

## Analysis of Plasma Epstein–Barr Virus DNA to Screen for Nasopharyngeal Cancer

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In a recent study in Hong Kong, a blood test detected Nasopharyngeal Carcinoma (NPC) before symptoms appeared and at earlier stages compared to historical rates.

### Clinical Summary

#### Objective

A prospective study of asymptomatic people investigated whether detecting EBV DNA in plasma samples would be useful to detect NPC.

#### Methods

EBV DNA in plasma specimens was analyzed to test participants who did not have symptoms of NPC. Participants with initially positive results were re-tested approximately 4 weeks later, and those with persistently positive EBV DNA in plasma underwent nasal endoscopic examination and/or magnetic resonance imaging (MRI).

#### Results

- 20,174 participants, all ethnically Chinese men ages 40-62, underwent testing
  - 1,112 participants (5.5%) had detectable EBV DNA in their initial plasma sample
  - 309 (1.5% of all participants and 27.8% of those who initially tested positive) had positive results on the second sample collected four weeks later
  - 300/309 participants with persistently positive results underwent endoscopic examination, and 275/309 underwent both endoscopic examination and MRI
  - 34/309 (11.0%) of these participants had pathology-confirmed NPC. Nine participants declined to undergo further testing, and one of these participants presented with advanced NPC 32 months after enrollment
- 71% of the participants with NPC identified by testing had stage I or II disease vs. 20% in a historical cohort; 97% of the participants diagnosed with NPC in this study were progression-free at 3 years as compared to 70% in a separate historical cohort
- Within 1 year of testing, only one participant with negative EBV DNA in plasma samples was diagnosed with NPC (stage II disease)
- The sensitivity and specificity of EBV DNA in plasma samples in testing for NPC were 97.1% (95% CI: 85.1%, 99.9%) and 98.6%, (95% CI: 98.5%, 98.8%), respectively

#### Conclusion

Analysis of EBV DNA in plasma samples was useful in early detection of NPC in asymptomatic individuals. NPC was detected before symptoms appeared and at earlier stages compared to historical data.