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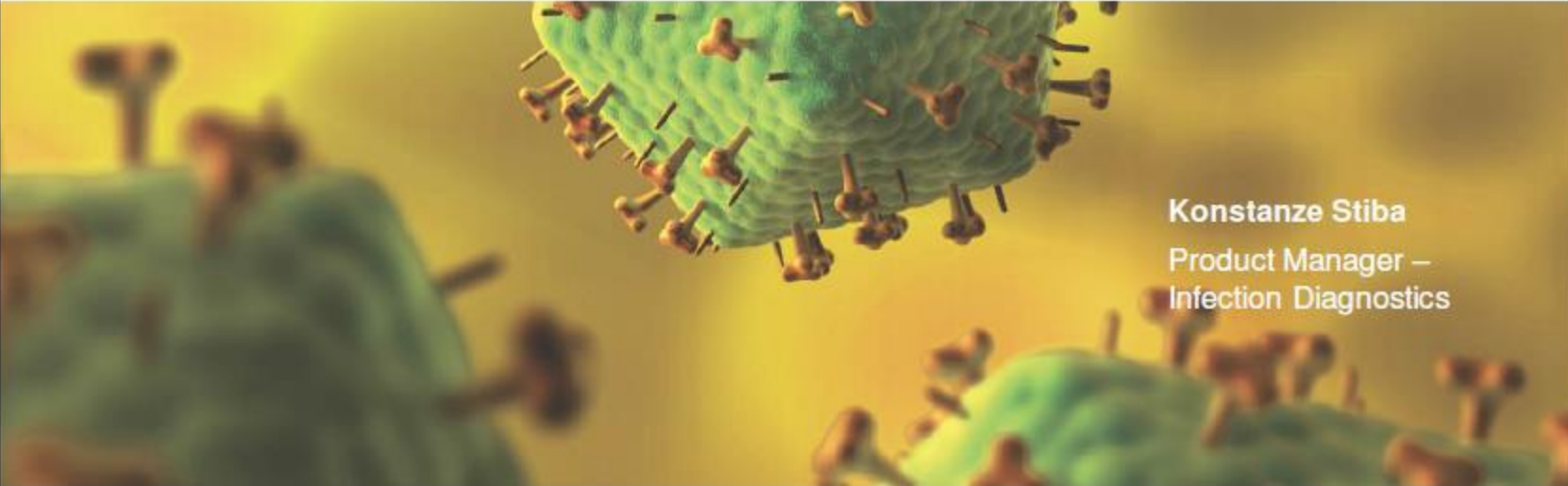
Medizinische
Labordiagnostika
AG



EBV-Diagnostics

鼻咽癌 診斷

Serological Patterns for Detection and Exclusion of acute
Infections



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Infection Diagnostics

EBV - General Informationen



Clinical picture

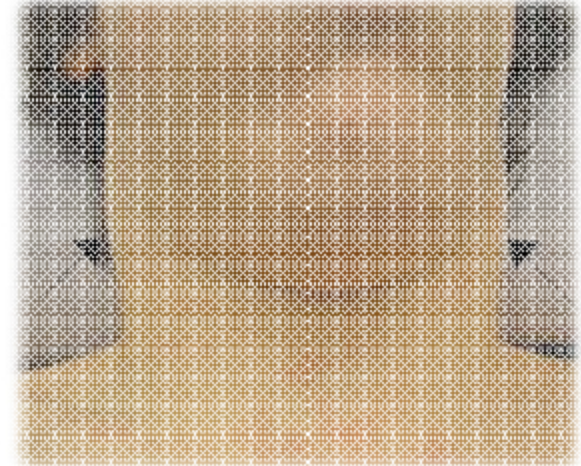
- Children: mostly no or mild and unspecific symptoms
- Adolescents: infectious mononucleosis in up to 30 – 60% of cases

青少年:感染傳染性單核球會30-60%上升
Onset of disease

- Flu-like symptoms: discomfort, fatigue, limb pain, headache,...

流感症狀:不舒服、疲勞、四肢疼痛、頭痛
Course of disease

- Fever, swollen lymph nodes, inflammations in the throat area 發燒、淋巴結腫脹、咽喉發炎
- Swollen lymph nodes (up to 50 %)
- Exanthema (up to 3%) 皮疹
- Hepatitis (up to 3%)



EBV - Diagnostics



Most prominent field of application – Detection of infectious mononucleosis 最突出的應用領域-偵測傳染性單球增多症

- Detection of Pfeiffer glandular fever is most often performed by serology

Detection of antibodies against early phase and late phase markers enables discrimination between acute and past infections

- **(V)CA: Capsid Antigen**, expressed in lytic phase 殼體抗原—表現在裂解期
 - Anti-CA IgM: early phase marker
 - Anti-CA IgG: intermediate early / late phase marker

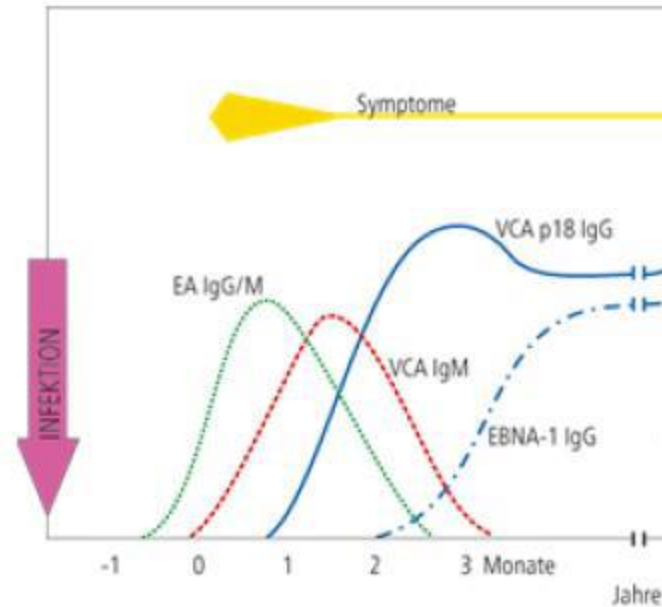
EBV核抗原-保持感染狀態

- **EBNA: EBV Nuclear Antigen**, maintaining status of infection
 - EBNA-1: late phase marker

早期抗原—引發病毒複製

- **EA: Early Antigen**, initiation of virus replication (interaction with DNA polymer)
 - EA: marker of virus replication activity (reactivation)

EBV - Diagnostics



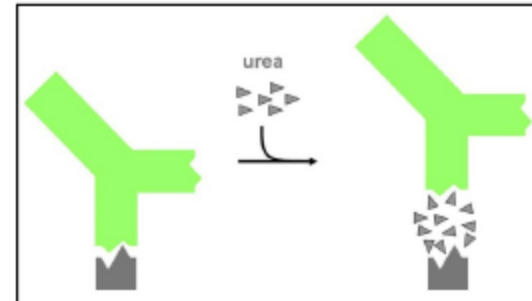
- **Anti-VCA IgM** marker for acute infections 急性感染
- **Anti-VCA IgG** occur after several weeks/months and persist
- **Anti-EBNA-1 IgG** exclude an acute infection 排除急性感染

Avidity



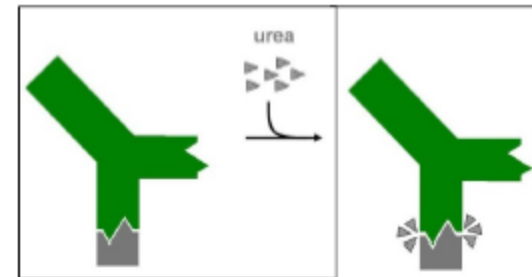
- Low avid antibodies:
Low functional binding strength
between antiserum and whole
antigen
(untrained immunity)

➤ acute (primary) infection



- High avid antibodies:
High functional binding strength
between antiserum and whole
antigen
(trained immunity)

➤ past (previous) infection;
reactivation



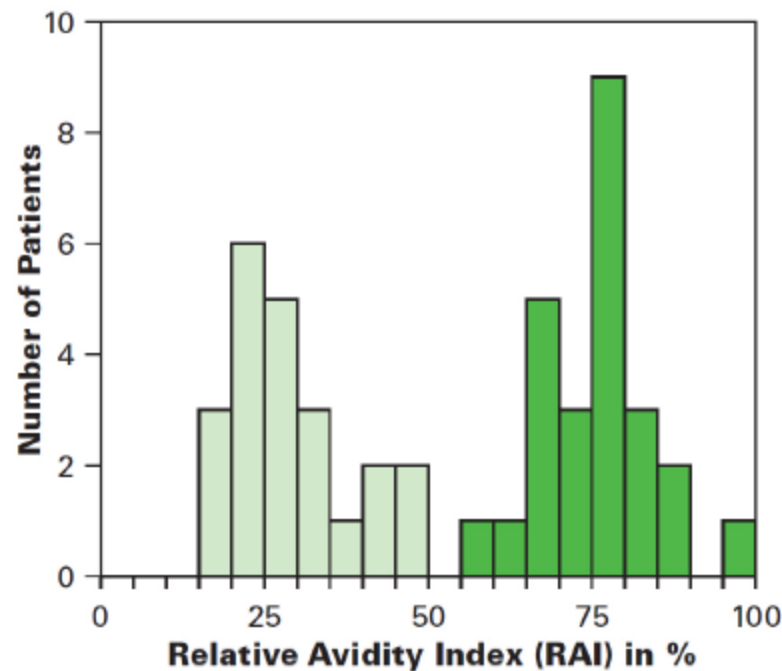
EBV – Avidity Determination



Avidity Determination is possible with ELISA and IIFT

Avidity in ELISA:

- 22 Sera of patients with **acute** EBV-infection
- 25 Sera of patients with **past** EBV-infection



$$\text{RAI (\%)} = \frac{\text{OD}_{\text{with urea}} \times 100}{\text{OD}_{\text{without urea}}}$$

Not helpful for < 0,150 OD

RAI < 40% → low avidity

RAI 40-60% → equivocal

RAI > 60% → high avidity

Detection of EBV-related NPC



Detection of Nasopharyngeal carcinoma (NPC) is of **high relevance** in **Asian** regions. 鼻咽癌-亞洲地區高度相關性

NPC diagnostics can either be based on **direct detection** method (detection of EBV DNA in serum or plasma) or **serology**.

Serological diagnosis is mainly based on detection of **anti-CA IgA** (screening) and **anti-EA IgA** (confirmation) antibodies.

篩檢

確認

EUROIMMUN
Anti-EBV-CA-IIFT (IgA)

	Patients/controls	
	patients	controls
positive	94	12
negative	2	68

Sensitivity: 98%
Specificity: 85%

EUROIMMUN
Anti-EBV-EA-IIFT (IgA)

	Patients/controls	
	patients	controls
positive	82	2
negative	14	78

Sensitivity: 85%
Specificity: 97%



Thank you for your attention!



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