
An update on

Occult Hepatitis B Virus Infection

An essay

Submitted for Partial Fulfillment of
Master Degree in Internal Medicine

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Lastly I'm deeply indebted to my family for their kind support and patience during this work,

Ahmed Mohamed El Meniawy



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Lastly I'm deeply indebted to **my family** for their kind support and patience during this work.

Finally

I would like to welcome **Professor +++++** at ----- hospital; and No words can express my delight to have him in the discussion board,

I'm also proud to have **Professor ++++++** in the discussion committee .**I'm sure that I will benefit much from their comments.**

An update on Occult Hepatitis B Virus Infection

طبيب/ احمد محمد عبد الحميد المنياوى

Abstract

occult HBV infection is a phenomenon mainly related to the intra hepatic persistence of viral cccDNA and to a strong suppression of viral replication and gene expression. In consideration of the very low levels of serum HBV DNA, its detection requires the use of highly sensitive and specific molecular biology techniques. The inhibition of HBV replication may be reversible and the occult infection may reactivate leading to acute and severe forms of classical hepatitis B, which may also occur after transmission of occult HBV by blood transfusion or organ transplantation. The long-lasting persistence of the virus in the liver may provoke a very mild but continuing necroinflammation that – if other causes of liver damage co-exist – may contribute over time to the progression of the chronic liver damage toward cirrhosis. Moreover,

occult HBV seems to maintain the pro-oncogenic properties typical of the overt infection, and in fact it is an important risk factor for HCC development.

Conclusion

Occult HBV infection is a complex entity comprising many conditions and situations that may be widely different from each other both from the biological point of view and in terms of clinical consequences. These considerations imply the need for a critical re-evaluation of the large amount of available information by experts who should also establish a common definition and the best ways of increasing our knowledge on this fascinating field of biomedical research.

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List of Abbreviations

| | |
|---------------|---|
| ACAs | Anticardiolipin antigens |
| ALT | Alanine aminotransferase |
| AST | Aspartate aminotransferase |
| CAH | Chronic active hepatitis |
| cccDNA | Covalent complete circular DNA |
| ER | Endoplasmic reticulum |
| GN | glomerulonephritis |
| GSHV | Ground squirrel hepatitis virus |
| HBcAb | Hepatitis B core antibody |
| HBcAg | Hepatitis B core antigen |
| HBeAb | Hepatitis B envelop antibody |
| HBeAg | Hepatitis B envelop antigen |
| HBIG | Hepatitis B immunoglobulin |
| HBsAb | Hepatitis B surface antibody |
| HBsAg | Hepatitis B surface antigen |
| HBV | Hepatitis B virus |
| HCC | Hepatocellular carcinoma |
| HCV | Hepatitis C virus |
| HDV | Hepatitis D virus |
| HIV | Human immune deficiency virus |
| HSCT | Haematopoietic stem cell transplantation |
| IFN | Interferon |
| IL | interleukin |
| MGN | Membranous Glomerulonephritis |

List of Abbreviations (Cont.)

| | |
|------------------------------|---|
| MHC | Major histocompatibility complex |
| MPGN | Membranoproliferative GN |
| NANB-FHF | Non-A, non-B fulminant hepatic failure |
| NK | Natural killer cell |
| NUCS | Nucleotides analogues |
| OBI | Occult Hepatitis B Infection |
| PAN | Polyarteritis Nodosa |
| PBMC | Peripheral blood mononuclear cells |
| PCR | Polymerase Chain Reaction |
| Pg RNA | Pregenomic RNA |
| Th 1 | T helper cell |
| TNF | Tumor necrosis factor |
| ULN | Upper limit normal |
| WHV | Woodchuck hepatitis virus |
| αFP | α-feto protein |

الملخص العربي

الالتهاب الكبدي الفيروسي ب الخفي هو عبارة عن مشكله طبيه متعلقه باستمرار وجود الحمض النووي الخاص بالفيروس داخل خلايا الكبد مع عمليه تثبيط لتكاثر الفيروس و اخفاؤه . و لان معدلات وجود الفيروس قى الدم ضعيفه جدا, فان اكتشافه يحتاج لاستخدام وسائل التكنولوجيا البيولوجيه عاليه الدقه و الحساسيه.

وتثبيط عمليه تكاثر الفيروس الكبدي الوبائي ب من الممكن ان تتوقف فجأة ويعاد تنشيط عمليه التكاثر مما قد يؤدي الى صور مختلفه من الالتهاب الكبدي الفيروسي ب الحاد والذى قد يحدث ايضا نتيجه نقل دم من متبرع يعانى من الالتهاب الكبدي الفيروسي ب الخفى او عن طريق عمليه زرع لاحد اعضاء الجسم من متبرع يعانى من الالتهاب الكبدي الفيروسي ب الخفى.

ولاستمراره وجود الفيروس فى الكبد ,قد يؤدي الى التهاب فى خلايا الكبد والذى قد يكون بدرجه ضعيفه و لكن بشكل مستمر و لفترات طويله, وبالتالي قد يؤدي فى النهايه الى تليف فى الكبد .

و الالتهاب الكبدي الفيروسي ب الخفى يحتفظ بنفس خصائص الالتهاب الكبدي الفيروسي ب فيما يتعلق بقدرته على احداث اورام الكبد . والحقيقه ان الالتهاب الكبدي الفيروسي ب الخفى يعتبر من اهم الاسباب فى حدوث اورام الكبد.

و لهذا فان الاطباء يجب ان ياخذوا فى الاعتبار وجود الالتهاب الكبدي الفيروسي ب الخفى فى العديد من المرضى مثل الذن يعانون من ضعف شديد فى جهاز المناعه لاسباب مختلفه او المرضى الذين يعانون من تليف كبدى والذين قد

يتعرضوا لنشاط مفاجئ للفيروس قد يؤدي الى التهاب كبدي حاد او الى اورام الكبد على المدى البعيد.

و الالتهاب الكبدي الفيروسي ب الخفي هو مشكله طبيه معقدة تتضمن العديد من الحقائق الطبيه التي قد تتباين من الناحيه البيولوجيه و الناحيه الاكلينيكيه ,و لهذا فان الحاجه ملحه لعمليه اعاده تقييم لكل هذا الكم من المعلومات عن طريق خبراء يستطيعوا ان يضعوا تعريفا دقيقا و شامل والوسائل الامثل لمواجهه هذه المشكله المهمه.

الجديد في ما يخص الالتهاب الكبدي الفيروسي ب الخفي

رسالة

توطئة للحصول على درجة الماجستير في الأمراض الباطنية

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2010**

Hepatitis B virus (HBV) infection is a major global health problem and has a worldwide distribution. This virus is transmitted through percutaneous or parenteral contact with infected blood, body fluids, and by intercourse. HBV may be the cause of up to 80% of all cases of hepatocellular carcinoma worldwide, second only to tobacco among known human carcinogens.

The epidemiology of HBV infection varies greatly worldwide. The HB carrier rate ranges from 8% to 20% in highly endemic areas such as Southeast Asia, China, and Africa to less than 2% in North America, western Europe, and Australia. In highly endemic areas, spread of HBV infection is mostly the result of maternal–infant transmission (vertical), while the use of reusable syringes and injectable drugs, and sexual spread, are also important. In contrast, sexual activity and injectable drug use account for most HBV cases in low endemic areas. However, even in low endemic areas, HBV infection is present in a substantial number of immigrants from highly endemic areas. Other less common risk factors for HBV transmission include occupational exposure, hemodialysis, acupuncture, household contact, and the receipt of infected organs or blood products.

The prevalence of HBV infection varies in different geographical areas. In low prevalence areas such as the United States, western Europe, Australia and New Zealand, HBsAg carrier rate is approximately 0.1% to 2%. In intermediate prevalence areas like the Mediterranean countries, Japan, India and Singapore, the carrier rate is approximately 3% to 5%. In high prevalence areas such as Southeast Asia and sub-Saharan Africa, the carrier rate is 10% to 20%.