

1 *Original article:*

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3 **Clinical relevance of low androgen to gastroesophageal reflux**
4 **symptoms**

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15 ***Running title:*** Testosterone level and FSSG score

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18 ***Key words:*** Free testosterone, Frequency scale for the symptoms of gastroesophageal
19 reflux disease (FSSG), Gastroesophageal reflux disease (GERD), and Late onset
20 hypogonadism (LOH).

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Abstract

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37 The aim of this study was to determine the relationships between free
38 testosterone (FT) level and parameters including laboratory data and data from
39 questionnaires and to determine symptoms leading to the detection of late onset
40 hypogonadism (LOH). We retrospectively reviewed medical records of patients in
41 whom serum FT was measured in our hospital. Aging Male Symptoms (AMS) score,
42 self-rating depression scale (SDS) and frequency scale for the symptoms of
43 gastroesophageal reflux disease (FSSG) score were used for questionnaires. A total of
44 205 patients were included in the analysis (55.2 ± 15.6 years of age, mean \pm SD).
45 Among them, 119 patients (58.0%) had an FT level of less than 8.5 pg/mL, which
46 fulfills the diagnostic criterion of LOH syndrome according to the clinical practice
47 manual for LOH in Japan. It was revealed that FSSG score was inversely correlated to
48 serum FT levels ($R=-0.3395$, $p<0.001$), although SDS and AMS scales did not show
49 significant correlations to FT levels. Our study revealed a high prevalence of LOH
50 syndrome among patients in whom the majority complained of general symptoms.
51 Although GERD symptoms are generally not considered to be typical symptoms of
52 LOH, our study indicates that those symptoms might be clues for the detection of LOH.