILA (1926) observed two cases in 1922 and 1926 respectively in Quito, Ecuador. LEON in 1958 reported, after having reported in several papers in 1938, 1947, and 1949, on 100 cases in Ecuador, while so far only 12 cases have been reported until now in Asia and Africa. We have to add, however, that BAER and SANDARS reported recently in 1956 a case of *Raillietina* (R.) *celebensis* in Australia which is similar to our case of *Raillietina garrisoni* Tubangui (1931) as it is listed as a synonym of that cestode among others in that article. CHANDLER and PRADATSUNDARASAR observed 2 cases of Raillietiniasis in infants in Thailand, so much so that we have to add 3 more cases to the mentioned cases excluding our own two cases, so that at present at least 17 cases have been already reported from Asia and Africa. The papers of LOPEZ-NEYRA were not available locally in original publication.

TUBANGUI described in 1931 the parasite of the brown rats (*Mus norvegicus*) with special reference to those forms that may be transmitted to human beings. However, the first case in the Philippines has been seen by GARRISON in 1911, and this case has been mentioned by TUBANGUI in 1931. AFRICA and GARCIA in 1934 jointly reported on three cases of human infestations by *Raillietina* in the Philippines, and one case has been a two-year-old child.

Raillietina is a cestode much smaller than the ordinary Taeniae. It has several species and the following are the known species of this cestode:

1. *Raillietina formosa*—this species was observed in Formosa and Rangoon.
2. *Raillietina garrisoni*—this species is similar to *Raillietina madagascariensis* but differentiated from it by TUBANGUI in 1931 and by AFRICA and GARCIA in 1934.
3. *Raillietina asiatica* was observed in 1901 in Russian Turkestan but so far it is still a questionable entity. KOURI differentiates an African species, an Asiatic species and an American species.
4. *Raillietina demerariensis* is likewise incompletely observed by DANIELS in 1895.
5. *Raillietina quitensis*—described by LEON in 1939.
6. *Raillietina equatoriensis*—described by DOLLFUS in 1939. Both *R. quitensis* and *R. equatoriensis* are observed in Ecuador and possibly in Honduras.
7. *Raillietina* (R.) *celebensis*—reported in 1902 and described by BAER and SANDARS in 1956.

We are not going into the parasitological differentiation of the different species of *Raillietina*. They are well described in the various textbooks in Parasitology by FAUST, JOYEUX & BAER, KOURI & BASNUEVO, and BRUMPT. We would just like to emphasize here that *Raillietina garrisoni* Tubangui (1931), a parasite of the brown rats relatively widespread in the Philippines, is around 30 cm. long, while the proglottids are around 3 mm. long and 1½ mm. wide resembling a grain of rice in size, shape, and color.

We had the opportunity to observe and diagnose a case of *Raillietina garrisoni* infestation in a two-year-old male infant from Cavite, who was born in April 15, 1957, and was admitted March 6, 1959 in the Philippine General Hospital for the chief complaints of discharging plenty of proglottids per anum. While the stools were always formed, every time the child moved his bowels, there were numerous proglottids discharged in his stools. Not much can be mentioned as to the symptomatology, as the child was well-developed and well-nourished and had no other symptoms except passing out proglottids per anum. The proglottids were observed by a doctor in Cavite who referred the case for further examination to the Department of Parasitology of the College of Medicine of the University of the Philippines. The report was as follows: "The proglottids belong to a tapeworm of the Genus *Raillietina*. The species require further studies of the proglottids." However, our examination of the stools revealed peculiar ova with a thin shell and a granular yolk, without any characteristic feature as described by KOURI for *Raillietina*. At any rate our provisional diagnosis has been *R. garrisoni*. As Dr. E. Y. GARCIA had been the one who described with AFRICA in 1934 this particular species after TUBANGUI (1931), we sent him samples of the proglottids passed out by our patient preserved in alcohol for definite diagnosis. Dr. E. Y. GARCIA later gave the report as follows: "I wish to inform you that the provisional identity, *Raillietina garrisoni* Tubangui (1931), you have given to this worm has been found correct to the morphological description of its ripe segments. Your ripe segments specimen has an average of two (2) eggs per egg pocket in contrast to three (3) eggs per egg pocket of *Raillietina madagascariensis*. In this country, this worm utilizes a wide variety of intermediate hosts, such as dung beetles, snails (*Cummindiana* sp.), and locusts. Among the wild population, dung beetles and snails are ideal transmitters; perhaps among men locusts are the most probable because this is edible. Locusts lay their eggs by boring in the ground."

To expel the worm on the 19th of March 1959, we gave the child Aralen (Chloroquin diphosphate) tablets (250 mg.) using two tablets after preparing the patient for the contemplated therapy. The child was then given Castor oil as purgative an hour later, however, with this dosage the child continued to pass out proglottids, so much so that we had to consider the treatment as a failure. Therefore, after two weeks the treatment was repeated, using 4 Aralen (Chloroquin diphosphate) tablets. We tried our best to recover the scolex of the cestode but we did not succeed. This can be due to the fact that the scolex is less than one millimeter wide and one half mm. thick, so that it can be easily missed. At any rate, after the second treatment there were no more proglottids passed out 2 days following the second treatment, and no ova could be found in the stools. This is a sufficient criterion for a successful therapy. After having observed our present case we tried to look over our previous records from 1945 to the present time. The previous records prior to 1945 were all destroyed by fire during the battle for the liberation of Manila in early 1945. Out of around 40,000 admissions (1945-April 1959) there was only a single case which carried the diagnosis of *Raillietiniasis* in an eight-month-

old male infant from Manila admitted November 6, 1946. The complaint of that patient was passing out of proglottids just like our present case, and the stool examination by Dr. PESIGAN revealed the diagnosis of *Raillietina garrisoni* Tubangui (1931) infestation. It is interesting to note that the worm was discharged spontaneously when the child developed acute infectious diarrhea without any medication intended for the expulsion of the cestode. Spontaneous discharge of this cestode was also reported by CHANDLER and PRADATSUDARASAR (1957) by BAER and SANDARS (1956), but LEON (1958) in his paper reported of the difficulty of expelling this cestode with several types of drugs used for this purpose. At any rate, our first case is a two-year-old male infant while our second case is an eight-month-old infant, so that both cases belonged to the younger age group; furthermore considering the fact that in 14 years only 2 cases were observed, the impression is that it is rather rare in the Philippines, although other cases may have been overlooked when the cases were asymptomatic and the observers were not aware of the condition or when the examiner had no experience in this particular parasite or cestode to enable him to make positive identification by gross and microscopic examination of the specimen.

Therefore, we believe that this kind of tapeworm infestation is not so rare as generally accepted and that with more careful observations more cases may be detected. We would like to emphasize here the treatment. We gave Aralen (Chloroquin diphosphate) tablets in the dose prescribed by parasitologists as used in the treatment of Taeniasis; however, we did not succeed, so that we were forced to administer twice the prescribed dose. Although one case is not enough to make final conclusions, our impression is that large doses have to be used for the success of treatment of this particular cestode.

While GRENET, DAVILA, and LEON claim that gastralgias, diarrheas, anorexia, nausea, vomiting, intestinal colics, and nervous symptoms may be observed in *Raillietina* infestation, in our case there were no symptoms at all, there was not even eosinophilia in the blood. However, it may be that our case was a recent infestation and long standing infestations may cause those symptoms described by the different authors on the subject.

Summary and Conclusions:

Two cases of *Raillietina garrisoni* Tubangui (1931) infestation have been described in a two-year-old male infant from Cavite and in an eight-month-old male infant from Manila. These patients did not present any clinical symptoms with the exception of discharging plenty of proglottids with the stools. Since the last case reported in the Philippines has been in 1934, we thought it worth-while to describe the 16th and 17th cases to be reported in Asia and Africa, with special emphasis on the successful therapy with Aralen (Chloroquin diphosphate) tablets in our older patient. The possible source of the infestation has been likewise discussed.

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