EPIDEMIC DROPSY IN TRANS YAMUMA AREAS OF DELHI AND U.P.

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ABSTRACT

Thirty patients of epidemic dropsy from seven families scattered in different areas of East Delhi and UP were studied. The age group of the affected individuals varied from 2 years to 55 years. Argemone oil contamination was found in mustard oil used for cooking. Sanguinarine was detected in all suspected oil samples. Pitting edema of legs was the most consistent feature present in all cases. Other prominent features like local erythema and tenderness were present in 80% and 70% cases, respectively. In contrast to earlier epidemics, two striking features were presence of persistent tachycardia without any pyrexia in all the cases and absence of any ocular problems. There was one death due to congestive heart failure and partial recovery in all others in a 2 months follow up.

Key words: *Epidemic dropsy, Sporadic cases.*

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Large outbreaks of epidemic dropsy have occurred in India since it was first reported in 1877(1). It was more frequently observed in states of West-Bengal, Maharashtra and Andhra Pradesh, particularly during the first half of this century(2-4). Since then the occurrence had decreased significantly all over India, presumably due to its etiological identification, awareness of disease symptomatology and better diagnostic facilities, leading to preventive steps being taken at various levels. From Delhi only two epidemics have been reported(5,6). Till now, the disease is known to occur in epidemic form only and no sporadic cases have ever been reported specifically. In this study, we observed and investigated thirty patients in the months of November to December, 1992.

Material and Methods

Eight patients from 4 different families were admitted to the pediatric ward of Guru Tegh Bahadur Hospital. History revealed that other family members were also involved. A survey of the affected areas was conducted and a total of 30 patients suffering from similar complaints were detected. Detailed history was obtained of each patient, followed by a thorough clinical examination. A special note was made of the mode of onset, duration of symptoms and progress of the illness. An enquiry was made about dietary habits with particular regard to the type of oil consumed. Each patient was subjected to complete ophthalmological examination. Complete blood counts, estimation of serum proteins, urine examination, liver function tests, chest radiographs and electrocardiograms were obtained in all patients. The mustard oil samples were tested for argemone contamination first by nitric acid test(7) and further confirmed by

more specific and sensitive method of 'thin-layer-chromatography'(8). The brilliant yellow orange fluorescence suggested sanguinarine in the test samples.

Results

Five families consisting of 18 members belonged to village Bhopra and Mohan-Nagar, District. Ghaziabad (UP) which are about 4 and 8 km away from GTB Hospital, respectively. One family each of 8 and 4 members was from Bhajanpura (East Delhi) and Khichripur (North-East Delhi), respectively.

In all families, mustard oil was used for cooking. These signs and symptoms appeared within 7-15 days after consumption of suspected oil. The oil consumed was reportedly purchased from the open market in loose form. Oil samples bought by families were contaminated with argemone oil.

Eight patients were below the age of 12 yrs and 4 were between 12-20 yrs. The remaining 18 subjects were above 20 years of age.

All patients presented with spontaneous recurrences and remissions of bilateral pitting pedal edema. The overlying skin was erythematous in 24 cases (80%) which blanched on pressure. Local tenderness over the edematous limb was present in 21 cases (70%). Another significant manifestation was the presence of persistent tachycardia in all cases in absence of fever *(Table I)*. None of the cases with hepatomegaly had jaundice, or any other clinical evidence of liver cell failure. Central or peripheral nervous system involvement was not seen in any of the patients. Also, conspicuous was the absence of any ocular manifestations. One of the patients was a pregnant woman who had a still birth at 34 weeks of gestation. She had similar clinical manifestations like rest of patients with no obstetrical complications. A mother of an admitted child developed congestive heart failure and expired subsequently.

TABLE I—*Clinical Features in Thirty Patients of Epidemic Dropsy*

Clinical features	No. of patietns	Percentage
Edema		
Legs	30	100.0
Generalized	8	26.6
Cutaneous		
Pain	13	43.3
Tingling	13	43.3
Erythema	24	80.0
Cutaneous flush	24	80.0
Pigmentation	14	46.6
Warmth	19	63.3
Tenderness	21	70.0
Cardiovascular		
Persistent tachycardia	30	100.0
Congestive heart failure	2	6.6
Murmur	4	13.3
Gastrointestinal		
Diarrhea	11	36.6
Vomiting	1	3.3
Pain abdomen	4	13.3
Hepatomegaly	3	10.0

Laboratory investigations revealed presence of Sanguinarine in all oil samples tested. Mild (Hb 8-10 g/dl) to moderate anemia (Hb 5-8 g/dl) was found in 14 and 6 cases, respectively. Even though all the patients had normal levels of total serum proteins, 17 had mild (3-3.4 g/dl) and 2 moderate hypoalbumenemia (2.5-2.9 g/dl). Blood-urea-nitrogen, liver function tests,

chest-radiographs, electrocardiograms and urine examination were normal in all cases. The patients were treated symptomatically with high protein diet, analgesics and diuretics to reduce pain and edema. In most patients pain had subsided but edema persisted at 2 months follow up.

Discussion

The occurrence of characteristic clinical picture in patients of various families, consuming mustard oil contaminated with argemone oil, established the diagnosis f epidemic dropsy. So far only two epidemics have occurred in Delhi in the years 1975(5) and 1983(6). In contrast, the cases in this series were sporadic, occurring in different areas of Delhi and UP. The onset of edema is the hallmark of epidemic dropsy and was witnessed in all patients which is in conformity with earlier studies(5,6,9). The associated findings like erythema, flushing, pigmentation, local warmth and tingling helped in differentiating this condition from other causes of edema. The toxin sanguinarine which is an alkaloid acts on capillaries and causes dilatation and increased permeability, resulting in edema of all tissues of varying degrees(9).

The striking feature noticed in all patients was the presence of persistent tachycardia. In earlier epidemics, tachycardia was observed in 9-60% of cases(5,6,10) except for one study which had similar observations as ours(11). Congestive heart failure (6.6%) and apical systolic murmur (13.3%) were other cardiovascular manifestations. The incidence did not differ from earlier studies(4,6,11). Response to conservative treatment was partial. Although symptoms like pain, tingling and numbness regressed by giving analgesics, edema did not respond satisfactorily to diuretic therapy. One patient, mother of an admitted child, died of congestive cardiac failure which did not respond to conventional decongestive therapy. None of the children died of, epidemic dropsy. The mortality rate of 3% is in concordance with earlier studies which reported a mortality of 3-7%(12). Hypoalbuminemia reported in previous studies was present in 55-60% of cases(10,11).

There was no significant difference in the clinical profile of pediatric and adult patients. However, the symptoms were generally milder and the disease did not have a fulminant course in children. This may be explained on the basis of low consumption of vegetables cooked in oil, by children because of food fads.

Sporadic cases of this disease have been seen which may occur at any time of the year, hence a high index of suspicion should be entertained by treating physicians to detect such cases.

Epidemic dropsy is now making a resurgence due to antisocial practice of food adulteration which is becoming more common with increasing inflation and in quest of earning more profits. This warrants stringent regulatory measures.

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REFERENCES

1. Park JE, Park E. Toxins in Food. *In:* Text Book of Preventive and Social Medicine, 11th edn. Jabalpur, Banarsidas Bhanot, 1986, pp 413-415.
2. Chopra RN, Chaudhri RN. A preliminary report on an epidemic dropsy outbreak in Purulia. Indian Med Gaz 1935, 70: 481-485.

3. Rrishnamachari KAVR, Satyanarayana K. Epidemic dropsy in Andhra Pradesh. Indian J Med Res 1972, 60: 741-746.

4. Sainani GS, Raj Kandwar VL, Wechalekar MD, Wachalekar DK, Epidemic drop sy in Chandrapur (Maharashtra). J Assoc Physicians India 1972, 20: 301-306.

5. Tandon RK, Singh DS, Arora RR, Lai P, Tandon BN. Epidemic dropsy in New Delhi. Am J Clin Nutr 1975, 28: 883-887.

6. Man Mohan, Sachdev HPS, Singh HP, Daral TS, Sachdev MS, Bhargava SK. Epidemic dropsy in Delhi. Indian Pediatr 1984,21: 241-247.

7. Sen AK. Argemone oil. Indian Med Gaz 1946, 81:126-128.

8. Park JE, Park E. Studies on the detection of argemone oil by thin layer chromatography. Science Culture 1970, 36: 654-656.

9. Chopra RN, Basu UP. Cardiovascular manifestation of epidemic dropsy and their treatment. Indian Med Gaz 1930, 65: 546-550.

10. Shanbhag W, Jha SS, Kekre MS, Rinoani GJ. Epidemic dropsy in Bombay city suburbs. Indian J Med Sci 1968, 22: 226-236.

11. Shah MJ, Mangahni KK, Sheth UK, Mehta JM, Karandikar PVK. Epidemic dropsy: Epidemiological, clinical and therapeutic observations in 67 cases. Indian J Med Res 1969, 57:1878-1891.

12. Wadia RS, Relwani GS, Batra RK, Ichaporia RN, Grant KB. Epidemic dropsy in Poona, 1969 (Clinical features and one year follow up). J Assoc Phys India 1971,19: 641-646.