وزراه التعليم العالي والبحث العلمي
كليه الحله الجامعة الاهلية
قسم التحليلات المرضية
المرحلة الرابعة

الموضوع:-

بحث تخرج لنيل شهادة البكلوريوس في قسم المختبرات الطبية بعنوان

Hepatitis: Types and routes of transmission and how to avoid it

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بسم الله الرحمن الرحيم

قال تعالى:

((ولئن اتبعت أهواءهم بعد ما جاءك من العلم ما لك من الله من ولي ولا نصير))

صدق الله العظيم

سوره البقرة: الاية 120

الاهداء

إلى صاحب السيرة العطرة، والفكر المستنير فلقد كان له الفضل الأول في بلوغي التعليم العالي(والدي الحبيب)، أطال الله في عمره.

إلى من وضعتني على طريق الحياة، وجعلتني رابط الجأش وراعتني حتى صرت كبيرا(أمي الغالية)، طيب الله ثراها.

إلى إخوتي ؛ من كان لهم بالغ الأثر في كثير من العقبات والصعاب.

إلى جميع أساتذتي الكرام ؛ ممن لم يتوانوا في مد يد العون لنا

شكر وتقدير

أحمد الله تعالى وأشكره بتوفيقة لي على إتمام هذا العمل، وأصلي وأسلم على أشرف الأنبياء والمرسلين وعلى آله وصحبه أجمعين

عن النبي صلى الله عليه وسلم قال: " لا يشكر الله من لا يشكر الناس. " وإقتداء بهذا الهدي النبوي أتوجه بخالص الشكر والتقدير والعرفان " إلى الدكتور الفاضل سليم عباس على ما أسدت لي من نصح وتوجيه وإرشاد خلال إعداد هذه الدراسة، منك تعلمت أن للنجاح قيمة ومعنى، ومنك تعلمت كيف يكون التفاني والإخلاص في العمل.

أشكر الذين كانوا عونا لي في بحثي هذا، والدي حفضهما لي الله ورعاهما، زرعوا التفاؤل في دربي، وقدموا لي المساعدات والتسهيلات والأفكار والمعلومات، ربما دون أن

يشعروا بدورهم بذلك لهم مني كل الشكر. كما أتقدم بالشكر والاحترام والتقدير للسادة الأفاضل أعضاء لجنة المناقشة الموقرين على ما بذلوه من جهد في قراءة رسالتي المتواضعة.

أتقدم بجزيل الشكر والامتنان إلى السيد عميد كليه الجامعه السيد رئيس قسم المختبرات الطبيه وجميع الاساتذه

Summary

Hepatitis is Inflammation of the liver that results from a variety of causes, both infectious and noninfectious.

Autoimmune hepatitis (AIH) is a complex immune-mediated liver disease that is diagnosed histologically by interface hepatitis and high serum levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST), and immunoglobulin G (IgG) and the presence of autoantibodies [1]. The initial perception of AIH as a chronic inflammatory liver dysfunction which mainly affects young Caucasian women [2] has been amplified to both sexes of all age groups and all ethnic societies worldwide [3]. AIH can be asymptomatic or present in various forms from subclinical disease to acute liver failure and end-stage liver disease [4].

Specific diagnostic criteria and scoring systems have been established which include analysis of autoantibodies (ANA, SMA, anti-LKM1, and anti SLA), immunoglobulins (IgG), viral markers (IgM anti-HAV, HBsAg, HBV DNA, and HCV RNA) and histological findings [5]. According to the antibody profile, AIH can be divided into two subtypes. The presence of ANAs and or anti-smooth muscle antibodies (SMA) may indicate AIH type 1 (AIH-1), and anti-liver kidney microsomal antibody type one (LKM1) and anti-LKM3 and/or anti-liver cytosol type one antibody (LC1) are disease markers for AIH type 2 (AIH-2) [6].

The exact mechanisms for the Immune tolerance breakdown in AIH have not been described yet, but there is growing evidence that a genetic predisposition, molecular mimicry, and an imbalance between effector and regulatory immunity are key pathologic components for disease development. In this context, several lines of evidence support the central role of impaired T cell number and function [1].

Viral hepatitis is an infection that causes liver inflammation and damage. Several different viruses cause hepatitis, including hepatitis A, B, C, D, and E. The hepatitis A and E viruses typically cause acute infections. The hepatitis B, C, and D viruses can cause acute and chronic infections.

[2]

Hepatitis A causes only acute infection and typically gets better without treatment after a few weeks. The hepatitis A virus spreads through contact with an infected person's stool. You can protect yourself by getting the hepatitis A vaccine[6]

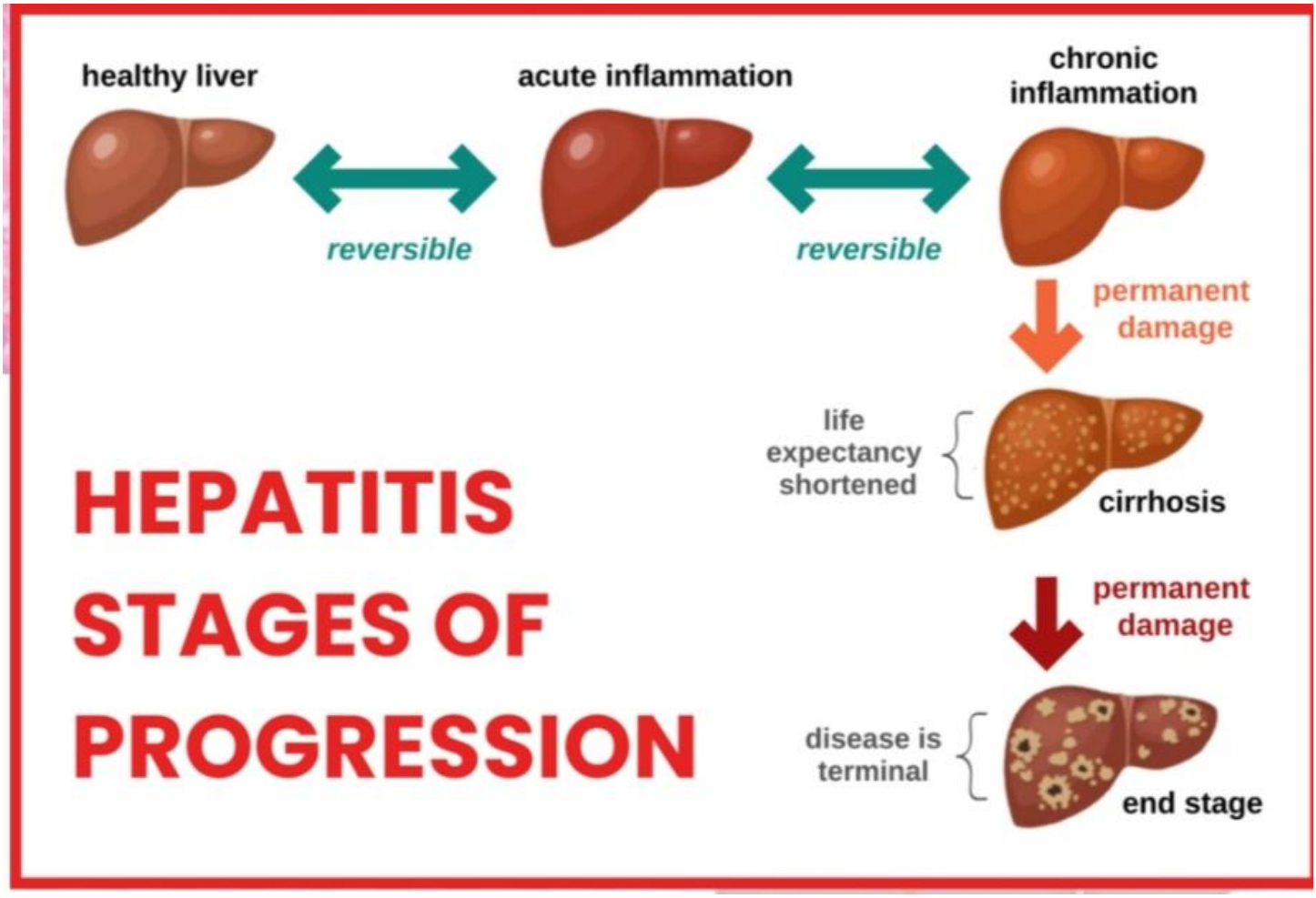
Hepatitis B can cause acute or chronic infection. Your doctor may recommend screening you for hepatitis B if you are pregnant or have a high chance of being infected. You can protect yourself from hepatitis B by getting the hepatitis B vaccine[4]

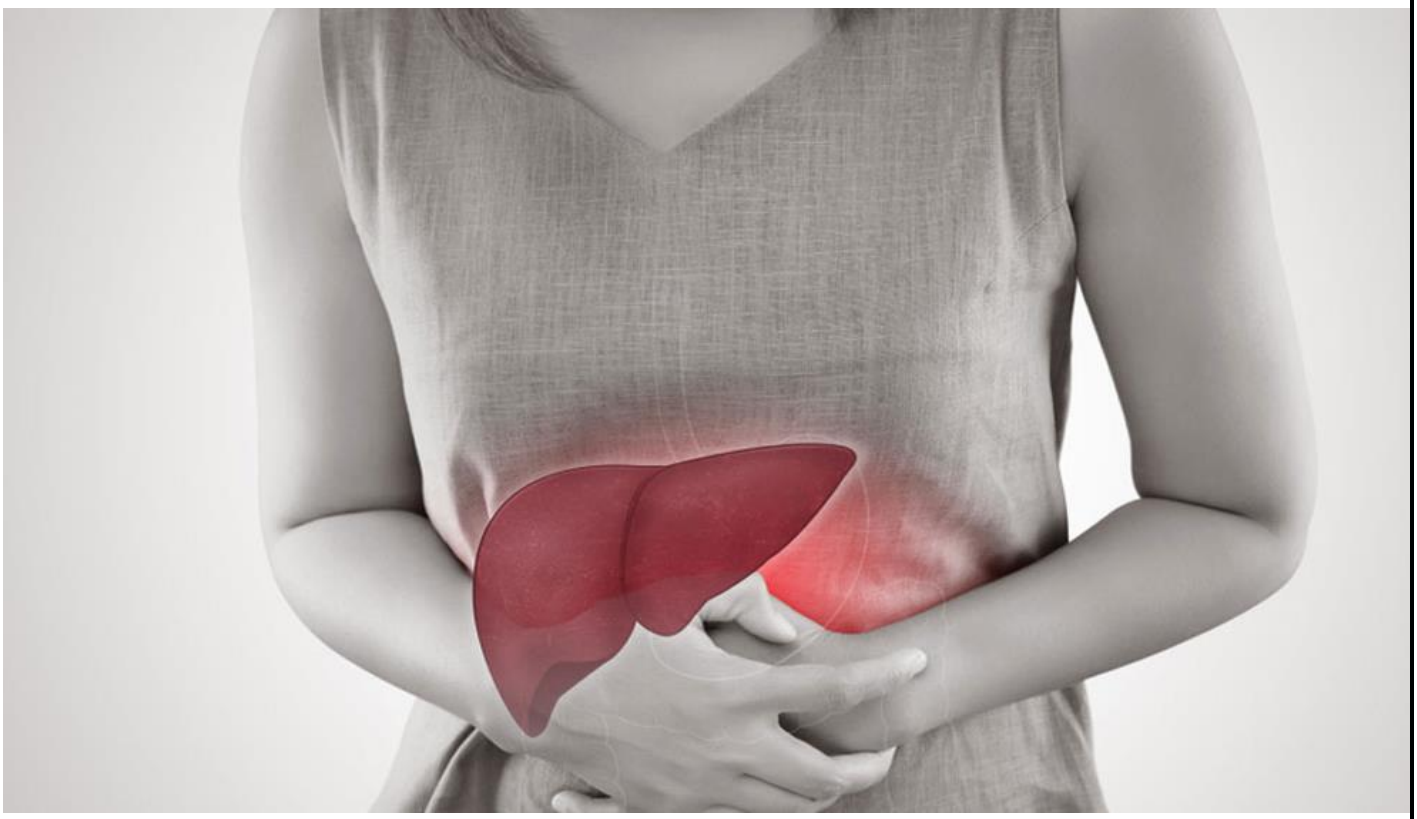
Hepatitis C can cause acute or chronic infection. Doctors usually recommend one-time screening of all adults ages 18 to 79 for hepatitis C. Early diagnosis and treatment can prevent liver damage.

The hepatitis D virus is unusual because it can only infect you when you also have a hepatitis B virus infection. A coinfection occurs when you get both hepatitis D and hepatitis B infections at the same time. A superinfection occurs if you already have chronic hepatitis B and then become infected with hepatitis D.[7]

Hepatitis E is typically an acute infection that gets better without treatment after several weeks. Some types of hepatitis E virus are spread by drinking water contaminated by an infected person's stool. Other types are spread by

eating undercooked pork or wild game.





introductions

1-Inflammation of the liver that results from a variety of causes, both infectious and non infectious.

2-Infectious agents that cause hepatitis include viruses and parasites.

3-Non infectious causes include certain drugs and toxic agents.

4-In some instances hepatitis results from an autoimmune reaction directed against the liver cells.

5-The viral that causes hepatitis (A, B, C, D, and E)

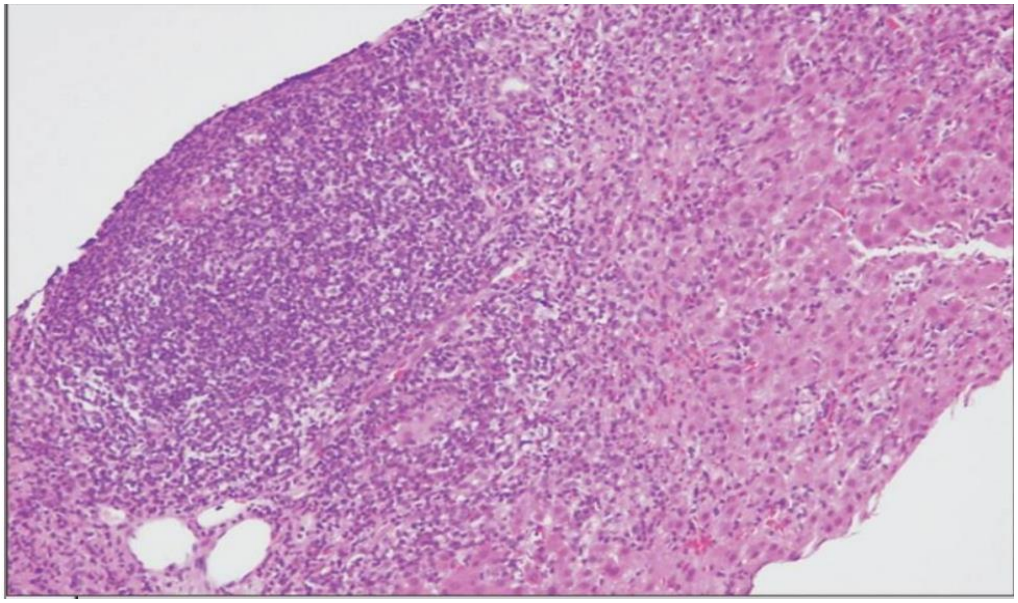
Etiology*:*

Viral hepatitis Hepatotropic viruses (HAV, HBV, HCV, HDV, HEV) are the most common cause worldwide Other common causes include:

- *Alcoholic hepatitis*
- *Toxic and drug induced hepatitis*
- *Autoimmune hepatitis*
- *Non-alcoholic fatty liver disease (NAFLD)*
- *Ischemic hepatitis*
- *Giant cell hepatitis (in infants and children)*
- *Metabolic disorders*

Autoimmune hepatitis (AIH)

Autoimmune hepatitis (AIH) is a chronic liver perspective disease of unknown etiology in which autoimmune-mediated relativities against hepatocytes are thought to play a crucial role.1 While middle-aged women have the highest risk for developing AIH, patients in childhood or adolescence are not uncommon. The elevation of transaminases, detectable autoantibodies, such as anti-nuclear antibodies (ANA) or anti-smooth muscle antibodies (SMA), elevation of serum immunoglobulin G (IgG) levels, and interface hepatitis or plasma cell infiltration in liver histology are characteristic features of AIH.2 However, since there is currently no specific biomarker for the diagnosis of AIH, criteria consisting of several items are used for diagnosis.3,4 AIH responds very well to immunosuppressive drugs, and corticosteroids are the first-line treatment.5,6 While the overall survival of patients with AIH is comparable to that of those in the general population when the treatment response is favorable, the outcome is poor in patients with more than two relapses, even with corticosteroid treatment during the clinical course.7 In this review, we summarize recent studies in terms of the epidemiology, etiology, diagnosis, and treatment of AIH, and finally discuss the unmet needs in AIH as a future perspective[2]



hepatitis A virus

Is an infectious disease of the liver caused by Hepatovirus A (HAV); its A member of Picornaviridae family. It is an RNA virus .

It has a relatively short incubation period Of 3-5 weeks after which Jaundice starts suddenly .

A large number of patients develop moderate infection that lasts for Several days, and some of them develop the disease In a more serious Form that lasts for months but does not turn Into a persistent (chronic) Infection, meaning it does not leave a serious impact on the liver .

Many cases have few or no symptoms, especially in the young. [9]

The symptoms include:-

1- Yellowing of the skin and the eyes

2-General fatigue in the body.

3-Severe nausea, vomiting, and sudden diarrhea.

4- Feeling pain or discomfort in the abdomen.

5- Anorexia

6- Mild fever

7- Dark urine and light-colored stool

8- Joint pain Severe itching sometimes.

The mode of transfusion including:-

1- Commonly transmitted By fecal- oral route (enterically)
2- Water and food contamination with HAV
3- Direct contact with inflected pperson

Avoid the infection

• Wash hands well with soap and water several times a day, Especially before eating and after using the toilet

• Maintaining the general cleanliness of the home and its external Surrounding Surroundings

• Do not share personal items with the patient

Treatment

No specific treatment for Hepatitis A.

Supportive treatment include by Rest and intake of food of Low lipid and high carbohydrate.

Child's immune system fights the virus and recovery from it And avoid medications that may increase the severity of Inflammation .[10]

Vaccine

Vaccine is given in a series of two injections, 6 to 12 months apart.

Hepatitis B Virus (HBV)

Hepatitis B is an infectious disease called serum hepatitis,Caused by the Hepatitis B

Virus (HBV) which affects the liver .

HBV is a member of the Hepadnavirus family, genus Orthohepadnavirus ,It is a

Small enveloped DsDNA.

Humans are the only natural hosts of HBV. There is no animal reservoir.

The incubation period varies from 45to 180 days , but the average is to 60 to90

Days, duration may increase or decrease depending on the severity Of the

ExposurInfection.

Many People have no symptom's during the initial infection

It can cause both acute and Chronic infections.

1- Acute Hepatitis B virus infection :

The prodromal or pre icteric phase begins approximately two weeks after Exposure Is characterized by gradual onset of anorexia , malaise and fatigue , vomiting , Headache and low-grade fever .

During the icteric phase , the Liver become tender and enlarge with development Of jaundice, abdominal Pain , pruritus with passing of dark-colored urine are the Symptoms noted in This phase.

Clinical manifestations of acute hepatitis B are similar to that of Hepatitis A but With the difference that the symptoms tend to be more severe And life- threating With HBV infection.

[9]

2- Chronic Hepatitis B virus infection-:

Chronic HBV infection is one of the major complications of HBV infection The risk of Chronic infection is also higher in those infected at birth (90%) And in patients who Are immunocompromised .

Only 5-10% older children or Adults progress to develop chronic infection. And the Patient may become as Chronic carriers and may become with chronic active Hepatitis , cirrhosis and Hepatocellular carcinoma may develop so it is oncogenic Virus.[9]

Mode of transportation HBV:• HBV is transmited by parenteral route

- blood transfusion
- use of HBVcontaminated needle
- sexual intercourse
- perinatal

Treatment :-

- Interferon.
- Telbivudine.
- Lamivudine.
- Entecavir.
- Adefovir.

Prevention:-

1-Practice safe sex by using condoms and reducing the number of sexual partners

2-Avoid sharing needles or any equipment used for injecting drugs, piercing, or tattooing

3-Wash your hands thoroughly with soap and water after coming into contact with blood,

Body fluids, or contaminated surfaces

4-Get a hepatitis B vaccine if working in a healthcare setting.

-Vaccine available and use HBsAg in this vaccine.

- First dose: as soon as you are able
- Second dose: 1 month after the first dose
- Third dose: 6 months after the first dose

Hepatitis C Virus (HCV)

Hepatitis C Is a viral Infection that affects the liver.

It can cause both acute (short term) and chronic (long term) illness. It can be life-threatening.

Properties of the Virus

It is member of the genus Hepacivirus , family Flaviviridae.

The Genome contain single-stranded RNA , positive-sense.

HCV consists of a lipid membrane enveloped . enveloped contain two viral Glycoproteins (E1 & E2).

Most new Infection (acute infection) with HCVare subclinical (asymptomatic)But majority of HCV Infection (80%- 90%) develop chronic hepatitis and many at Risk of progressing to chronic active hepatitis ,cirrhosis which may lead to Hepatocellular carcinoma.

Incubation period 8 weeks.

It is most commonly occurred in adults.

The root of HCV infection or transmission is parenteral (blood borne Virus) This can happen through sharing contaminated needles or syringes anInjection drug use accounts for almost all new HCV Infection , blood Transfusions with unscreened blood products.Transmission from Mother to child during birth is another very common mode of Transmission.

The virus present in the blood and saliva but absent In stool and urine.

It can pass to chronicity.

It is oncogenic virus.

Clinical feature of HCV:-

It Is similar to other viral Hepatitis. Acute HCV Infections are usually Asymptomatic and when present symptoms usually occur a few weeks After infection and it Is non specific include Fever, anorexia, nausea, Vomiting, and jaundice are common. Dark urine, pale feces, and Elevated transaminase levels are seen. The virus persists in the liver, Becoming chronic in about 80% of the patients with HCV .early on chronic Infection typically has no symptoms and after many years it often leads To liver disease and cirrhosis .in some cases cirrhosis will develop to Hepatocellular carcinoma . Liver biopsy is often done in patients with chronic Infection to evaluate the extent of liver damage and to guidetreatments.[9]

Treatment:-

1-Alpha –interferon ,

2-Lamivudine antiviral drugs.

3-No vaccine is available

Prevention:-

The best way to prevent hepatitis C is by

1-Avoiding behaviors that can spread the disease, especially injecting drugs.

2-Washing the hands thoroughly with soap and water after any potential exposure to blood.

3-Use condoms with sexual partners.

4-Avoid direct contact with blood and bodily fluids.

5-Clean up blood spills with a fresh diluted bleach solution (mix 1 part bleach with 9 parts water)

6-Cover all cuts carefully

Hepatites D

its RNA virus causing an infection of the liver and it is limited to Hepatitis B infected Patient.

People with hepatitis D can spread it through contact with blood and other body fluids.

Coinfection with hepatitis D usually worsens the symptoms of hepatitis B.

The diagnosis of chronic hepatitis D on the results of blood tests.

Hepatitis D occurs only in conjunction with acute hepatitis B or with chronic hepatitis B. Hepatitis D virus is an incomplete virus that needs the help of hepatitis B virus to replicate.

About 15-20 million people worldwide suffer from chronic hepatitis B in association with hepatitis D.

Transmission of hepatitis D

Hepatitis D can be spread

1-Through contact with blood and other body fluids

2-Hepatitis D occurs most often in people who share needles to inject illicit drugs.

(3).It can also be spread through sexual activity.

Symptoms of hepatitis D

Coincidence of hepatitis D and hepatitis B can lead to fulminant hepatitis (a severe form of hepatitis). Fulminant hepatitis can progress very quickly. Toxic substances that the liver eliminates usually build up in the blood and reach the brain, causing Hepatic (portosystemic) encephalopathy.

Patients may enter a coma within days or weeks. Fulfilling hepatitis can lead to death, especially in adults. [9].

Prevention of hepatitis D:-

Avoiding high-risk behavior (such as sharing needles to inject drugs and having multiple sexual partners) helps prevent people from getting hepatitis B and thus preventing hepatitis D.

There is no vaccine for hepatitis D. But if people do not have hepatitis B, they can b evaccinated with the hepatitis B vaccine, which can protect against hepatitis D.

Treatment :

There is no specific treatment for acute viral hepatitis D.

People with hepatitis D should not drink alcohol because it may further damage the liver. There is no need to avoid certain foods or limit activity.

Chronic hepatitis D can be treated with interferon alfa, usually for one year.

Liver transplantation is the most effective treatment and the best hope for survival when fulminant hepatitis occurs, especially in adults infected with Hepatitis B.[9][10]

-Hepatitis E virus

Is an infectious disease of the liver caused by Hepatovirus E(HEV): it's a member Hepeviridae family ..is a positive-stranded RNA virus. The incubation period of an inflammatory disease after exposure to its virus is between two and ten weeks, with an average of between five and six weeks.It usually does not lead to chronic or serious liver disease, and most people recover from it within a few months[8][9]

The symptoms include:-

After exposure to the virus, it can take 2-7 weeks before symptoms appear and usually last for two months.

-Feeling very tired

-Losing weight suddenly

-Nausea and loss of appetite.

-Pain in the right side of the abdomen under the rib cage (where the liver is).

-Yellowing of the skin (jaundice)

-Dark urine

-Dark stool

-Myositis

-Symptoms of influenza symptoms

Avoid the infection:-

1-We should avoid drinking unclean water and eating uncooked spicy foods.

2-Avoid uncooked fruits or vegetables that we don't peel or prepared well

3-Wash hands after using the toilet, changing diapers, or preparing or eating food.

4-People who have any type of viral hepatitis (hepatitis A, B, C, D, E) are not allowed to donate blood.

Treatment:-

Hepatitis E goes away on its own in most cases, but there are some methods that speed up the healing process, including:

1-Reducing daily activities while resting at home

2-Drink plenty of water to avoid dehydration

3-Eat a healthy mix of foods.

4-If the symptoms are severe or if you are pregnant, you should talk to your doctor, because you may need treatment in the hospital.

Vaccine:-

There is no vaccine for hepatitis E.

Prevention:-

The prevention of hepatitis transmission varies depending on the type.

Experts recommend regular screening for hepatitis A,B and C for those at higher Risk. Doctors also routinely screen for hepatitis B and C during pregnancy

Hepatitis A and E:-

Hepatitis A and E are most commonly spread through food and water that has come

Into contact with the fece of a person with the virus.

Some ways of preventing infection include:

. washing the hands carefully after using the bathroom and before eating

. ensuring that food is fully cooked and appropriately stored

. drinking only bottled water stored

. drinking only bottled water stored when traveling

. avoiding or peeling fruits and vegetables that may have been washed or grown in Unsanitized water

People may ask their doctor about the hepatitis A vaccine, especially if they are Traveling to an area where the virus is prevalent.

Hepatitis B,C and D:-

To minimize the risk of transmission, where relevant, a person should:

. talk openly with any sexual partners about any viruses they may have

. use a barrier method, such as a condom, during sex

. only use previously unused , clean needles

. aovid sharing toothbrushes, razors, and manicure instruments

Data:-

According to the field tours of the Babylon Health Department, Public Health Department, Viral Hepatitis Division, where statistics were obtained for viral liver infections from the year 2017/2023 for each of the viruses A, B, and C, including the clinical cases examined.

السنه	A	B	C	السريري
2017	278	310	179	489
2018	301	344	194	619
2019	229	434	224	658
2020	58	256	153	432
2021	60	453	294	468
2022	46	274	346	620
2023	430	346	210	589

Total number of viral hepatitis infections for the years 2017-2023

مجاميع الاخطار	النوع B		النوع C	
	مفحوص	موجب	مفحوص	موجب
العاملون بلحقل الطبي والصحي	2444	0	2160	1
الملامسون	3134	7	2855	0
القابلات	705	1	603	0
الحلاقون	1221	1	1115	2
العمليات البارده	36174	225	35375	68
النساء الحوامل	24532	22	22083	46
المتزوجين	19143	31	18414	8
مرضى الثلاسيميا	1517	9	5807	2
مرضى الكليه الصناعيه	3006	58	2725	420
مرضى السكري	282	16	553	16
اخرى تذكر/توكيدي	379	326	196	173
اخرى تذكر /عشوائي	468	0	459	0
اخرى تذكر/عمال احانب +عراقيون	1315	5	1348	2
اخرى تذكر/تبني +جزارين+شهادة دوليه	7055	27	5830	14
شتشاريات+باطينه+انعاش+قسطرة +حروق	10361	57	8882	44
المجموع الكلي	111769	785	108405	796

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