

# Screening and diagnosis of acute and chronic bird-related hypersensitivity pneumonitis by serum IgG and IgA antibodies to bird antigens with ImmunoCAP®

Tsuyoshi Shirai<sup>1</sup>, Takefumi Nikaido<sup>2</sup>, Yoshinori Tanino<sup>2</sup>, Yotaro Takaku<sup>3</sup>, Seishu Hashimoto<sup>4</sup>, Yoshio Taguchi<sup>4</sup>, Tomohisa Baba<sup>5</sup>, Takashi Ogura<sup>5</sup>, Kensuke Kataoka<sup>6</sup>, Masayuki Nakayama<sup>7</sup>, Yoshihito Yamada<sup>8</sup>, Sayomi Matsushima<sup>9</sup>, Satoshi Nakayama<sup>10</sup>, and YASUNARI MIYAZAKI<sup>1</sup>

<sup>1</sup>Tokyo Ika Shika Daigaku

<sup>2</sup>Fukushima Medical University

<sup>3</sup>Saitama Cardiovascular and Respiratory Center

<sup>4</sup>Public Interest Incorporated Foundation Tenri Hospital

<sup>5</sup>Kanagawa Cardiovascular and Respiratory Center

<sup>6</sup>Tosei General Hospital

<sup>7</sup>Jichi Medical University

<sup>8</sup>JR Tokyo General Hospital

<sup>9</sup>Hamamatsu University School of Medicine

<sup>10</sup>Thermo Fisher Diagnostics KK

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## Abstract

Background: Bird antigens are some of the most relevant antigens in hypersensitivity pneumonitis (HP). Possible sources of bird antigens are bird breeding, feather products and fertilizer with fowl droppings. For the screening and diagnosis of HP, the measurement of bird-specific antibodies should be standardized. Objective: The aim of this study was to clarify the utility of serum IgG (sIgG) and serum IgA (sIgA) antibodies to bird antigens in screening and diagnosing acute/chronic bird-related HP with ImmunoCAP® in multi-centre clinical research. Method: We performed a clinical performance test by conducting a multi-institutional study to measure the levels of sIgG/sIgA against pigeon, parrot and budgerigar antigens by the ImmunoCAP® system in 29 acute and 46 chronic bird-related HP patients. Results: The levels of sIgG/sIgA against the bird antigens of the three species were significantly higher in subjects with acute bird-related HP and chronic bird-related HP with acute episodes (recurrent type) than in the control subjects. For sIgG, the optimal cutoff values by ROC analysis were 24.6 mgA/L for pigeon, 14.0 mgA/L for parrot, and 8.7 mgA/L for budgerigar. By measuring multiple bird antigens and combining sIgG values of two species, the sensitivity and specificity for acute and recurrent-type chronic bird-related HP patients were 85-91% and 73-80%, respectively. For recurrent and insidious types of chronic bird-related HP, the sensitivity and specificity were 48-61% and 73-80%, respectively. Conclusion: The measurement of the levels of sIgG/sIgA against pigeon, budgerigar and parrot antigens by ImmunoCAP® was useful for screening and diagnosis in bird-related HP.

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