4. Hepatitis A vaccines and long-term protection

4a) Inactivated hepatitis A vaccine

Author(s): Ott J, Wiersma S
Date: 2011-09-28
Question: Should inactivated hepatitis A vaccine be used for long-term protection against hepatitis A?
Settings: General population

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Inactivated hepatitis A vaccine	Control	Relative (95% CI)	Absolute[3]		
anti-HAV antibodies >5 years after immunization (follow-up 5-14 years; measured with: GMC, GMT, or % seroprotection post vaccination)												
8	observational studies	Serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	720	-	-	GMT range from 62-1587[2]	⊕OOO VERY LOW	IMPORTANT
anti-HAV antibodies 14 years after immunization (children, 3-dose, Havrix) (follow-up mean 14 years)												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	56	-	-	GMT range from 131-227[5]	⊕⊕OO LOW	IMPORTANT[4]

[1] Loss to follow-up reported to be up to 50% and increased with duration of follow-up. There is also a risk of confounding because other factors potentially associated with antibody response are not considered.
[2] Results had wide ranges and wide confidence intervals and often only reported GMC/GMT and not ranges of data.
[3] Results listed as mean geometric titer or concentration.
[4] Three different schedules were used (0, 1, 2 mo; 0, 1, 6 mo; 0, 1, 12 mo) in this study.
[5] Seroprotection rate ranged from 86-100% depending on schedule.

Bibliography

Bian GL, Ma R, Dong HJ, Ni HX, Hu FJ, Chen YR, Chen JQ, Zhou SY, Lin YX, Xu GZ. Long-term clinical observation of the immunogenicity of inactivated hepatitis A vaccine in children. Vaccine 2010; 28; 4798-801.

Bovier PA, Farinelli T, Loutan L. Interchangeability and tolerability of a virosomal and an aluminum-adsorbed hepatitis A vaccine. Vaccine 2005; **23**: 2424-9.

Bovier PA, Bock J, Ebengo TF, Grösner G, Glaus J, Herzog C, Loutan L. Predicted 30-year protection after vaccination with an aluminum-free virosomal hepatitis A vaccine. J Med Virol 2010; 82: 1629-34.

Byrd KK, Bruden DL, Bruce MG, Bulkow LR, Zanis CL, Snowball MM, Homan CE, Hennessy TW, Williams JL, Dunaway E, Chaves SS, McMahon BJ. Long-term immunogenicity of inactivated hepatitis A vaccine: Follow-up at 15 years. Journal of Pediatric Infections Diseases 2010; 5: 321-26.

Crum-Cianflone NF, Wilkins K, Lee AW et al. Long-term durability of immune responses after hepatitis A vaccination among HIV-infected adults. J Inf Dis 2011; **203**: 1815-23

Lopez EL, Contrini MM, Mistchenko A, Debbag R. Long-term immunity after two doses of inactivated hepatitis A vaccine, in Argentinean children. Pediatr Infect Dis J 2010; 29: 568-70

Van Herck K, Van Damme P. Inactivated hepatitis A vaccine-induced antibodies: follow-up and estimates of long-term persistence. J Med Virol 2001;**63**:1-7.

Wiedermann G, Kundi M, Ambrosch F, Safary A, D'Hondt E, Delem A. Inactivated hepatitis A vaccine: long-term antibody persistence. Vaccine 1997; **15:** 612-5.

4b) Live attenuated hepatitis A vaccine

Author(s): Ott J, Wiersma S
Date: 2011-09-28
Question: Should single dose live attenuated hepatitis A vaccine be used for long-term protection against hepatitis A?
Settings: general population

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Single dose live attenuated hepatitis A vaccine	Control	Relative (95% CI)	Absolute		
anti-HAV antibodies (follow-up 7-15 years; measured with: GMC, GMT, or % seroprotection post vaccination; Better indicated by lower values)												
5	observational studies	Serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	871	-	-	GMT range from 80-918[2]	⊕OOO VERY LOW	IMPORTANT
anti-HAV antibodies 15 years after immunization (chilren, 1-dose, H2 strain LA) (follow-up mean 15 years; Better indicated by lower values)												
1	observational studies	Serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	220[3]	-	-	GMT 128[4]	⊕OOO VERY LOW	IMPORTANT

[1] Loss to follow-up not always reported. There is also a risk of confounding because other factors potentially associated with antibody response are not considered.
[2] Confidence intervals not consistently reported and studies often only reported GMC and not ranges of data.
[3] Initially enrolled participants, not clear how many were lost to follow-up.
[4] GMC 128, no CI reported. 81% seroconversion rate. No hepatitis A cases reported.

References

Liu HF, Zhang XJ, Zhang JL, Hao ZY, Zhang ZY, Ma JC, Chen JC, Chu J, Wang XY, Xu ZY. [The immunological effects of three doses of a live attenuated hepatitis A vaccine (H2 strain) in 8 years]. Zhonghua Shi Yan He Lin Chuang Bing Du Xue Za Zhi. 2009;23:180-1.

Liu HF, Zhang XJ, Zhang JL. [Comparison of antibody persistence between live attenuated and inactivated hepatitis A vaccines]. Zhongguo Yi Miao He Mian Yi. 2009a; 15:300-3.

Wang XY, Xu ZY, Ma JC, von Seidlein L, Zhang Y, Hao ZY, Han OP, Zhang YL, Tian MY, Ouyang PY, Zhang ZY, Han CQ, Xing ZC, Chen JC. Long-term immunogenicity after single and booster dose of a live attenuated hepatitis A vaccine: results from 8-year follow-up. Vaccine 2007;25:446-9.

Zhuang FC, Qian W, Mao ZA, Gong YP, Jiang Q, Jiang LM, Chen NL, Chai SA, Mao JS. Persistent efficacy of live attenuated hepatitis A vaccine (H2-strain) after a mass vaccination program.Chin Med J 2005;118:1851-6.

Zhuang FC, Mao ZA, Jiang LM, Wu J, Chen YQ, Jiang Q, Chen NL, Chai SA, Mao JS. [Long-term immunogencity and effectiveness of live attenuated hepatitis A vaccine (H2-strain)-a study on the result of 15 years' follow up.] Zhonghua Liu Xing Bing Xue Za Zhi. 2010;31:1332-35.