

# HEPATITIS NON A - NON B - REPORT OF A WATER-BORNE OUT BREAK

Pages with reference to book, From 203 To 205

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## Abstract

An outbreak of hepatitis was reported from a military unit. An investigation to determine the type and the cause of outbreak revealed that the maximum number of cases occurred in a barrack which shared a common water supply contaminated from an overflow from a septic tank. Another barrack which had separate supply from the same source was unaffected.

Seromarker study in 8 cases showed immunity to Hepatitis A and no evidence for recent HBV infection.

The disease was self limited in nature. No chronic sequelae were documented. In view of the spread a public health education plan is necessary (JPMA 38: of this disease through contaminated water supply 203, 1988).

## INTRODUCTION

Hepatitis Non A Non B has emerged as the major type of hepatitis in Pakistan and other developing countries. There has been evidence that more than one virus is responsible<sup>1,2</sup>

## MATERIAL AND METHODS

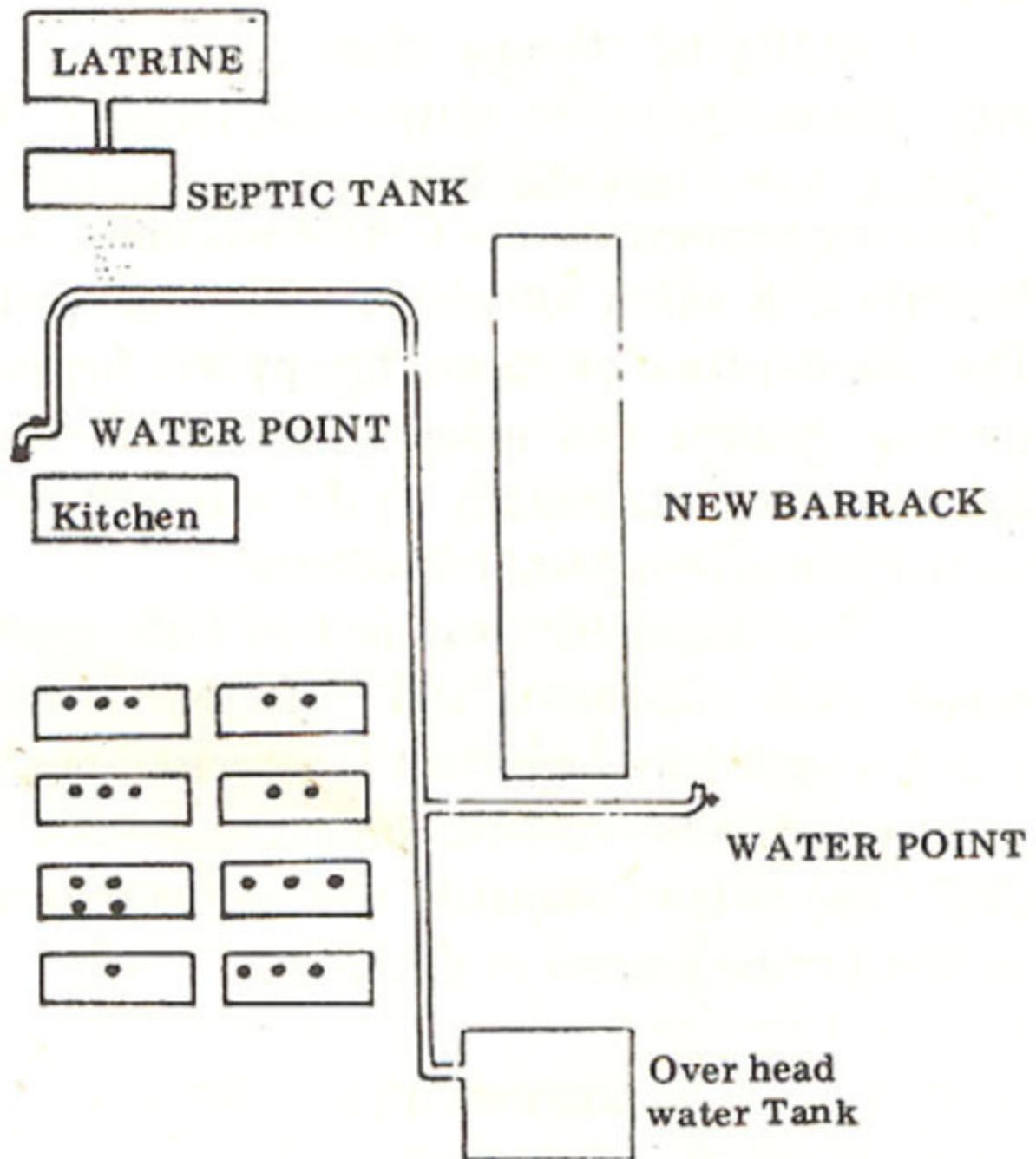
An outbreak of viral hepatitis was reported from a Military Unit over a short period of time. An investigation team visited the area, and inspected living arrangements, cook houses, water supply, latrines and sewage disposal. Water samples were taken from the water points for evidence of pollution. The occurrence of cases, their location and sequence was charted.

Some cases were hospitalised and clinical complaints recorded on a proforma. The patients were discharged after becoming clinically and biochemically normal. They were re-examined after 3 months. The liver function tests included Serum bilirubin, alkaline phosphatase and SGPT. Serum was also taken for Anti HAY, IgM and IgG, Anti HBS. IgM antibodies to HBC were also determined. Two hundred clinically normal individuals living in the same accommodation were examined for clinical complaints and hepatomegaly and their serum tested for serum transaminase levels.

## RESULTS

### Living Accommodation Water Supply and Sewage Disposal

The affected personnel lived in barracks (Figure)



**Figure 1. Living accommodation with water supply and sewage disposal.**

in sub-unit groupings (Company) each comprising 200 persons. A new set of barracks had been provided next to the old ones. The water supply of both areas was from a tube well, distributed from a central overhead tank and carried through G. I. pipes to different water points. The water for cooking was taken from the tap near the cook house. The pipe was found cracked. The latrine was a modified water carriage type with a septic tank nearby. There was seepage and over-flow from the septic tank which was in communication with cracked pipe. The examination of water samples showed that the tubewell water and that from central overhead tank were free from contamination.

The first case occurred in August followed by 6 in September and 13 in October. About 10 percent of

those exposed developed jaundice. There were scattered cases in the adjacent barracks but the maximum cases (21) occurred in one company which had water point near the polluted area. No case occurred in the nearby new barracks. No history of vaccination/inoculation was elicited in the previous six months.

The clinical features and biochemical features are shown in Table-I-II.

**TABLE – 1. Clinical Features Observed in Patients of Epidemic Non–A Non B Hepatitis.**

Clinical Feature	Percentage
Dark urine	100
Anorexia	100
Nausea	40
Fever	48
Vomiting	48
Abdominal Discomfort/Pain	62

**TABLE – II. Biochemical Profile of Epidemic Hepatitis Non A – Non B.**

Biochemical Feature	Mean Value
Serum Bilirubin	7.4 mg/dl
Alanine Transaminase	153 U/L
Alkaline Phosphatase	100 U/L

The average stay in hospital was 20.4 days (range 10-35). None of the patients had any residual symptoms or raised transaminase levels on follow up examination. The seromarkers could be carried out in 8 cases. All cases showed IgG antibodies to Hepatitis A. No antibodies indicating recent B virus infection were present.

## DISCUSSION

Hepatitis Non A Non B is the commonest type of sporadic hepatitis in adult population in Pakistan<sup>3</sup>.

Unlike disease in the western countries, history of parenteral exposure is uncommon. There is suggestive evidence that it may be water-borne. The present study documents a water borne outbreak of this disease. The conclusion is based on the following evidence:

1. The cases were confined to the barrack which shared a common water supply.
2. This water supply was contaminated by overflow from the septic tank.
3. No cases occurred in the adjacent barracks which got water from the same overhead tank.
4. The occurrence of cases stopped after the pipe was repaired.
5. All cases showed immunity to Hepatitis A virus. None showed serological evidence of recent B virus infection.

It is difficult to estimate incubation period in these cases. Others, however, have suggested that the incubation period may vary from 3540 days<sup>4</sup>.

Only a proportion of cases which were exposed developed jaundice. Why others did not develop jaundice can only be speculated upon. It is possible that they received a smaller dose of the infective agent. On the other hand the possibility that these persons may have been immune needs looking into. Hepatitis A is also an enteric transmitted disease. The adults in Pakistan, however, have almost universal immunity against it. It appears that immunity against Non A Non B agent, if present, is only partial. It is interesting to note that none of the contacts showed any rise in the transaminase level. It could indicate that the persistence of virus in subclinical form is uncommon, unlike-B virus which persists for long time in liver. The self limited nature of the disease is also shown by the fact that all cases on follow up did not show any elevation of enzymes or clinical evidence of chronic hepatitis. There are however, reports which suggest that the disease is not always benign. It has been reported to have caused fulminant hepatitis<sup>5</sup> and death in pregnant women<sup>6</sup>.

Waterborne NANB hepatitis has been reported from many countries including India<sup>7</sup>, Nepal<sup>8</sup>, Burma<sup>9</sup>, Algeria<sup>10</sup> and the Central Asian republics of Soviet Union<sup>11</sup>. It is perhaps a major public health problem for the developing countries. In Pakistan safe water supply and sewage disposal leave much to be desired. In view of the water-borne nature of the disease, it is imperative that a public health education programme be undertaken. Purification of water or even simple boiling of water may help in preventing the disease.

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