Supplementary methods

Auer & Hegen formulae

\[ Q_{\text{lim}}(IgX) = a \times Q_{\text{alb}} b \] (1)

| Ig isotypes | a  | b   |
|-------------|----|-----|
| IgG         | 0.882 | 1.035 |
| IgA         | 0.819 | 1.076 |
| IgM         | 1.845 | 1.340 |

\[ Ig_{\text{int}} = (Q_{IgX} - Q_{\text{lim} IgX}) \times Ig_{\text{ser}} \] (2)

\[ Ig_{IF} = \frac{Ig_{\text{int}}}{Ig_{X_{CSF}}} \times 100 \] (3)

Formula (1): The \( Q_{\text{alb}} \)-based cut-off Ig quotient (\( Q_{\text{lim} IgX} \)) is calculated by inserting the empirically determined values for \( a \) and \( b \).

Formula (2): The amount of intrathecally synthesised Ig (\( Ig_{\text{int}} \)) is calculated.

Formula (3): The percentage of an intrathecally synthesised Ig fraction (\( Ig_{IF} \)) in the CSF is calculated.

Reiber formulae

\[ Q_{\text{lim}}(IgX) = \frac{a}{b} \times \sqrt{Q_{\text{atb}}^2 + b^2 - c} \] (1)

| Ig isotypes | a/b | \( b^2 \times 10^6 \) | \( c \times 10^3 \) |
|-------------|-----|---------------------|---------------------|
| IgG         | 0.93 | 6                   | 1.7                 |
| IgA         | 0.77 | 23                  | 3.1                 |
| IgM         | 0.67 | 120                 | 7.1                 |

\[ Ig_{\text{int}} = (Q_{IgX} - Q_{\text{lim} IgX}) \times Ig_{\text{ser}} \] (2)

\[ Ig_{IF} = \frac{Ig_{\text{int}}}{Ig_{X_{CSF}}} \times 100 \] (3)

Formula (1): The \( Q_{\text{atb}} \)-based cut-off Ig quotient (\( Q_{\text{lim} IgX} \)) is calculated by inserting the empirically determined values for \( a \), \( b \) and \( c \). For convenience, the values for \( a/b \), \( b^2 \times 10^6 \) and \( c \times 10^3 \) are provided.

Formula (2): The amount of intrathecally synthesised Ig (\( Ig_{\text{int}} \)) is calculated.

Formula (3): The percentage of an intrathecally synthesised Ig fraction (\( Ig_{IF} \)) in the CSF is calculated.

Abbreviations: Ig, immunoglobulin; \( Ig_{X_{CSF}} \), Ig concentration in CSF; \( Ig_{\text{ser}} \), Ig concentration in serum; \( Q_{\text{atb}} \), CSF/serum albumin quotient; \( Q_{IgX} \), CSF/serum Ig quotient