

PERSISTENT CARRIERS OF *ENTAMOEBA HISTOLYTICA*:

TREATMENT WITH CHAPARRO AMARGOSA AND SIMARUBA.

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THE 81 cases with which this report deals were all carriers of *Entamoeba histolytica*, who, with a single exception, had been treated with at least two courses of emetine bismuth iodide, but still continued to pass either cysts or free *E. histolytica* in their stools. They may be regarded, therefore, as a group of cases especially refractory to treatment with emetine.

It will be seen that 74 out of the 81 cases were treated with the drug known as "chaparro amargosa" (i.e., "bitter-bush"), which grows wild abundantly in Southern Texas and Mexico. Its botanical name is *Castela nicholsoni*. The use of decoctions of this plant for dysentery has for some time had a local reputation, but attention has been specially drawn to it recently in several papers by Dr. P. I. Nixon, of San Antonio, Texas.^{1,2} The Medical Research Committee obtained several parcels of the drug, with a view to further investigation of its properties, and we are indebted to the help of Dr. H. H. Dale, F.R.S., of the committee's staff, for the specimens with which we carried out the treatment of our cases. Three samples of drug were tested by us, each prepared by drying and powdering a different part of the plant—viz., (1) twigs and leaves; (2) root bark; and (3) decorticated root. In addition a few cases were treated with a crystalline bitter principle extracted from the drug by Dr. A. J. Ewins, which is still a subject of investigation in the Medical Research Committee's Bio-chemical Department.

Simaruba bark has a somewhat similar reputation in the treatment of amoebic dysentery. It is obtained from a plant botanically related to chaparro amargosa, and contains a similar, if not identical, bitter principle.³ We treated a few cases with simaruba bark for comparison.

Our method of administration was in both cases based on that recommended by Nixon for chaparro amargosa.^{1,2} In every case an interval of at least three weeks elapsed between the termination of the last course of emetine bismuth iodide and the commencement of the chaparro treatment, and during this interval cysts or free forms of *E. histolytica* were discovered at least twice in the stool. In most of the cases recorded as cured by chaparro the interval was four to five weeks, and three or four "positive" examinations were made during this period.

We can therefore with some confidence exclude the possibility that any of the apparent results of chaparro treatment were due to a delayed action of the course of emetine. We have regarded a case as "cured" after a minimum of six negative stool examinations, taken over a period of not less than five weeks from the end of treatment. The last examination in each case was made at the convalescent depôt, Barton-on-Sea.

Treatment with Chaparro Amargosa.

Method of administration of the drug.—The treatment lasted ten days, except in 7 cases on the twigs and leaves, in which it lasted seven days.

The dose was five heaped teaspoonfuls daily of powdered chaparro amargosa. Decoction from three of these teaspoonfuls was given by mouth, and from two by enema. The method used for preparation of the decoction was to boil the heaped teaspoonful of chaparro amargosa powder in about 20 oz. of water for 15 to 30 minutes. It was allowed to cool and then strained.

Three times every day a teaspoonful of the powdered drug was thus prepared and given to patient to drink half an hour before meals. At about 10 A.M. and 6 P.M. an enema of the drug, also prepared as above, was given to patient in elbow-knee position. A rubber catheter (warmed and oiled before introduction) was used, connected by rubber tubing to a glass funnel. The patient remained in the elbow-knee position for 15 minutes if possible after injection, and was kept in bed for at least two hours after the drinks and enemas.

¹ Amer. Journ. of Trop. Dis., 1915, ii., 572.

² Journ. Amer. Med. Assoc., 1916, lxxvi., 946.

³ Medical Research Committee, Third Annual Report, 1917.

On the day before the treatment the bowels were well opened with mag. sulph., and the patient given a light diet, such as fish or chicken. *Symptoms caused by the drug.*—A few patients vomited after the drinks, and some had nausea after the drinks without vomiting. In a few cases the enemas caused increased motions and abdominal pain. The chaparro acted on many patients as a bitter tonic, causing marked increase in the appetite and improvement in the general condition.

Results of Treatment.

1. Twigs and Leaves.

The treatment lasted seven days; drinks and enemas were given. Number of cases treated 7; 4 cured—i.e., 57 per cent. One case when put on treatment had dysenteric symptoms with free *E. histolytica* in stools. The other 6 cases had *E. histolytica* cysts in stools.

Vomiting.—There was none.

Pain.—Two cases had general abdominal pain during treatment, especially over transverse and descending colon. One of these cases had dysenteric symptoms with free *E. histolytica* in stools; this case was not cured. Two cases had general abdominal pain during last two days of treatment. Both these cases were cured.

Bowels.—In the case with free *E. histolytica* in stools there was marked increase of number of motions per diem.

Nausea without vomiting.—The two cases with increased abdominal pain suffered from nausea each day of treatment after the drinks.

In the remaining five cases the drug caused marked increase of appetite and the patients felt better for the treatment. Three out of these five cases were cured.

2. The Root Bark.

The treatment lasted ten days; drinks and enemas were given. Number of cases treated 30; 11 cured—i.e., 36.6 per cent.

Vomiting.—Four cases suffered from vomiting. Two cases vomited only once after treatment and that after first drink on first day of treatment. One case vomited after first drink on first and second days of treatment. All these cases who vomited were cured.

Bowels.—Two cases had increased number of motions per diem during treatment. Both these cases had free *E. histolytica* in stools, with dysenteric symptoms when put on treatment; neither of them was cured.

Pain.—Five cases had increased pain distributed generally over abdomen during each day of treatment. This includes the two cases mentioned above with free *E. histolytica* in stools; in these two cases there was increased tenderness over ascending, transverse, and descending colon. None of above cases were cured. Two cases had during treatment increase of pain and tenderness over descending colon. One of these cases was cured. Eight cases had occasional abdominal pain, five of whom were cured.

Nausea without vomiting.—Two cases suffered from nausea after drinks during each day of treatment; one case after drinks of first and second days of treatment only.

In 15 cases the root bark caused increase of appetite and patient felt better for the treatment.

3. The Root.

(a) The treatment lasted 10 days; drinks and enemas being given. Number of cases treated 27; 13 cured—i.e., 48 per cent.

Vomiting.—Four cases suffered from vomiting. Three cases vomited after first drink of first day of treatment, two of these cases were cured. One case vomited on first and second day of treatment after first drink. This case was not cured.

Bowels.—In two cases the treatment caused an increase in number of stools per diem. Both these cases had free *E. histolytica* in stools and dysenteric symptoms when put on treatment. These two cases were not cured.

Pain.—Eight cases suffered from general abdominal pain during each day of treatment. This includes the two cases mentioned above with free *E. histolytica* in stools. None of these cases were cured. Five cases suffered from occasional abdominal pain, one of whom was cured.

Nausea without vomiting.—One case had nausea each day after drinks. Two cases had nausea after each drink on first and second days of treatment only.

Fourteen cases felt much better for the treatment and had marked increase in their appetites; 12 of these cases were cured.

(b) In six cases drinks only were given without enema injections. The treatment lasted 10 days. Three out of six patients thus treated were cured—i.e., 50 per cent.

Vomiting.—None.

Bowels.—No change in condition or number of motions.

Pain.—The treatment caused no abdominal pain.

Nausea.—One case had nausea after drinks during whole of treatment; this case was not cured. One case had nausea after drinks during first and second days of treatment only; this case was cured. One case had nausea during first day of treatment only and was not cured.

All the above cases except the one patient who had nausea during each day of treatment felt much better for the treatment and had increased appetite.

Second Course of Treatment.

Twelve cases who had not been cured by the first course were given a second course of chaparro amargosa, drinks, and enemas. In 9 of these cases the first course had consisted of drinks and enemas, and in 3 cases the first course had been one of drinks only. None of these cases on the second course of treatment were cured. Out of the 9 cases above-mentioned 3 had dysenteric symptoms with free *E. histolytica* in their stools. The symptoms caused by the second course of treatment were practically the same as in the first course.

Chaparro Amargosa, Bitter Principle.

Three cases were given the bitter principle extracted from chaparro amargosa root bark. The dosage was equivalent to that given in the other forms of the drug and the same method of treatment was carried out, with the exception that the drug given by the mouth was given in cachets. None of the cases were cured. Cases 1 and 2 had *E. histolytica* cysts in the stools. Case 3 had free *E. histolytica* with dysenteric symptoms, and this case had had a previous course of chaparro amargosa root extract.

Vomiting.—None.

Bowels.—Case 3 had increased motions during treatment.
Pain.—In Case 1 treatment caused occasional pain over area of transverse colon. Case 2, no pain. Case 3 had general abdominal pain, especially severe over whole colon area, during each day of treatment.

Nausea.—Case 3 had nausea after each of the drinks.

Cases 1 and 2 were given a second course of treatment with the bitter principle; the drug had the same effect. The cases were not cured.

A fourth case was treated who had had no previous treatment for amoebic dysentery and had contracted the disease in France three months before treatment with the bitter principle. This case was not cured. There were nausea and headache during the treatment and occasional abdominal pain. After the failure of the bitter principle a course of *chacarro amargosa* root was tried, which also proved a failure. This case was subsequently given a course of salol coated emetine bismuth iodide pills, gr. iii. per day for 12 days, and was cured.

Simaruba Bark.

Seven cases were treated and 3 were cured—i.e., 42·8 per cent. The method of treatment was the same as for *chacarro amargosa*. The bark was cut into about 4-in. lengths and treated the same as the *chacarro* preparations. The dose varied from a half to two handfuls.

Three cases were given drinks and enemas made from half a handful of the pieces of bark for each dose. One of these cases was cured.

Three cases were given one handful of the pieces of the bark for each dose. One of these was cured.

Another case was given two handfuls of the pieces of the bark for each dose and was cured.

The cases given a half handful to the dose suffered no ill-effects from the drug.

Of the three cases with one handful for each dose, one suffered no ill-effects. The other two had nausea after the drinks.

The case with two handfuls for each dose had nausea each day after the drinks and vomited after each drink on first day and after first drink on second and third days of treatment.

Conclusions.

The results with the different preparations may be summarised as follows:—

Preparation.	Cases treated (81).	Cases "cured" (34).
Chaparro, twigs and leaves ...	7	4
" root-bark	30	11
" root	33	16
" bitter principle ...	4	0
Simaruba	7	3

The numbers of cases treated with the different preparations are not sufficiently large to warrant any comparison based on percentages of cures. It is noteworthy, however, that the root-bark of *chacarro*, which, as we are informed, gives a much larger yield of the bitter principle than the other parts of the plant, shows, at any rate, no better therapeutic performance than these; and, in conformity with this finding, we failed to cure any case treated with the isolated bitter principle. Yet the presence of such principles, either identical or very closely related, in both *chacarro* and *simaruba* is highly suggestive of their connexion with the therapeutic action common to these drugs. Possibly the few cases treated with the bitter principle happened all to be refractory to the effect of *chacarro*; we know that one had previously been treated with the drug without success, and that another was uncured by a course of the drug after the isolated principle had failed.

When a first course of treatment with *chacarro amargosa* has failed, a second course of treatment does not appear to be of any use; 12 cases were so treated with a second course and none were cured.

Concerning the effects incidental to the treatment it may be noted that pain, vomiting, nausea, and increased number of motions were caused by all preparations, except the twigs and leaves, which gave no vomiting; but only 7 cases had this preparation. In no case were the above symptoms so severe as to interfere with treatment.

No case with free *E. histolytica* in the stools was cured, and in these cases abdominal pains and the number of motions per diem were increased by the treatment.

The percentage of cures was higher among those cases who suffered no ill-effects from the drug and whose general health improved during treatment.

Of the six cases who were given drinks without enemas three were cured, and it is possible that enemas are not an essential part of the treatment.

The bitter principle extracted from the *chacarro amargosa* root bark caused the same symptoms as the other forms of the drug, but of the four cases treated none were cured.

The *simaruba bark* when given in the way described above, with two handfuls to each dose, has very much the same effects as the *chacarro amargosa* preparations.

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF TRAUMATIC RUPTURE OF JEJUNUM.

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APART from the rarity of the accident there are many points of interest in the following case:—

Deck hand A. B., R.N., aged 44, was admitted to hospital on Nov. 26th, 1917, at 12.30 P.M., complaining of severe abdominal pain. Whilst embarking on to his ship on the 25th, about 7 P.M., and half-way up the gangway, he fell into the water, a distance only of 6 feet. It is probable that during the fall he struck some obstacle. On external examination well-marked bruise over left anterior superior spine of ilium; no other sign of external injury.

After being rescued from the water patient vomited and complained of severe pain in lower abdomen. He was under the influence of drink. No recurrence of vomiting until 11.30 P.M. same evening; after this no more vomiting. He was treated on H.M.S. — till the following morning when he was transferred to hospital.

On admission patient was in critical state; face pinched, respirations thoracic, tongue dry, and sordes about mouth. P. 150, T. 97°, R. 40. Both recti abdominis were rigid, no abdominal movement; absolute constipation since accident. Abdomen not distended; no diminution of liver dullness. There was dullness in both flanks; whole abdomen extremely tender. No bladder dullness, but small quantity of urine obtained which contained mainly blood.

The diagnosis was intraperitoneal rupture of some viscus, thereby causing general peritonitis. The one favoured was that of intraperitoneal rupture of the bladder for the following reasons: (1) Site of bruise with (?) fracture of pelvis; (2) presence of large quantities of blood in urine; (3) free fluid in peritoneal cavity; (4) absence of flatulent distension of abdomen. The special tests for ruptured bladder were not applied owing to critical state of patient.

Operation.—General anaesthesia having been administered laparotomy was performed without delay. Median subumbilical incision; on opening peritoneal cavity large quantities of straw-coloured fluid, not offensive, exuded; no gas. Bowels in state of general peritonitis. On careful examination bladder and kidneys were found normal. The small intestine was then examined. On approaching upper part of abdomen trace of bile noticed; large perforation size of shilling piece found in jejunum about 12 inches from duodeno-jejunal flexure; the part was freely movable. Perforation was of punctate variety with slightly ragged edges on antimesenteric border. Gut perfectly healthy; no sign whatsoever of previous ulceration or existing disease. The perforation was sutured, reinforced by Lambert sutures in transverse direction. Peritoneum cleansed; drainage suprapubically and in both loins. Saline enema given before leaving theatre, with 1/30 gr. strychnine hypodermically. Patient in very weak condition. He rallied for a few hours but succumbed at 5 P.M. the following day.

A post-mortem examination showed no other macroscopic internal injury, the blood in the urine arising from contusion.

Conclusion.—This accident is rare, and certain questions arise. 1. Why should an external injury cause rupture of free hollow viscus remote from seat of violence? 2. In the presence of a bowel perforation why was there so little gas in the abdominal cavity? The absence of this, together with normal liver dullness, increased the difficulty in diagnosis. The size of the rupture certainly hastened the onset of general peritonitis. The theory as to the cause of the perforation is of interest. Possibly owing to the sudden increase in intra-abdominal pressure the intestine gave way. Or is it possible that the man in falling struck some object which nipped the bowel between itself and the vertebral column, leaving no bruise on the abdominal wall except that on the anterior superior spine of the ilium? The short distance of the fall also adds interest to the case. I am indebted to Fleet-Surgeon E. A. Grazebrook and Lieutenant-Colonel A. E. Weld for kindly permitting me to publish this case, and to Captain O. R. Belcher for his assistance at the operation.

NOTES ON TWO CASES OF BENIGN TERTIAN MALARIA TREATED BY DISODO-LUARGOL.

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THE following two cases of benign tertian malaria were treated, apparently successfully, by intravenous injections of disodo-luargol:—

CASE 1.—Lieutenant —, aged 45, came under observation on April 15th, 1917. He had acquired malaria in Bismarck Archipelago in March, 1915, and had had treatment since with quinine by mouth and intramuscularly. He had had repeated attacks of malaria, not regularly recorded, but sufficiently frequent for him to be invalided to Australia. From July, 1916, to January, 1917, the attacks came at about intervals