

TURTLE POISONING

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ABSTRACT

Turtle poisoning or chelonitoxication have been reported from the tropical and subtropical Atlantic, Pacific and Indian Oceans and the species of turtles responsible for the same are also known. While the clinical characteristics of the disease have been reported from time to time, nothing much is known about the pharmacology or chemistry of the toxins. To date there are no known antidotes to combat chelonitoxin. By far the largest number of instances of turtle poisoning are from the Indian Ocean and Western Pacific. Some observations on instances of turtle poisoning in India involving fatalities is reported here with a brief review.

INTRODUCTION

The study of marine turtles has been receiving more attention in recent years, more so as they have come under the category of endangered species needing urgent conservation and management measures to ensure their protection. A subsistence level fishery for turtles exist in some areas, and in other coastal areas where intensive inshore fisheries exist, incidental captures in fishing gears are not infrequent. While measures for the protection of the nesting sites, implementation of ban on fishing turtles and attempts at headstarting or sea ranching for augmenting turtle resources may be under way, turtle flesh is still consumed from fresh catch in some places thereby exposing people to accidental cases of poisoning. We have here

used the term turtle poisoning to denote this condition, Halstead (1956, 1959, 1970) has reviewed the problem of turtle poisoning or chelonitoxication and has listed the following species of turtles which may be poisonous during certain periods in some areas.

Caretta caretta gigas Deraniyagala
Chelonia mydas (Linnaeus)
Eretmochelys imbricata (Linnaeus)
Dermochelys coriacea (Linnaeus)

Besides these, among the Trionychidae, *Pelochelys bibroni* (Owen) from the rivers and sea coasts of South East Asia, Indonesia, Philippines and New Guinea is also known to be responsible for turtle poisoning. Cases of turtle poisoning from the Indian Ocean are not many but a large number of fatalities have been reported from a few places from India and Sri Lanka.

The major outbreaks of turtle poisoning in these two countries are as follows :

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Location	No. of cases	No. of deaths	Species	Remarks
1. Panatura, S. of Colombo, Oct. 1840	.. 28	18	<i>Chelonia mydas</i>	Tennant (1861)
2. Karuppankudiyiruppu, Sri Lanka, 27 June, 1888	.. —	12	<i>Eretmochelys imbricata</i>	Deraniyagala (1939)
3. Mandativu, Jaffna, Sri Lanka, June 1921	.. —	7	<i>Eretmochelys imbricata</i>	Deraniyagala (1939)
4. Vaddukoddai, Northern Province, Sri Lanka April, 1923	.. —	4	<i>Eretmochelys imbricata</i>	Deraniyagala (1939)
5. Tuticorin, Tamil Nadu, India, 2 January, 1961	.. 9	3	<i>Eretmochelys imbricata</i>	Present report
6. Sakthikulangara, Quilon, India, 27 May, 1961	.. 130	18	<i>Eretmochelys imbricata</i>	Pillai <i>et al.</i> , 1962 & present report
7. Punnaikayal, near Tuticorin, India, 19 April, 1977	.. —	5	<i>Chelonia mydas</i>	Present report
8. Manapad, near Tuticorin, India, 3 August, 1977	.. 300	10	<i>Eretmochelys imbricata</i>	Present report
9. Tuticorin, India, June 1980	.. —	10(?)	<i>Eretmochelys imbricata</i>	Present report
10. Moolachi, Kanyakumari Dist., India, 1979	.. —	4	?	Present report
11. Tuticorin, India, 22nd May, 1983	.. 6	4	<i>Chelonia mydas</i>	Present report

As far back as 1861, Tennant mentions that 'At certain seasons the flesh of turtle on the south-western coast of Ceylon is avoided as poisonous, and some lamentable instances are recorded of deaths ascribed to its use. At Panatura to the south of Colombo, twenty-eight persons who had partaken of turtle in October, 1840, were immediately seized with sickness after which some survived and eighteen died during the night. Those who survived said that there was nothing unusual in the appearance of the flesh except that it was fatter than ordinary. Other similarly fatal occurrences have been attributed to turtle curry; but as they have never been proved to proceed exclusively from that source, there is room for believing that the poisons may have contained in some other ingredient.' These early comments are interesting and as we shall see from the present reports, Medical Science has yet to come up with a good remedy for chelonitoxication.

Some of the earlier workers including Deraniyagala (1939) have attributed faintly toxic properties to the meat of *D. coriacea* when eaten during some seasons along the southern coast of Sri Lanka. Feeding on certain toxic marine algae or ascidians or the Portuguese man-of-war (*Physalia*) is the reason attributed to the flesh of *E. imbricata* acquiring poisonous qualities. No studies have been carried out on this, although most of the fatalities due to turtle poisoning in India and Sri Lanka have been due to eating the flesh of this species. There is no sure way of telling when the turtle flesh would be poisonous or not. According to Deraniyagala (1939) experienced fishermen are said to chop off the liver of *E. imbricata* and feed it to the crows and if they discarded the liver the animal was considered poisonous. Feeding of turtle meat to dogs and cats for reactions has been reported from New Guinea (Bierdrager, 1936). The origin of chelonitoxin is still unknown. Turtle poisoning shows some similarities to ciguatera and could occur during any season and hence considered most probably due to the food ingested by the turtle.

The clinical characteristics of marine turtle poisoning have been reported by some workers and reviewed by Halstead (1970) from which the following is taken. The symptoms which develop from within a few hours to even a week after the ingestion of poisoned turtle flesh are reported to consist usually of 'nausea vomiting, diarrhoea, facial tachycardia, pallor, severe epigastric pain, sweating, coldness of the extremities and vertigo.' Acute stomatitis consisting of a dry burning sensation of the lips, lining of the mouth and throat is sometimes reported; so also in some cases, a sensation of tightness in the chest. Though there is pro-

nounced hypersalivation, swallowing becomes difficult and the patient may be lethargic and unresponsive. The oral symptoms are said to develop gradually and become increasingly severe after a few days resulting in the tongue developing a white coating and eventually becoming covered with multiple pinhead size reddened pustular papules. The pustules may break down into ulcers or persist for several months. Deep reflexes may be diminished. In severe cases somnolence is pronounced. It may be difficult to awaken the patient who gradually lapses into coma which is rapidly followed by death.

Pathological reports based on autopsy are few (Bierdrager, 1936; Siegenboek van Henkelom, 1936; Kinugasa and Suzuki, 1940; Romeyn and Hanefeld, 1956; and Pillai *et al.*, 1962). The treatment is symptomatic as to date there appears to be no known antidotes for chelonitoxin. Hardly any attempts have been made to test the toxic properties of the flesh or blood of poisonous sea turtles experimentally on laboratory animals. The attempts of Kinugasa and Suzuki (1940) in this regard using guinea pigs, mouse and frogs as test animals have not been very conclusive. There is complete lacunae regarding the pharmacology and chemistry of the toxin involved. Thus it will be seen that there are large gaps to be bridged and hence the need for proper documentation of data if any unfortunate incident, however, small should occur.

1. TURTLE POISONING AT TUTICORIN, TAMIL NADU, INDIA

Place : Fishing village off North Beach, Tuticorin.

Date : 2 January, 1961.

No. of cases : About Nine

No. of deaths : Three (One adult and two children)

Species of turtle eaten : *E. imbricata*

A turtle (*E. imbricata*) caught in fishing nets on 2 January morning was cooked and eaten for lunch. Among those who took part in the meal, an infant aged 1½ years who was fed some meat and another aged 3 years died on 5-1-61 and 6-1-61 respectively. They started vomiting from the night of 2-1-61 and despite local medication they did not survive. By 3-1-61 all those who had eaten the turtle meat developed symptoms. The case of Shanmugham aged 20 years was as follows : the onset of symptoms occurred on 3rd afternoon while he was at sea where he had earlier in the day made some dives and picked up 13 chanks from waters 3 to 4 meters in depth. Throughout the day he had no appetite, but by noon felt giddiness and nausea. On return to land early in the afternoon he complained

of pain in the chest and started vomiting frequently. Food or fluids taken could not be retained. On 4-1-61 the symptoms persisted and there was ulceration in the mouth and inner side of lips. Despite local treatment, the nature of which was not divulged, there was steady deterioration in his condition. Alarmed at what was happening, on 5-1-61 noon he was taken to Tuticorin General Hospital in coma and expired in the early hours of 6-1-61.

A dog which had eaten the uncooked leftovers and the blood of the turtle and a goat which drank the water in which the blood of the turtle was mixed by washings of the meat died within 24 hours. This did create some panic among the villagers. On 19-1-61 one of the dogs of the family which had eaten some of the cooked leftovers of the turtle meat was found in a very emaciated state, with ulceration in the mouth and unable to consume food. It died three days later after the photograph was taken by one of us (E. G. Silas). (Plate)

Symptoms : Only on 5-1-61 did they think of going to the Government Hospital for treatment. Even after a fortnight some of the survivors were having spells of nausea and vomiting ; pain in the joints ; burning sensation in the stomach every now and then ; scratching all over the body, especially at night and insomnia. The urine was deep yellowish red. The ulceration in the mouth and longitudinal fissures on the tongue which was heavily coated white to bluish appeared characteristic. (Plate)

2. TURTLE POISONING AT SAKTHIKULANGARA, QUILON, KERALA, INDIA

Place : Sakthikulangara, Quilon, Kerala

Date : 27-5-61

No. of cases : 130

No. of deaths : 18

Species of turtle : *E. imbricata*

Pillai *et al* (1962) have reported on some aspects of this incident which occurred on and after 27 May 1961 involving 130 persons who had consumed turtle meat resulting in the death of 18 adults and children.

On 27-5-61 three turtles (two *C. mydas* and one *E. imbricata*) were landed in the forenoon at Marathadi close to Sakthikulangara, Quilon. The meat of the three turtles were distributed amongst several families totalling 130 members including children. No symptoms were apparent on Saturday, the 27th. However, by 28th many were sick from vomiting and nausea and resorted to

medication from local physicians. There was no relief and on Monday 29th a man and two children died. This was followed by two more deaths the same day with still many afflicted with the poisoning. The health authorities took prompt action to see that all those who had taken turtle meat on 27th were rushed to the Government Hospital, Quilon for observation. Enquiries revealed that those who had consumed the flesh of *E. imbricata* were the ones affected. Despite all efforts the following 13 victims died in the hospital taking the death toll to 18.

Name	Age	Sex	Date of admission	Date of death
1. Sulochana	14	F	29-5-61	6 AM 30-5-61
2. Usha	9	F	..	5.05 AM 30-5-61
3. Sreedharan	35	M	..	6.30 AM 30-5-61
4. Bhargavi	30	F	..	4.15 PM 30-5-61
5. Mone	2	M	..	1.30 AM 29-5-61
6. Ummini	45	F	..	4.45 AM 30-5-61
7. Sarojini	33	F	..	2.10 PM 31-5-61
8. Nirmala	6	F	30-5-61	9 AM 31-5-61
9. Stella	17	F	..	11.55 PM 31-5-61
10. Mary	8	F	..	5.20 AM 31-5-61
11. Lazar	18	M	..	11.00 AM 1-6-61
12. Karmali	23	F	..	7.15 PM 1-6-61
13. Margaret	55	F	..	8.30 PM 2-6-61

It is felt that the report by Pillai *et al.*, (1962) is extremely important, though not easily accessible to turtle workers. In view of this, relevant part of this report is cited below :

* On the morning of Saturday (27-5-1961), 5 turtles were caught alive by fishermen. The flesh of one of them which alone proved poisonous was shared by 12 families and was consumed the same afternoon. The preparation made was a curry which in some houses was prepared after boiling and decanting. No incidence of poisoning occurred in these families and in those who ate the other four turtles. Among those poisoned all had taken curries prepared without decanting after boiling but were symptom free on the first day except one child, who vomited several times the same evening. Another child from the same family started vomiting on Sunday morning i.e., on the next day and later developed fits and died on the way to hospital. It was on Sunday that most of the persons who consumed the flesh of the poisonous turtle without decanting after boiling, started vomiting.

Symptoms

The presenting symptoms in all these cases were vomiting and severe constipation. Vomitus was bilious in nature and contained plenty of mucus, but no blood. All of them complained of pain in the throat and general weakness. Even those persons who were admitted with mild symptoms had pain in the throat. Six of the patients who were pregnant women aborted before death. One case, an adult male, who was convalescing, suddenly developed behaviour disorder, but improved later with treatment.

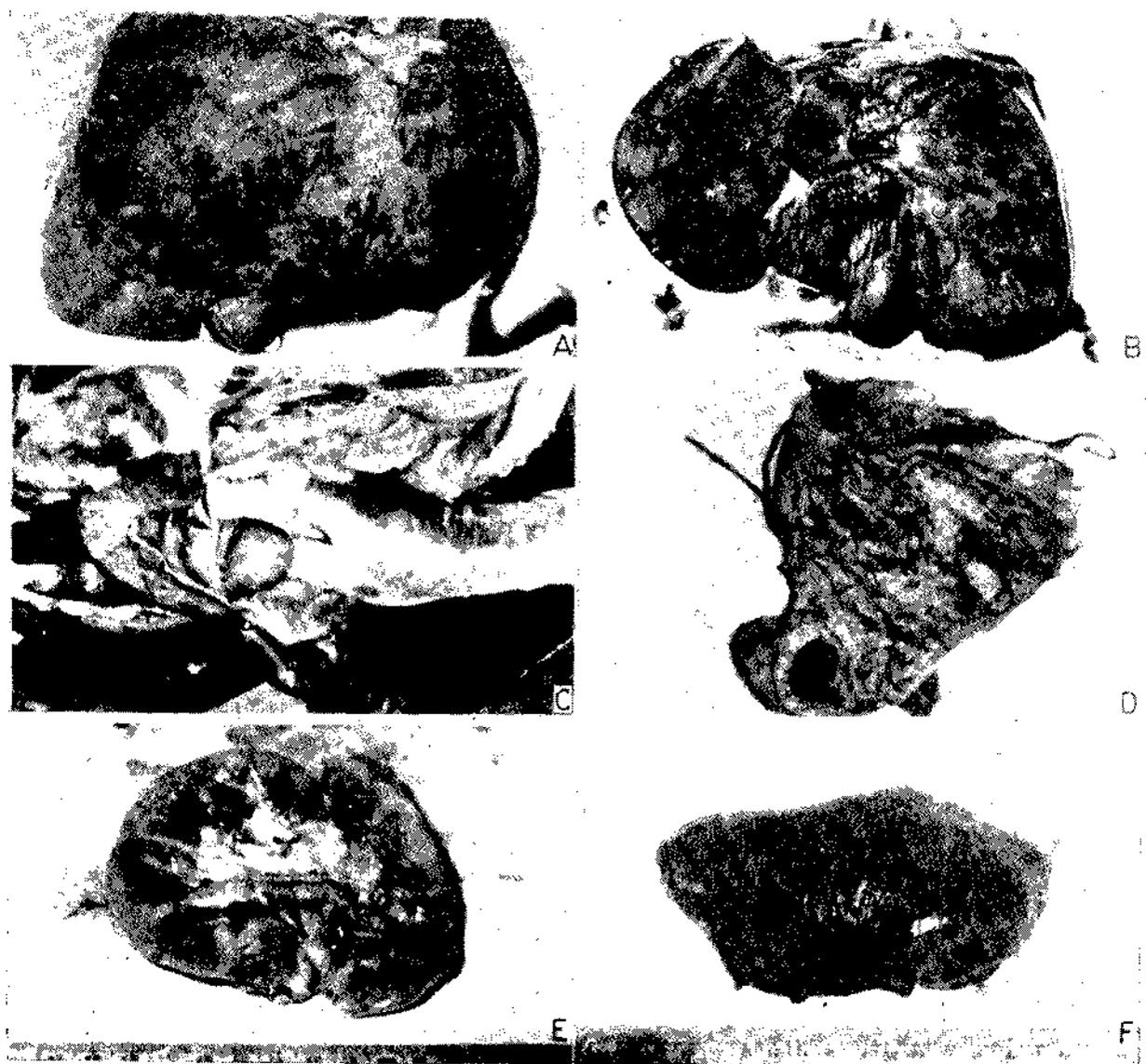


PLATE I. Autopsy of an 18 year old : A, B. Liver showing haemorrhagic discoloration and distended gall bladder ; C. Close up view of distended gall bladder ; D. Inner view of stomach showing patches of haemorrhage and congested gastric mucosa ; E. Kidney intensely congested and F. Enlarged spleen. (Photo : E.G.S.)

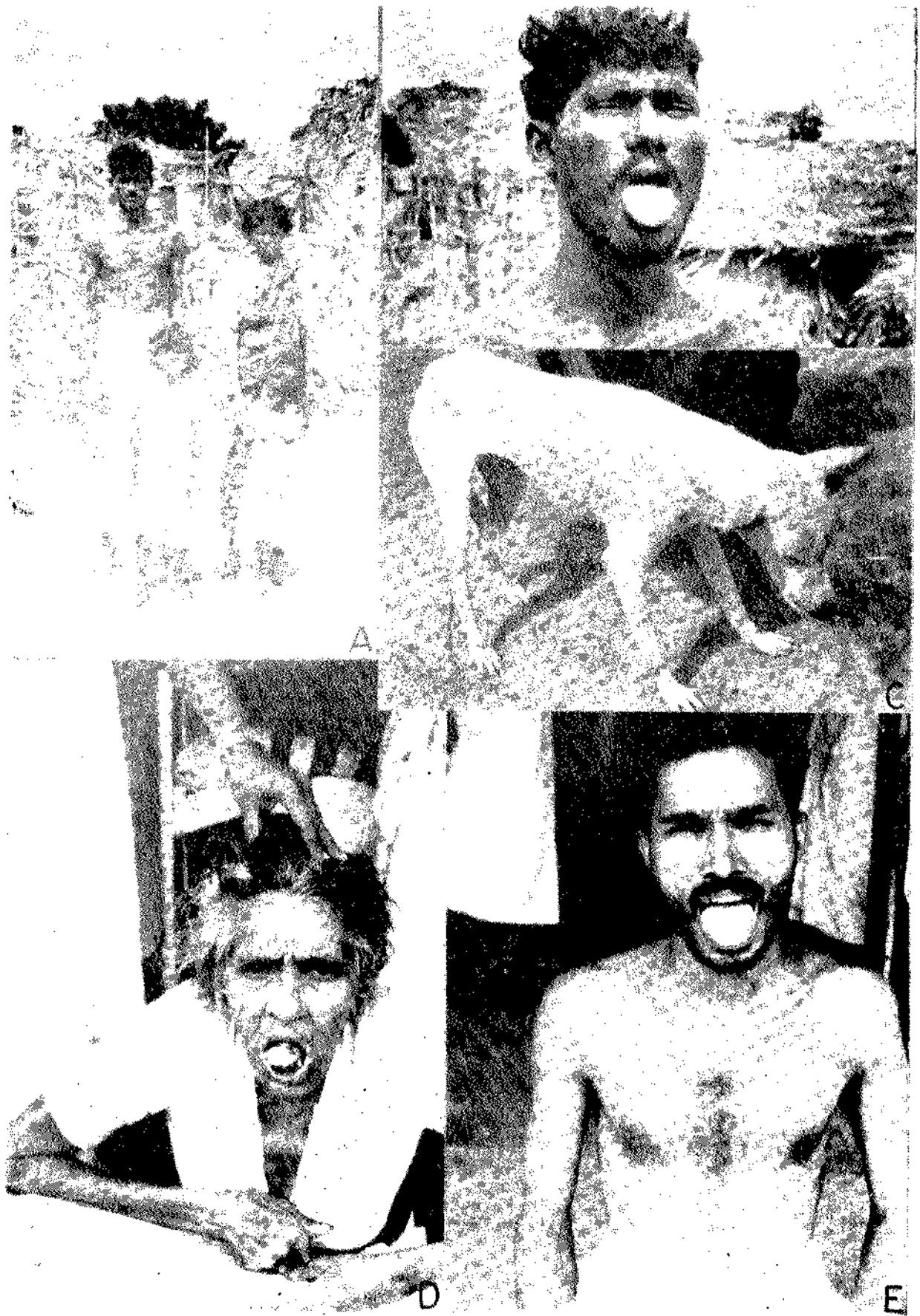


PLATE II. A-E. Victims of turtle poisoning : A. Family which survived after consuming poisoned flesh of hawksbill at Tuticorin in 2nd January 1961 ; B. Man with ulceration of mouth and white coated tongue with deep fissures (not clear in Plate) ; C. Dog which had consumed poisoned hawksbill flesh in weak state and died three days after the photograph was taken. D and E. Two of the survivors of turtle poisoning incident at Sakthikulangara, Quilon in May 1961. Characteristic ulceration of mouth and fissured tongue in recovering patients even two weeks after the incident. (Photo : E.G.S.).

Physical findings

Thirty-two of the patients were drowsy with sunken and congested eyes and had moderate fever, the temperature varying between 99-101 degree F. No allergic manifestations were noted in any of the cases.

Alimentary system: Tongue was dry and coated and longitudinally fissured. Two or three days later all showed severe glossitis. This finding was also seen in the 98 cases admitted with mild symptoms. Throat was congested. Abdominal examination did not reveal anything abnormal in the beginning except in one boy who had a palpable, firm liver which was not tender. In the 2nd week, in 32 patients the liver was found to be palpable upto three-fourth of an inch below the costal margin, but it was not tender.

Cardiovascular System: Slight tachycardia was noted in all the 32 cases with fall of B.P. (systolic pressure varying between 84-94 mm of Hg.). Nothing else abnormal was noted. E.C.G. was normal.

Respiratory System: Did not reveal anything abnormal except in 18 of the comatose patients who had pulmonary oedema just before death.

Central Nervous System: All were drowsy, 18 of them were comatose. Two cases (both children) had convulsions before death. Pupils were not reacting to light in 32 cases with severe symptoms. Deep reflexes were diminished. Plantar reflex was flexor. Fundus oculi was normal in all the cases.

Genito Urinary System: Nothing abnormal was detected.

Course and Complications

Children developed convulsions before death and adults died of coma. The total mortality in this series amounted to 18 and all died due to respiratory paralysis, the pulse and the heart sounds were good till the end and the ECG taken 30 minutes before death in one case was normal. Others who were serious in the beginning improved with the symptomatic treatment given, but as mentioned earlier, liver became palpable in 32 of them.

Investigations

1. Urine: Normal in all cases.
2. Blood: (a) Total leucocyte count 6,000-7,500/cmm., (b) differential count was normal, (c) E.S.R. 10-15 mm/1st hr., (d) Westengren Blood Urea—was raised in five cases but not significantly.
3. Liver function tests—normal.
4. C.S.F.: The tension was raised in five cases, but biochemical analysis showed nothing abnormal.
5. E.C.G.—normal.
6. Report from Public Health Laboratory:
 - (A) Bacteriological and serological examination from blood and motion for common food-poisoning salmonella and other organisms proved negative.
 - (B) Chemical analyser's report:

The usual inorganic or organic poisons were not found but the extract of the stomach contents

and liver on injecting into mouse and frog killed them. Control animal showed no symptoms.

7. Autopsy findings in 5 cases (1 woman, 1 child and 3 men): Serious cavities contained slight excess of fluid. Oesophagus showed ulceration of mucosa. Gastric mucosa was congested and oedematous. Small intestines contained thick bile. The intestinal mucosa and sub-mucosa showed marked oedema. The muscle bundles were separated out by oedema fluid. Large intestine contained thick mucus and bile and the mucosa showed oedema and ulceration. Liver: soft, friable, showed patchy congestion. Microscopy showed practically all the liver cells to have fatty changes with formation of fat cysts. There was centrilobular congestion and necrosis of the adjacent liver cells. Heart was flabby and showed subepicardial petechial haemorrhages. Kidneys were intensely congested and tubules showed cloudy swelling. The cerebral cortex was oedematous. The cortical vessels were intensely congested. The floor of the fourth ventricle showed congested vessels and petechial haemorrhages. The neurones showed degenerative changes.

The following notes based on personal observations by one of us (E. G. Silas) at the time of the incident and visits to the Hospital and Village supplement observation of Pillai *et al.* (1962).

1. Three turtles, 2 *C. mydas* and one *E. imbricata*, the latter locally known as 'Alungu-aama' were caught on 27-5-61 and *E. imbricata* was eaten by members of about 15 families for lunch. Symptoms started appearing on Sunday 28-5-61 when some felt nausea, vomiting and developed pain all over the body. Local medication gave no relief and deaths were reported from 29th, when all those who had eaten meat of the three turtles were rushed to the Government Hospital, Quilon for observations.

2. By 1st June '61 the death toll had risen to 18 and 6 more were on the critical list.

3. The onset of the symptoms were delayed by even 4 or 5 days and nausea and vomiting were the first signs of the illness.

4. Those who had taken turtle meat on a full stomach were said to be less affected.

5. According to the Hospital authorities, those who ate the meat from the posterior half of the turtle were more severely affected.

6. It was seen that one family boiled the meat thrice and drained off the water each time. None were affected in the family. However, they were not sure whether they had cooked the meat of *C. mydas* or *E. imbricata*.

7. Gastritis is one of the symptoms, but not enteritis. In fact all those who were affected developed constipation in a day or so.

8. Thick white coating and longitudinal fissures on the tongue were noticed in some by the fifth day. Many victims had ulceration of the mouth.

9. Fatalities were more among the younger age group and among females in this case. Death in children was accompanied by convulsions and fits. Death in adults took place usually 4 to 10 hours after the victims had lapsed into coma.

10. Nervous system seems to be affected as a depressor. Reflexes in victims seriously affected are very much diminished.

11. On the fifth day the urine of affected victims was found to be normal and nothing unusual was noted in laboratory examinations. However, in spite of saline transfusion given, the quantity of urine output was less than normal indicating malfunctioning of kidneys.

12. Some of the victims had fever, besides nausea, vomiting and body pain.

13. In the case of one victim (Stella) after the second day (29th May) slight improvement was seen and she was able to walk about freely, but sudden deterioration set in on 31st morning and she expired the same night.

14. Autopsy of an eighteen year old conducted on 1-6-61 showed that :

—There was no ulceration of mouth, tongue or genitals ; lungs collapsed and constricted ; liver slightly enlarged, discoloured and darker in places ; gall bladder exceptionally large and distended ; stomach with patches of haemorrhages ; spleen and kidneys enlarged ; urinary bladder distended ; no changes or ulceration in small or large intestine, but yellowish mucous present in the same (Plate II).

Pillai *et al.*, (1962) have presented photomicrographs of histological sections through oesophagus, small intestine, liver, kidney and heart showing the degree of damage and deterioration in organ tissues from the material from the autopsy. The oesophagus shows hydropic degeneration of epithelium and ulceration. The small intestine shows marked submucous oedema and separation of muscle bundles by oedema fluid. The section through the liver shows fatty changes and commencement of centri lobular necrosis. The kidney shows cloudy degeneration of tubules and the heart section through the floor of fourth ventricle shows subependymal ring haemorrhages.

15. Other points of interest were that in victims the cardiac rate was steady and normal until the last. Death was attributed to respiratory failure.

16. Some of the case histories taken from the records of the Government Hospital, Quilon through the courtesy of Dr. (Mrs.) Sumitra, District Medical Officer are given in Annexure I.

3. TURTLE POISONING AT PUNNAIKAYAL, TIRUNELVELY DISTRICT, TAMIL NADU, INDIA

Place : PUNNAIKAYAL fishing village 26 km south of Tuticorin

Date : 17th April, 1977

No. of cases : 250 (approx.)

Deaths : 5 children aged between 1 and 6 years on 19-4-77

Names

1. Chitra	Girl	1 yr old	Breastfed baby
2. Jesamma	Boy	1½ yr old	„
3. Amaladasan	Boy	4 yrs old	
4. Thomas	Boy	4 yrs old	
5. Jeeva	Girl	6 yrs old	

Cause of death : Suspected to be the consumption of meat of *C. mydas* captured on 16-4-77 and butchered the next day, the meat being shared by 160 families in small quantities (approx. 200 gm)

Although no death was reported among adults, the men complained of weakness but perforce to earn their daily bread they had to go out for fishing. Some of those who consumed the meat, even after 2 or 3 weeks complained of burning sensation in the lips and had deep fissures on the tongue. Until the deaths on 19-4-77, the causative factor for the symptoms was not known and at first was not connected to turtle meat consumption. But the general concensus among the villagers after the deaths took place was that this was due to the consumption of turtle meat. The symptoms which had developed in the adults persisted 2 to 3 weeks after 17 April. However, we would not want to hazard a guess about the children because two of the children were breastfed babies and they did not consume the meat. Their mothers had eaten the meat, but they were not affected. The doctors at Tiruchendur and Thenthiruperai were unable to throw any light on the actual reasons and were probably under the misconception attributing the deaths to botulism. But botulism normally occurs within hours after consuming any contaminated food. The symptoms in brief shown by the affected children are as follows : nausea and excessive vomiting, slight temperature, fits and spoils

of unconsciousness, hands becoming stiff. To investigate the incident the visits to the village were made on 20-6-77 and two weeks later. The condition of some of the affected adults several days after the incident indicate that this is a case of turtle poisoning, the species involved being *C. mydas*.

4. TURTLE POISONING AT MANAPAD, TIRUNELVELY DISTRICT, TAMIL NADU, INDIA

Place : Manapad

Date : 3-8-1977

No. of cases : 300

Deaths : 10

Species responsible : *E. imbricata*

At the Manapad fishing village in the bottom set gill nets on 2-8-77 the fishermen caught some specimens of *C. mydas* and *Lepidochelys olivacea* and on 3-8-77 two *E. imbricata*. All these turtles were butchered on 3-8-77. The meat was distributed to a large number of families in small quantities, half a coconut-shell measure. It is said that about 300 adults and children ate the meat made into curry on 3-8-77.

The local people by tradition avoided eating the meat of all turtles except the green turtle *C. mydas*. They were also aware of the occasional poisonous quality of the meat of *E. imbricata*. Besides, the meat of the hawksbill is considered to be of poor quality having a repulsive red tint. Being fond of turtle meat, and there having been a paucity in the landings of turtles in the village at that time, casting aside the traditional precaution and with the encouragement from the butcher the meat of all the turtles were distributed for consumption mixing even the intestines and livers which normally are discarded.

The children upto the age of 6 developed symptoms only about 48 hours after consuming the meat and by the noon of 5-8-77 they started vomiting and experienced giddiness. The parents neither paid any serious attention to them nor attributed the symptoms to turtle meat. So the children were treated with folk medicines but on 6th morning the vomiting and giddiness accompanied by severe stomach pain aggravated and so they were rushed to the nearest medical aid centre. Until then neither the doctors nor the parents suspected any food poisoning. Eight children between 8 months and 8 years of age who had been taken to the hospital suddenly developed fits, collapsed and died. The adults, about 75 of them began to feel symptoms of heaviness of head, nausea, exhaustion and exceptional thirst on the noon of 5th August. They attributed these indispositions to the extra long exposure to the sun that day and bit of drinking as most of them were at Tuticorin, 50 km away from their village participating in the 'great festival of golden car.' Solomon 22, who stayed back at the village had excessive vomiting and began to be giddy by 5th noon. So also his one year old daughter who developed symptoms of vomiting and diarrhea had been rushed to the hospital by the neighbours. Solomon lost consciousness and passed away in his house on 6th morning. Enquiry revealed one more adult Lawrence 45, also died in the evening of 6-8-77 evincing the same symptoms. Only at this point of time did people suspect that the cause was the consumption of turtle meat particularly the hawksbill turtle. All adults who had the slightest symptoms were rushed to various hospitals at Tiruchendur, Manapad, Udangudi and Tuticorin in the district. The symptoms of delayed turtle poisoning in the cases of adults were giddiness, heaviness of head, nausea, vomiting and diarrhea. In most of the cases there was burning sensation in the mouth and ulceration of the upper oesophagus, pain in the stomach and extraordinary thirst.

Age Group or Name	Date on which the meat was consumed	Date of developing symptoms	Date of death	Symptoms
8 months	3-8-77 (mother ate meat)	5-8-77	6-8-77	Diarrhea only.
1 year	3-8-77	5-8-77	6-8-77	Vomiting, fits.
1-8 years	3-8-77	5-8-77	6-8-77	Vomiting, giddiness, fits.
Solomon, 22 years	3-8-77	5-8-77	6-8-77	Vomiting, giddiness, coma.
Lawrence, 45 years	3-8-77	5-8-77	6-8-77 (evening)	Vomiting, giddiness, coma.
All adults	3-8-77	5-8-77	recovering	Vomiting, giddiness, loss of appetite, general debility.
All other children more than 8 years old	3-8-77	5-8-77	recovering	Vomiting, giddiness, fits.

Treatment

The Press reported that one suckling baby (Barbara 8 months) died because the mother had eaten the poisonous meat of turtles. Our enquiries reveal that the child died of severe diarrhoea (no vomiting) and passed away due to dehydration and lack of attention. The doctor who attended to the child at a private clinic considered the case to be one of neglected gastroenteritis. Personal interview with the mother in question showed that though the mother of the baby had consumed the turtle meat she had not developed symptoms even 5 or 6 days after the incident.

We are constrained to note that among the local medical practitioners there has been a complete lack of knowledge about turtle poisoning and its effects. The treatment was only for visible symptoms exhibited by the patients. In two private clinics at Udangudi, the doctors who suspected that the symptom could have been caused through neurotoxin, administered mild purging to eliminate toxins, charcoal tablets to detoxicate and tetracycline as antibiotic and vitamins. One homeopathic practitioner at Udangudi treated 9 severely affected persons (age from 1 to 35 years) successfully with siddha medicine, his own preparation called 'vishakudori' tablets. The medical officer of Government Hospital, Tiruchendur, attributed the 3 deaths which occurred there to respiratory failure. Medical officer at Udangudi Government Hospital said that the nature of the poison corresponds to ptomaines as in the mesocarines. He also reported that the deaths (3) in his hospital were due to respiratory failure.

On 9-8-77 at Kulasekarapatnam Government hospital post mortem was conducted on two of the victims, a girl child and an adult. The results could not be obtained.

5. TURTLE POISONING AT TUTICORIN, TIRUNELVELI DISTRICT, TAMIL NADU, INDIA

Place : Tuticorin

Date : June, 1980

No. of deaths : + 10 (?)

Species responsible : *E. imbricata*

Symptoms : Typically as in earlier cases

Among the dead was a breastfed baby about 8 months old and the child died within 24 hours after the mother had eaten the turtle meat curry. The mother was hardly about 18 year old and she was admitted to the Government hospital at Tuticorin and was showing typical symptoms and on the third day after admission to the hospital her tongue had a single, deep furrow

as though it was going to cleave into two. The mouth was ulcerated. This particular case is of special importance in view of the death of her baby which was breastfed. In earlier incidents, the breastfed babies had died after their mothers had consumed turtle meat. However, the mothers had not developed any symptoms of turtle poisoning and the medical reports attributed the deaths of the children as due to other causes. In this incident, among the dead there was only one adult and all others were children under 12 years of age.

6. TURTLE POISONING AT MOOLACHI, KANYAKUMARI DISTRICT, TAMIL NADU, INDIA

Place : Moolachi

Date : 1979

No. of death : 4 children

Species : not known

Cause of death : Consumption of turtle meat

Moolachi is a village in the interior part of Kanyakumari District near Thuckalay and the turtle meat was transported by cycle from the coast. The affected children were all taken to local doctors who treated them for gastroenteritis.

Visit to the village was made, 3 days after, as the news appeared in the local press and the interrogation of the affected families revealed that this was a sure case of turtle poisoning. A few adults who consumed the meat also complained of the symptoms of nausea, giddiness, general weakness and had deep furrows in the tongue.

7. TURTLE POISONING AT TUTICORIN, TIRUNELVELI DISTRICT, TAMIL NADU, INDIA

Place : Tuticorin

Date : May, 1983

Deaths : 4 children

Species responsible : *C. mydas*

The incident was confined to only one family and a guest child. One of the children who died was one year old and breastfed. The mother had purchased the meat scrappings and leftover meat of some 500 gm for just Rs. 1 only in the noon (1300 hrs), the turtle having been butchered before the sunrise and the meat brought to V.O.C. market. The meat was cleaned for cooking by 1800 hrs i.e. 13 hours after butchering. On enquiry it was said that the meat was purplish in colour, instead of pink, emanating a strong unpleasant odour. The children complained to the mother against the colour and odour of the meat before cooking and

the mother did not heed to it. One of the sons who was playing truant that day was denied turtle curry as a measure of punishment and so he escaped all ill effects and death. Except the father who began to exhibit symptoms the very next morning, all other victims showed symptoms of vomiting only after 24 hours. In two cases, there was no diarrhoea and the end came with fits and coma. However, one of the children aged 6 (Kanishkar) showed symptoms of diarrhoea, vomiting and fits before his death. The parents of the children escaped with inflamed throat and fissures on the tongue. The case histories are given in Annexure II.

While we are sure that the family had consumed the meat of *C. mydas* since no other species is surreptitiously butchered in Tuticorin, we feel that the delayed symptoms point to turtle poisoning rather than that of food poisoning due to consuming putrefied turtle meat curry.

DISCUSSION

1. The occurrence of turtle poisoning along the Gulf of Mannar Coast and adjacent areas indicates that despite the Indian Wild Life (Protection) Act 1972, turtles are still being caught for consumption, the species being *C. mydas*, *L. olivacea* and *E. imbricata*. The loggerhead *caretta* may be extremely rare.

2. It is evident that *C. mydas* is also responsible for chelonitoxication besides *E. imbricata*. We note some difference between the time of eating the meat and onset of symptoms in cases where poisoned meat of *C. mydas* and *E. imbricata* have been consumed resulting in fatalities. In two cases where the meat of *C. mydas* was consumed the onset of symptoms were earlier i.e. within 24 hours. In this connection the observations made by Tennent (1981) has some relevance.

3. The death of breastfed babies occurring hardly 24 hours after the mothers had consumed turtle curry, is a point of considerable importance. At this stage we are unable to comment on the implications of this.

4. It is suggested that it is a neurotoxin that causes chelonitoxication. While the general symptoms of chelonitoxication are known, we have yet to develop effective treatment for the same. A wide spectrum of medications have been administered to those affected

at various centres as evidenced from hospital records and enquiries with doctors who treated the victims.

5. In some of the incidents it is seen that death had occurred among children while adults showed delayed symptoms and gradually got over the same. It is not known whether it is due to the consumption of a larger quantity of the turtle curry by the children.

6. The burning sensation in the mouth and deep fissures in the tongue appearing a few days after the consumption of poisoned turtle meat is very characteristic. We find that there is absolutely no follow-up of the patient's condition once they are discharged from the hospital. Whether there are any long range effects on them or irreversible damage done to their vital organs is not known.

7. It is absolutely necessary to get the correct identity of the turtle species involved. It is equally imperative that the tissues/organs of the turtle if it could be retrieved be sent for analysis to determine and confirm the chemical and biological nature of the toxin present.

8. The medical practitioners are by and large ignorant about chelonitoxication. A wider awareness should be created in coastal areas prone to such incidents.

9. Perhaps in the interest of the medical science, with the dispensation from the Wild Life Department, a programme of examining periodically a few hawksbill turtles from the Gulf of Mannar for analysing their body tissues for toxicity and related studies should be carried out. It is necessary that in the non-consumptive utilisation of turtle we give equal attention to this aspect also.

10. It is important that wide publicity be given along the Tamil Nadu, and Kerala Coast to the fact that the flesh of turtles, especially that of the hawksbill and occasionally the green turtle could be poisonous. This measure by itself should act as a deterrent towards the consumption of turtle meat and indirectly help in the conservation programme.

It is a tragedy when chelonitoxication occurs. While prevention is better than cure, if an incident occurs we should by all means be prepared to face such an eventuality by developing an efficacious treatment for the malady.

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ANNEXURE-I

SOME CASE HISTORIES PERTAINING TO THE TURTLE POISONING INCIDENT
AT SAKTHIKULANGARA (MAY 1961)

1. Name :	SUMATHI (Female) Aged 11. Admitted to hospital on 29.5.1961.	2-6-61 :	Temp. 99.6°F
Complaints :	Nausea, vomiting.	3-6-61 :	No complaint.
History :	On 27.5.1961 ate turtle curry at 1 p.m. At 3 p.m. on the very same day started nausea and vomiting 5 to 6 times. First taken to local allopathic doctor; persisting symptoms and admitted to government hospital.	8-6-61 :	Complaint nil.
Family history :	Mother died on 31.5.1961. Similar complaint. Two sisters died on 28 or 29.5.1961 with similar complaint; father in-patient in the hospital with similar complaint.	O/E :	Liver felt 4 FB below costal margin, firm and tender.
General Exam. :	Moderately nourished girl; not anaemic or jaundiced; No cyanosis; tongue coated and moist.	3. Name :	RAJAMMA (Female) Age. 37 years, Admitted 29.5.1961.
CVS :	Pulse 112/mt. regular. B.P. 80/69 mm Hg. Heart borders with normal limits; Auscultations both sounds heard in all areas; no adventitious sounds heard; respiratory systems normal.	Complaint :	Vomiting, constipation for 5 days.
Al. system :	Liver and spleen not palpable. No other mass felt.	History of previous illness :	Nil particulars.
C.N.S. :	Intelligence and memory good, cranial nerves normal, superficial reflexes present, normal. Pupils light reaction, deep reflexes and normal. Temp. 100.4°F. TC DC. P. 69 L. 26 M 4, E 1.	History of patient's present illness :	Started as vomiting on Sunday afternoon; consumed turtle meat on Saturday; constipated since then; admitted to the hospital on 29.5.61. Given stomach wash and enema; vomited several times even after coming to hospital; passes urine normally; complains of discomfort inside.
3-6-1961 :	Constipation Mist alba 3 III given.	General examination :	Moderately nourished; not anaemic, not jaundiced; no cyanosis; patient looks lethargic; tongue dry coated. Blue in colour (fungal infection ?)
4-6-1961 :	O/E Liver felt 3 FB below costal margin slightly tender, firm.	Temp. 98.4°F	
2. Name :	SUJATHA (Female) Age 12 years. Admitted on 29.6.1961.	Pulse : 104/mt regular. Volume good; tension, poor.	
Complaint :	Vomiting from Wednesday (31.5.1961).	CVS :	Apex beat in the rt. 5th space $\frac{1}{2}$ inch astride mid cl. live. Both sounds heard well in all areas; systolic murmur over apex.
History of present illness :	Treatment on 27.5.1961 Admitted as symptomless case of observation. On Wednesday she developed vomiting thus transferred to this ward; Last night (1.6.1961) vomitted several times.	R.S. :	Lungs clear.
General Examination :	Moderately nourished, looks very ill; not anaemic or jaundiced; not cyanosed; no clubbing of fingers; tongue coated.	C.N.S. :	Pupils reacting to light; deep reflexed all sluggish.
CVS :	P.R. 108/mt. Reg. B.P. Heart sounds—both sounds heard very well in all areas. No adventitious sounds heard.	Al. system :	Liver or spleen not palpable; no other palpable mass. vague tenderness all over abdomen.
R.S. :	N.A.D.	1.6.61 :	Investigation Blood TC DC P 68 L 22 M 1 E 9 ESK
C.N.S. :	Pupils normally react to light; reflexes sluggish. Plantar, flexor.	2.6.61	Pulse 102/mt Regular. Very good BP Reflexus Biceps + Others absent Plantar Flexor Pupils Contracted—react to light Temp. 100° F
Al. systems :	Liver or spleen not palpable; no other palpable mass or tender area. DC : P 72 L 24 M 3 E 1	4.6.61	Liver area tender.

4. Name : WILLIAM (Male). Age 24. Admitted on 29.5.61.
 Complaint : Vomiting and constipation from 29.5.61.
 Family history : Wife and only child died in food poisoning; consumed turtle meat on 27.5.61. Symptoms developed next day, Sunday: vomiting; Sunday and Monday improved and admitted for observation; again starts vomiting on 1.6.61; constipated shocked of death of child due to same food poisoning.
 1.6.61 Very weak; general examination: Well built man, slightly anaemic; not jaundiced or cyanosed; no clubbing of fingers tongue moist slightly coated; RVS Pulse 100/mt. B.P. heart sound normal.
 R.S. : N.A.D.
 Al. system : Sigmoid colon palpable and tender.
 C.N.S. : Intelligence and memory good; speech normal; deep reflexes sluggish. (Biceps +, knee fork —, ankle +) abdominal absent in all four quadrants Plantar—flexor.
 Progress : Pt. contes toxic. Temp. 99°F, Pulse 96/mt 2-6-61 regular. B.P. reflexes, biceps present; knee fork absent; ankle fork present; pupil normal; ESR 5 mm Blood picture normal.
5. Name : MALATHI (Female) age 28; admitted; 29.5.61.
 Complaints : Vomiting twice. Sunday evening; rolling movements in the abdomen.
 Family history : 2 children died of same complaint, husband seriously ill.
 History of patient's illness : T.M. 27/5 norm. alright; since Sunday evening she vomited several times and on Monday also and admitted to hospital. Given stomach wash and enema after coming to the hospital; constipated passes urine normally; she is improving after coming to hospital. anorrhoea—4 months duration.
 General exam. : Well nourished; not anaemic; nor jaundiced, nor cyanosed; no clubbing of fingers; tongue dry and coated. CVS P.R. 100/mt; Resp V + T good; BP 94/74; apex beat in the ht; 5th space $\frac{1}{2}$ inside mid cl. live. Both sound well in all areas. Systolic murmur over all areas. CNS: Intelligence and memory normal; speech normal; pupils normal—reacts to light sluggishly; deep reflexes sluggish; Plantar-flexor.
 Al. system Liver or spleen not palpable.
 R. system : no long signs.
 1.6.61 : Vomited early morning. O/E P.R. 96/mt. regular BP reflexes all sluggish pupils dilated—react to light; D.C. P 66, L 26, M 2, E 6.
 4.6.61 8 a.m. : Vomited 7 times O/E. Liver felt 3 F.B. below costal margin in the (M C Liver). It is firm and tender.
6. Name : MARGARET (Female) age 55. admitted on 30.5.61.
 Complaint : Vomiting—duration 4 days; drowsiness 2 days; uneasiness 1 day.
 History of previous illness : She was taking some Ayurvedic medicines for pain all over the body.
 History of patient's present illness : Consumed turtle flesh Saturday afternoon; allright till Sunday; then started vomiting. A local medical practitioner treated her symptomatically; given some injection; she was brought to the Govt. hospital as she did not improve; she did not pass motion all these days; became unconscious on 31.5.61.
 General Exam. : moderately nourished; slightly anaemic; not jaundiced; left eye blinded and shrunken (Panophthalmitis) tongue dry and coated; Temp. 98.4°F.
 C.V.S. : Apex bent visible in the rt. 5th space in the mid-cl. live, heart sounds—both sound heard well in all areas; systolic murmur over apex; no congestion of jugulars; BP 100/50; pulse 100/mt, regular, very good.
 R.S. : no lung signs;
 C.N.S. : unconscious; Rt. pupil contracts, not reacting to light.
 Reflexes : Biceps absent; knee fork absent; abdominal present in all quadrants; plantar—flexor.
 Investigations : Blood WBC—TC 5700/
 DC P 64, L 28, M 6, E 2, ESK
 2.6.61 8 a.m. : pulse regular. 100 mt; BP 100/70; pupil contracting; react to light; reflexes all sluggish; knee fork absent, Plantar-Flexor.
 3 p.m. : Throat with secretions; noisy strenuous breathing; lungs, plenty of moist sounds; pupil contracted; no reactions to light; conjunctival reflexes nil; Temp. 100° F. by axilla; ECG at 7.30 P.M. on 2-6-61 normal. Expired at 8.30 P.M. Post-mortem conducted.
7. Name : JANARDHANAN (Male). Age 45. Admitted on 29.5.61.
 Complaint : Vomiting.
 History : Started vomiting on 27.5.61 evening; had eaten cooked turtle meat, then taken to private nursing home and afterwards to another private doctor.
 Family history : Two of his children died on Monday with similar complaints; one of his daughters also here with similar complaint; given treatment; moderately nourished, individual not anaemic nor jaundiced; tongue coated and moist.
 C.V.S. : Pulse 78/ min.
 B.P. : 90/70, heart normal, lungs NAD.
 C.N.S. : Intelligence and memory good; superficial and deep reflexes all present.

Al. system : NAD
 Investigations : T.C. } P 67, L 25, M 1, E 7.
 D.C. }

8. Name : RAJAN (Male). Age 12. admitted 29.5.61.
 2.6.61 : Complaints—headache—and—vomiting.
 Family history : All members ate turtle flesh ; all of them developed symptoms ; his father and aunt died on 29.5.61 in the village.
 History : Ate a few pieces of turtle meat on 27.5.61 ; developed vomiting and headache on 29.5.61 morning.
 General exam. : moderately nourished ; not anaemic, not jaundiced ; tongue coated and moist.
 C.V.S. : Pulse 96/min ; regular + ; BP 110/80.
 Auscultations : Both sounds heard ; no adventitious sound heard ; respiration normal.
 Al. system : liver felt ; 4 FB below costal ; margin of spleen not felt ; (Place most tender).
 C.N.S. : Intelligence, memory good, deep reflexes normal, superficial reflexes normal ; plantar pupils react to light. Temp. 100°F.
 Investigations : TC } Bb 5, L31, M1, E3.
 DCJ
 Urine : Sugar Nil
 albumen Nil
 deposit neg.

9. Name : MONIAMMA (Female). Age 12 years.
 Admitted on 30.5.61.
 Complaints : Consumed turtle meat on 27.5.61 (eaten only 4 or 5 pieces). Symptoms : vomiting and constipation developed on 28.5.61 evening.
 Progress of Symptoms : Starts as fever plus vomiting ; constipation ; became drowsy later.
 General Exam. : Drowsy ; looks very toxic ; no anaemia or jaundiced ; tongue dry plus thickly coated.
 C.V.S. : Pulse 100/min. regular V + A good ; BP 90/70.
 C.N.S. : All reflexes sluggish, Plantar—flexor.
 Al. system : Liver—
 Spleen—
 no other palpable.
 3.6.61 tongue dry-glossitis +
 4.6.61 Liver palpable.

10. Name : MARIAPPAN (Male). Age 18. fisherman admitted on 30.5.61.
 2.6.61 Vomiting 6 days ; constipation 4 days ; weakness 5 days.
 Complaints :
 History : Ate turtle meat on 27.5.61 night ; developed vomiting ; (Mucoid, frothy material bile stained) bowels constipated since 5 days ; on 29th morning he was admitted to local nursing home and on 30.5.61 he was transferred to government hospital.
 Family history : Parents admitted to Govt. hospital under similar condition ; 2 children in that family died ; step-mother also has similar complaint she aborted on 30.5.61.

General exam. : Moderately nourished ; not anaemic ; not jaundiced ; no cyanosis ; tongue coated dry and fissured.
 4.6.61. Liver felt 2 FB below costal margin tender.
 C.V.S. : Pulse 80/min. regular volume ; tension good ; BP 118/80. Both sounds heard in all no adventitious sounds heard. R.S. normal. Alimentary-bowels constipated ; liver and spleen not palpable.
 C.N.S. : Patient is semi conscious ; not responding to questions readily ; pupils contracted but reacts to light ; cranial nerves normal ;
 plantar. Deep reflexes R L
 Biceps + +
 Triceps — —
 Inspiration — —
 Knee forks — —
 Ankle forks — —
 Urine : reaction acid.
 Temp. 100° F.
 albumen—nil
 sugar—nil
 DCJ P 65, L 3, M 1, E 3.
 deposits.

11. Name : K. K. SIVANANDAN, Male 35 years (weaver).
 Complaint : Thirst and dryness of tongue—5 days, ball rolling movement in the abdomen—2 days, vomiting 2 days, constipation 4 days (31-5-61 vomitted twice).
 History : Ate turtle meat on 27.5.61 at 1300 hrs. All inmates of the house ate same food.
 Family history : Wife in-patient in the hospital ; one daughter and one son died on 29.5.61. 2nd daughter admitted in the hospital with vomiting.
 General examination : Moderately nourished, individual not anaemic or jaundiced ; tongue coated, moist and raw at the periphery ; no cynosis.
 C.V.S. : Pulse rate 80/ min ; regular ; +vde and tension good ; BP 100/80. Heart borders within normal limits ; auscultation—both sounds heard in all the areas ; no adventitious sound ; respiration normal.
 C.N.S. : Intelligence and memory normal ; no neck rigidity, knee, negative ; pupils react to light ; superficial reflexes ; abdominal +, crenaester +.
 Deep reflexes : All present but sluggish.
 Al. system : No visible puncture seen ; liver and spleen not palpable.
 2.6.61 9 p.m. : Developed mental symptoms, paraldehyde 7 cc given. 3.6.61 5 a.m. patient restless, 4 cc repeated, liver function test.
 T.C. 4700/cm.
 D.C. P 69, L. 26, E 5.
 4.6.61 Patient drowsy ; glossitis +, Stometitis + liver felt 2 FB between one costal margin.

12. Name : KOCHUNNY, Female, age 65 years, admitted on 29.5.61.
 Complaints : Vomiting since Sunday.
 History of previous illness : Nil.
 History of present illness : Vomiting from Sunday morning; vomited several times, vomitus containing frothy mucous; admitted to hospital 29.5.61 she was very drowsy when she was brought here; became unconscious on Tuesday, constipated; she was given stomach wash and enema; passes urine normally.
 General exam. : Moderately nourished; comatose; not jaundiced; no cyanosis; tongue dry coated; pulse 90/min. Reg. V and T. good; BP 140/90; of HG. Both sounds heard well in all areas.
 C.N.S. : Unconscious; pupils both react to light; deep reflexes, normal; plantar-Flexor.
 R.S. : No lung signs.
 Al. System : NAD
 2-6-61 Patient in coma; pupil react to light pulse 108/min. BP 140/92 deep reflexes all normal, Plantar-Flexor.
 E.S.R. : = 10 min.
 P. 66, L 31, M 0, E 3
 Bl. urea 97 mg.
 8-15 a.m. on 4.6.61 Complaints of burning sensation in mouth Patient sits up; answers to questions relevantly.
 5.6.61 Nil particulars. Condition same as Yesterday.
13. Name : NANOO (Male). aged 43. Admitted on 29.5.61 recovering.
14. Name : SASI (Male) age 10 years.
 C.V.S. : 86/min. BP 120/70 mb of Hg liver and spleen palpable.
 urine acidic
 albumen nil.
 sugar traces (a result of glucose ?)
 P 81, L 14, M 3, E 2.
15. Name : PURUSHAN (Male).
 Age : 7 years.
 Date : 2.6.61.
 BP. 90/70.
 Pulse 96/min.
 Temp. 99.4°F.
16. Name : SUBHA (Female) 4 years. Admitted on 29.5.61.
 Elder sister and younger sister both died with symptoms.
 C.V.S. Pulse 110/min. nothing abnormal.
 General treatment given at the Government Hospital Quilon
 — Vitamin B complex 2 cc each/or 2 times a day.
 — Ca injection.
 — Acromycin I.V.
 — Glucose I.V.
 — Saline drip 3 to 5 bottles per patient.
 — Chloromycetin 1 cap. 4 times all patients.

ANNEXURE II

CASE HISTORIES — TUTICORIN INCIDENT MAY 1983

1. Name : ANTONY PITCHAI (Male)
 Age : 42 years
 Height : 5' 5"
 Complexion : Dark
 Intelligence : Less than normal
 Health : Not good, weak; squint eyed, anaemic.
 Profession : Toddy tapper (coolie).
 Monthly income : Less than Rs. 75 per month
 Date of eating turtle meat : 22-5-83
 23-5-83 0600 hrs complained of vomiting feeling, dizziness, headache. Took rest. 0800 hrs took Tom-Tom tonic, a locally made and bottled folk medicine. 1200 hrs dizziness. By 1700 hrs felt normal.
 26-5-83 No complaint.
 27-5-83 Treated by Govt. HQ hospital as out patient. Dr. Laxman, L.M.P. treated him with Buscopan and a shot of terramycin.
 1-6-83 Tongue deeply fissured; Throat is inflamed. Recovering.
2. Name : MRS. ANTONY PITCHAI.
 Height : 5' 2".
 Health : Normal.
 Intelligence : Normal.
 Occupation : Sweet toddy hawker during season March-June.
 Income : Rs. 100 per month.
 Date of taking turtle meat : 22-5-83.
 26-5-83 No distressing symptoms; on the way treated by Govt. HQ Hospital as out patient.
 27-5-83 Dr. Laxman, L.M.P. treated her for some difficulty in breathing, stomach discomfort, difficulty in swallowing. (The doctor opines that during mourning severe chest beating might have caused chest discomfort: virtual starving during these days of anguish might have caused stomach discomfort).
 She was given Buscopan, Terramycin

- 1-6-83 injection, Glucose (oral therapy) Electral, Soda bicarbonate tablets.
No fissures on tongue. Anaemic. Sore throat, difficulty in swallowing. Recovering.
3. Name : JEBAMALAI RANI.
Age : 1 yr. Breastfed baby.
Sex : Female.
Date on which the mother ate turtle meat : 22-5-83.
Date on which symptoms showed up : 25-5-83.
25-5-83 0300 hrs vomiting intermittently, gasping for breath, wheezing; 0600 hrs treated by a paramedical worker; 0700 hrs became stiff; 1235 hrs admitted into Govt. HQ hospital at Tuticorin with diarrhoea and vomiting. Treatment given—Generous quantity of glucose intravenously. Decadron, ampicillin as antibiotic. Supporting therapy B₁, B₁₂.
26-5-83 2400 hrs dehydration.
0300 hrs. Died.
4. Name : MICHAEL RAJ.
Age : 7 years.
Sex : Male.
Date of eating turtle meat : 22-5-83.
Date of developing symptoms : 24-5-83.
0800 hrs headache, took one tablet of Anacin and felt relieved; 0900 hrs vomiting incessantly treated by a paramedical worker for vomiting. 1200 hrs appeared to have recovered completely; 1500 hrs threw fits. Instant death Post-mortem conducted at the Govt. HQ Hospital.
5. Name : ANNAMMAL.
Age : 4 years.
Sex : Female.
- Date of eating turtle meat : 22-5-83.
Date of developing symptoms : 22-5-83.
0900 hrs child slumped down dead without any prior symptoms. (May be no one noticed or the child did not at all complain of any symptom on the previous day owing to the distress in the family).
6. Name : KANISHKAR.
Age : 6 years.
Sex : Male.
Date on which he took meat : 22-5-83.
Date of developing symptoms : 26-5-83.
0300 hrs vomiting, drowsy; 0820 hrs admitted into Govt. HQ Hospital. Drowsy; Tachycardia, Conscious; 1000 hrs drowsy, but answers questions clearly; 1130 hrs burning sensation in the stomach and abdomen; 1200 hrs vomited twice drowsy but rousable.
27-5-83
1300 hrs threw fits, sedation given; 1330 hrs slipping into coma; comatose; respiration hurried; pulse feeble; neck stiff; 1535 hrs death. (Therapy Glucose intravenously. Decadron, Ampicillin. Supporting therapy B₁, B₁₂. Sedative (not Siquil).
7. Name : NICHOLAS.
Age : 5 years.
Sex : Male.
Date of taking meat : 22-5-83.
Symptoms : Till date that is, 1-6-83 had not developed symptoms except sore throat.
26-5-83 Was treated as out-patient at the Govt. hospital. Dr. Laxman, L.M.P. treated the boy with Glucose (oral) Buscopan (for throat inflammation) Terramycin, Electral. Appears to be in good health.