Evolution of EBV seroprevalence and of age at EBV primary infection in France in the 2001-2015 period: analysis of 81,000 serologies

G.Fourcade[1,3], R.Germi[2,3], F. Guerber[4], M.Baccard[2,3], J.Lupo[2,3], P.Morand[2,3], O.Epaulard[1,3]

1 – Infectiologie, 2 – Virologie, Grenoble University Hospital, France

2 – Fédération d'Infectiologie Multidisciplinaire de l'Arc Alpin, Université Grenoble Alpes, France

3 – Laboratoires Oriade, Vizille, France

OEpaulard@chu-gernoble.fr

Background

Few studies reported a change in the age of acquisition of EBV in developed countries, leading to an increase of late primary infections (PI), and of the number of infectious mononucleosis (IM) as well as severe IM. We aimed to determine whether PI age had evolved in the population of the Isère department, France, and to which extent age and EBV PI intensity were correlated.

Material/methods

We retrospectively studied 2 large French EBV serology databases (IgM and IgG VCA, IgG EBNA, heterophile Ab):

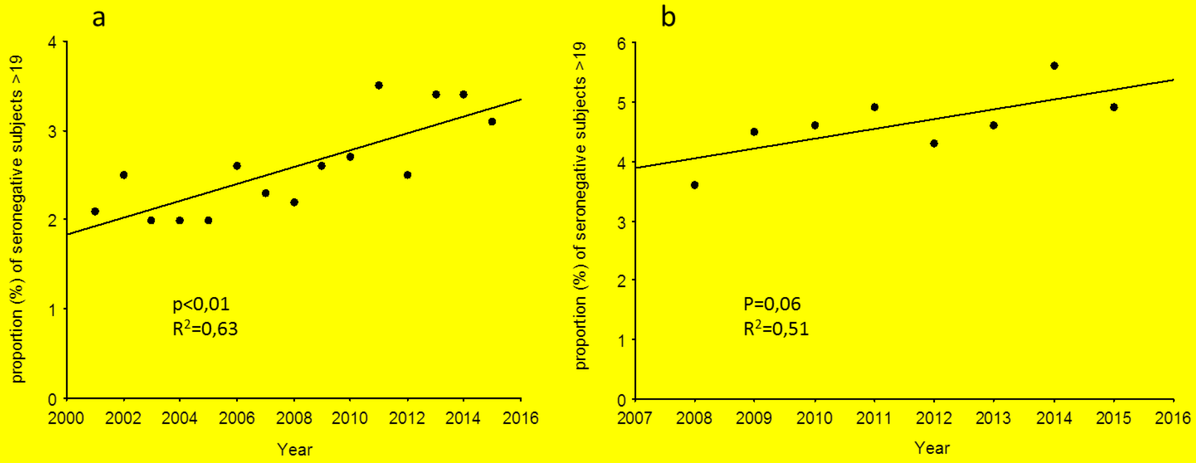
- From Grenoble university hospital (2001 to 2015, n=53,553)
- From a city private laboratory network including 25 collecting centers in Isère department (2008 to 2015, n=27,485).

Using state-of-the-art interpretation of serological profiles, we determined for each year i) the seroprevalence of EBV for patients aged over 19, and ii) the age at EBV PI. We also collected the clinical and biological data of each patient with a serologically proven EBV PI from the hospital database.

Results

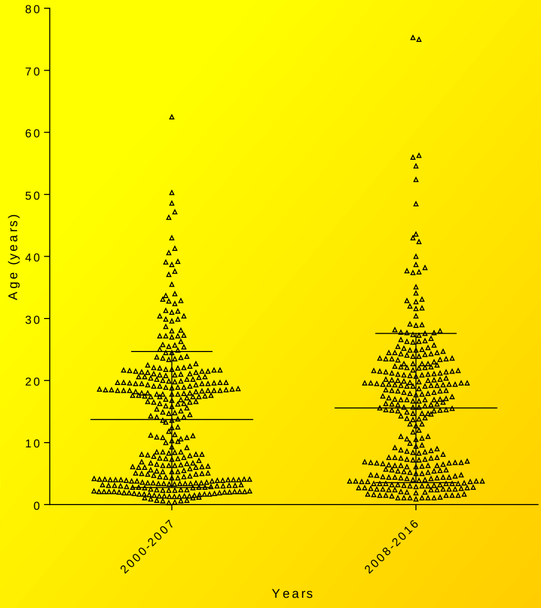
In the hospital database, we observed a significant decline of EBV seroprevalence over years (R^2=0.63, p<0.01) in the subjects older than 19: 2.1%, 2.5% and 3.1% were EBV seronegative in the 2001-2005, 2006-2010 and 2011-2015 periods, respectively. In the city laboratory database, the same trend was observed, but did not reach statistical significance (p=0.06)(figure1).

Figure 1: proportion of EBV seronegative subjects >19 years. a: hospital population, b: city population



In the hospital database, age at PI was significantly higher between 2008 and 2015 than between 2001 and 2007 (13.7±11 vs 15.6±12, p=0.03), and there was a significant increase of PI age over the 2001-20015 years (p=0.05). This was not observed in the city laboratory database (18.0 and 17.9 years between 2008 and 2011, and between 2012 and 2015, respectively).

Figure 2: age at EBV primary infection during two time periods in the hospital population



In the hospital database, we observed significant variations of hepatic abnormalities (ASAT, ALAT, γGT, bilirubin) and thrombocytopenia in different age groups (figure 3).

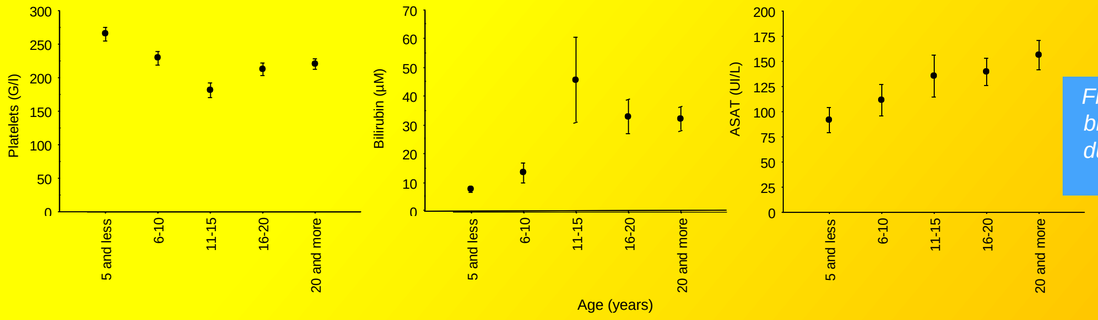


Figure 3: platelets, bilirubin and ASAT during EBV PI in 5 age groups

Conclusion

In the population explored in Grenoble university hospital, the age of EBV PI increased in the last 15 years, as observed recently in UK and Japan. Consistently, seroprevalence decreased in the population aged over 19 years. We also confirmed a correlation between age and biologic abnormalities during PI.

Our data suggest a shift in the age of acquisition of EBV, probably associated with an increased risk of severe IM.