S17. Cancer prevention by vaccination against hepatitis B

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Chronic inflammation caused by persistent infection is closely related to a number of cancers, such as hepatitis B or C and hepatoma, human papilloma virus and cervical cancer, H.pylori and gastric cancer, etc. The first evidence of cancer prevention by vaccination in human was provided by hepatitis B vaccination in infants. Chronic hepatitis B virus (HBV) is related to approximately 60–90% of hepatocellular carcinoma (HCC) in adults and nearly 100% of childhood HCC in areas endemic for HBV infection. The first universal hepatitis B vaccination program has been launched in Taiwan for more than 20 years. Three or four doses of hepatitis B vaccine were given to all infants starting from the first week of life. In addition, infants of high risk mothers (with positive hepatitis B e antigen or high HBsAg titers) were given hepatitis B immunoglobulin with 24 hours after birth. At 20 years after the launch of the HBV vaccination program in Taiwan, chronic HBV infection (HBsAg seropositive) rates in the general population below 20 years of age revealed a remarkable reduction from 10–17% before the vaccination program to 0.7–1.7% after the program. HCC incidence rate in children 6 to 14 years old also reduced from 0.52–0.54 to 0.13–0.20 per 100,000 (RR = 0.25 to 0.36). HCC prevention failure is mainly related to vaccine failure to prevent chronic HBV infection. The causes of vaccine failure included intrauterine infection, vaccine escape mutants, genetic hyporesponsiveness, poor compliance, etc. Future efforts to reduce vaccine failure will improve the efficacy of liver cancer prevention by HBV vaccination. The experience of HCC prevention by HBV immunization may be applied to the prevention of other cancers.