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REVIEW OF VIRAL HEPATITIS B AS A PUBLIC HEALTH PROBLEM
IN THE WHO REGION FOR THE EASTERN MEDITERRANEAN AND INDIVIDUAL COUNTRIES *

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* Map of the Region is attached as Annex I

INTRODUCTION

Viral Hepatitis is recognized as a major public health problem in the Eastern Mediterranean Region.

The keen interest of EMRO in this subject was reflected by the presentation of a paper at the Twenty-sixth Session of the Sub-Committee A of the Regional Committee for the Eastern Mediterranean which was held in Pakistan in October 1976.¹

The presence of viral hepatitis in the countries of the Region, is qualitatively established but not quantitatively well defined. This is due to many factors, the most important of which is the rarity of systematic studies and the lack of statistical data. The reported data is not correct and under-reporting is high and the result is that we have scanty information on this subject.

Viral Hepatitis A and B as well as unspecified types are reported together without any differential typing as to the aetiological agent causing the infection. Age and seasonal distribution is not always given and in some countries no reporting of this disease is made. In fact, most of the studies conducted, are concerned with the serological identification of Viral hepatitis B. Table I presents cases of viral hepatitis reported in the countries of the Region.

All these deficiencies make it difficult to reach reliable conclusions as to the epidemiology and the ecology of this disease entity. However, this should not deter one from attempting a preliminary study based on available data, recognizing its limitations.

VIRAL HEPATITIS A

Viral hepatitis A is endemic in the countries of the Region and is a childhood disease. The major mode of transmission is by the intestinal oral route, though parenteral and possibly other routes play a role in its spread.

It should be noted that sub-clinical cases of viral hepatitis A (anicteric) are very high and they might propagate the virus and cause contamination of food and water.

In Israel there is evidence that, where waste water is used for agricultural purposes, the incidence of viral hepatitis A is two to four times higher than in the areas where this is not used.²

VIRAL HEPATITIS A PARTICLES

Viral hepatitis A particles have been recently revealed by the techniques of immune-electron-microscopy and it was proved that the peak of the shedding of the virus coincides with the elevation in serum transaminases and declines at the onset of jaundice.

Viral hepatitis A has rather a long incubation period where viruses could be shed and could contaminate water and food.

Data from Kuwait and Iraq and some other countries of the Region support the high incidence of the disease in children. The figures³ included in Table II show the incidence of poliomyelitis and measles as well as viral hepatitis. This shows that all cases of poliomyelitis and measles occur under five years of age while, in viral hepatitis, the age of greater incidence of the disease was the 1-4 years group, although it occurs in other age groups as well. This strongly suggests that viral hepatitis A is common among children but viral hepatitis B may vary widely and is present throughout the population.

Viral hepatitis A is now a major public health problem in the countries of the Region. This is most probably due to the inefficiency of sanitary measures to eliminate the disease as is also the case with minor enteric infections. Therefore, new methodology for disinfection of water and sewage system is needed to eliminate viral hepatitis A.

However, the differences between the epidemiology of viral hepatitis A in the developing countries including the EMR and between the developed countries is evident. In the former, it is a disease of childhood (1-4 years) and it is endemic while in the latter it is mostly common among young adults (20-24 years).⁴ Moreover, it appears that the high infection rate in children might result in herd immunity which protects older age people in developing countries.

The role of sea foods in spreading the infection⁵ has been proved recently by serological techniques though no studies have been done in EMRO but this possibility applies.

Our limited knowledge about viral hepatitis A is mainly due to the lack of proper techniques for its study however, recently, four methods have been developed for assaying hepatitis A antigen and antibodies. These methods are

- Immune electron microscopy
- Complement fixation test
- Immune adherence haemagglutination test
- Solid phase radioimmunoassay

At present these are not utilized due to the lack of sufficient amounts of antigens. These methods might provide a stimulus to research on viral hepatitis A analogous to that provided to hepatitis B research by the discovery of Hepatitis B antigen.

VIRAL HEPATITIS B

The epidemiology of viral hepatitis B has been thoroughly reviewed in the three WHO Technical Report Series Nos. 512⁶, 570⁷, and 602⁸ respectively. The importance of parenteral mode of transmission as the main method of spread of the disease is recognized, other routes of spread e.g. transplacental, sexual oral route, mosquitoes, direct contact and intra-familial play a role but further confirmation is needed on this. Since viral hepatitis B is mainly an iatrogenic disease, new developments in medical care e.g. Haemodialysis, tissue transplantation, treatment with immunosuppressive and cytotoxic

drugs have increased the risks of infection for patients and workers alike

The discovery of Blumberg in 1965 of the then called Australia antigen⁹ (HBsAg) has paved the way for studies which led to better understanding of this disease. This has rendered useful virological and serological information and gave insight in the ecology and epidemiology of this disease and its control. By providing a marker to the virus of this disease, a method became available to differentiate between Viral hepatitis B (HBV) and other unspecified types of viral hepatitis by serological techniques. This helped in controlling HBV since its presence indicated that the blood positive for HBsAg should be condemned and not be used in blood transfusion, thus eliminating a main source of infection.

In recent years, HBsAg has been detected in blood and blood derivatives as well as in several body fluids including saliva, mouth washings, nasopharyngeal washings, urine, semen, with hepatic bile, sweat and pleural effusions. These materials may play a role in spreading the disease but are in need of more corroborative studies.

In the early 1970s, techniques for the detection of HBsAg and anti HBs have been introduced in laboratories and blood transfusion services in EMR countries. Studies were reported from Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Libya, Syria and Pakistan. Table III summarizes the information of the findings of these countries. They have the following things in common

1. HBsAg carrier rate is high if compared to Europe and USA using counter-electrophoresis techniques, the carrier rate varies from 0.89% in Israel to 4% in Pakistan while its incidence in some western countries is 0.42% in Paris and Mainz and 0.62% in Italy.

This could be due to the misuse of parenteral injections, as practising transfusion before testing for HBsAg or probably by insect bites which might explain the difference between the rate of HBsAg carrier rate between Kurds and Arabs in Iraq. Kurds live in areas where mosquitoes and malaria are prevalent, or where vaccination was practised by using needles and syringes which are not properly sterilized as was noticed in Iraq and Kuwait. This is of special interest and intensified studies should be carried out to eliminate the risk of infection by hepatitis B and decide on the appropriate methodology to be used for vaccination especially that we are embarking on the Expanded Programme of Immunization. It appears that in most non-endemic regions of Europe, approximately 40-60% of hospitalized patients with active viral hepatitis are diagnosed as having hepatitis B. In the USA this is estimated to be 18-48% in contrast with developing countries e.g. Iraq, India, Egypt and Ethiopia where other types of hepatitis are endemic, the majority of which have non-B-type hepatitis. Type B hepatitis is found in only 10-20% of patients admitted to hospitals with acute viral hepatitis infection.

In Jerusalem¹⁰, studies suggesting nonparenteral transmission of viral hepatitis B are interesting to note. The probable parenteral transmission was more common in patients with hepatitis B (31%) than in those with non hepatitis B (5%).

An additional 19% of the patients had possible parenteral exposure, the remaining 50% of hepatitis B patients had no obvious parenteral transmission indicating that nonparenteral transmission of viral hepatitis B may be a significant epidemiological factor. It seems that personal contact and intrafamilial spread play an important role in nonparenteral transmission.

2. The male carrier rate of HBsAg in Israel is higher than in females. In males, it is about 2.2% as compared to 1.4% in the latter. Cases of all hepatitis in Kuwait is about 66% in males as compared to 34% in females. It is wondered whether circumcision as practised in all countries of the Region might contribute to the increased rate in males. However, Blumberg has recently proposed that, the different reactions of males and females is probably because the surface antigen or the virus cross-reacts with an antigen determined by a gene on the "y" chromosome. This could explain why males tend to become carriers of the antigen, whereas females are more likely to develop antibodies. This interesting proposal needs confirmation and corroboration.

3. The socio-economic status plays a role in the carrier rate. In Israel, HBsAg carrier rate among children from Libyan and Yemeni origin is 3.9% and 2% respectively while the rate is only 0.4% for immigrants from Europe and 0.2% for children born in Israel. This supports the hypothesis that type B hepatitis in Israel behaves essentially as a contagious disease of childhood and mid-childhood and this might be also applicable to other countries in the Region.

4. Countries from which reports were available, show that 'ay' subtype is the predominant one. Some studies on the relationship between HBsAg and cirrhosis, have been undertaken in Iraq, Iran and Pakistan. The study in Iraq is of special interest¹¹. HBsAg was detected in 58% of patients with cirrhosis as tested by four different techniques. This figure is much higher than has been reported from any other part of the world and seven times higher than in normal hospital control patients. However, more studies are needed to confirm the relationship and on a larger scale.

In Libya, the death rate from hepatitis in pregnant women is high¹². Of 992 hepatitis patients treated in 1975, 377 were males and 545 were females. The case fatality rate was 0.53% for males and 7.67% for females. In 293 pregnant women it was 12.97% compared with 1.6% in 252 non pregnant women. In pregnant women, deaths occurred mainly in the last trimester. Although 18.4% of the male patients and 15.2% of the women were hepatitis B surface antigen (HBsAg) positive, no patient shown to be antigen-positive died. The exact cause of the high mortality in pregnant women is not clear, but it may have a nutritional basis.

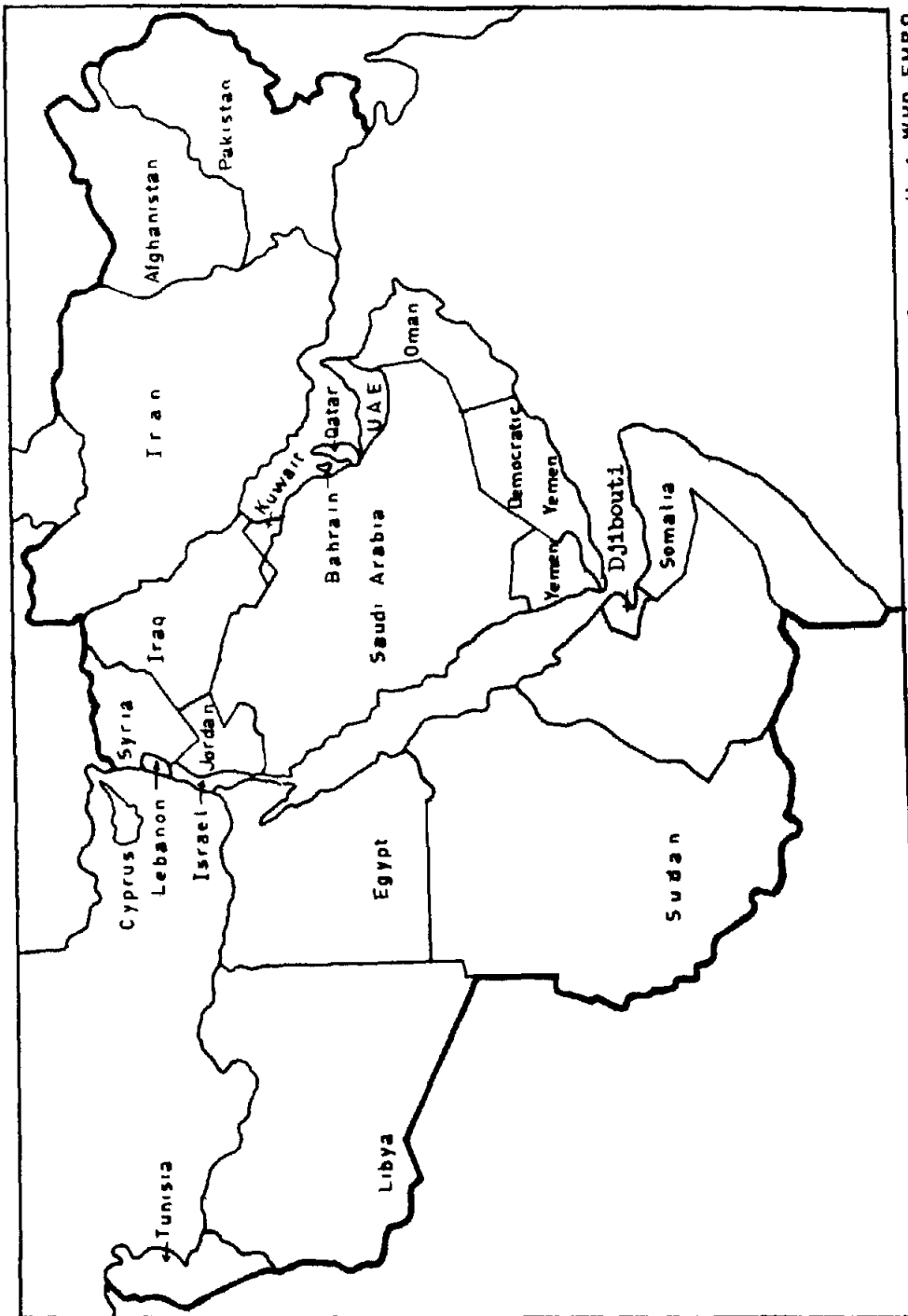
Treatment with globulin and gammaglobulin is used only to a limited extent and most of the countries purchase this from abroad because there is no local production.

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ANNEX I

MEMBER COUNTRIES
WHO EASTERN MEDITERRANEAN REGION



Health Statistics Unit, WHO-EMRO

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TABLE SHOWING THE NUMBER OF CASES OF VIRAL HEPATITIS IN
SOME COUNTRIES OF THE REGION AND THEIR PERCENTAGE IN THE POPULATION IN

1975

COUNTRY	Jan.	Feb.	Ma.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	TOTAL No. OF CASES	TOTAL POPULATION	% OF CASES IN POPULATION
DJIBOUTI	21		26	16	8	33	33	20	28	28	23	36	300	201 000	0.15
IRAN	244	475	129	143	87	126	192	84	330	378	224	232	2644	32 215 000	0.0082
IRAQ	84	108	103	83	77	89	95	79	85	75	94	84	1056	10 765 000	0.0098
JORDAN	53	54	32	27		7	10	8	9		24	15	288	2 646 000	0.11
KUWAIT	43	54	53	61	48	56	52	43	56	51	59	44	620	860 000	0.72
UNRWA	51	43	45	31	20	40	31	44	36	65	98	87	591		

N.B. Please note that only approximate figures are given since information for some months is missing.

TABLE I

T A B L E IIINCIDENCE OF REPORTED CASES BY AGE - 1973
POLIOMYELITIS, HEPATITIS AND MEASLES

Age Group	Estim.* Popul.	Number of cases			Rate per 100 000		
		Polio	Hepatitis	Measles	Polio	Hepatitis	Measles
Under 1	32 618	46	4	183	141	12.2	561
1 - 4	120 717	84	206	590	69.5	171	459
5 - 14	199 168	-	240	120	-	120	60
15 - 29	242 005	-	192	61	-	79	25
30 - 49	184 024	-	126	14	-	68	8
50 and over	61 024	-	84	5	-	114	8
Not specified		-	58	53	-		
TOTAL	839 556	130	910	1 026	15.5	109.0	111.0

* Population estimate provided by Kuwait Planning Board

T A B L E IIISUMMARY OF FINDINGS ON HBsAg, Anti HBs
and HBeAg and Anti HBe (1975)

Country	Method Used	Rate of HBsAg Carriers	Predomi- nant Subtype	Anti HBs	HBeAg	Anti HBe
EGYPT	CIE-RIA- H _{agg}	2.9 - 5%	Ay	17%-57%	1.5%	3.9%
IRAN	CIE-RIA, HI	2.8 %	Ay			
IRAQ	CIE-RIA	3.3 - 8.8%	Ay			
JORDAN	CIE-RIA	3.4 - 5.8%	Ayw	26.5%		2.2%
LIBYA	CIE-RIA	3.2%	Ay			
KUWAIT	CIE	0.6%	-			
PAKISTAN	CIE	4%	Ayw	18.3%-37.5%		
ISRAEL	CIE-RIA	.89%-.97%	Ay	19.0%		
SYRIA	CIE	2.5%	-			
LEBANON	CIE	1.4% to 3%	-			

* CIE = Counter-immune-electrophoresis

** RIA = Radioimmunoassay

CONCLUSION: The rate of HBsAg carrier is higher than figures reported from Europe and USA. The predominant subtype is of Ayw. Carrier rates are higher in males than in females.