

Diagnostic criteria for Patulous Eustachian Tube: A proposal by the Japan Otological Society



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ABSTRACT

Patulous Eustachian Tube (PET) is of increasing importance in otology. However, despite the abundance of diseases requiring a differential diagnosis from PET, such as superior semicircular canal dehiscence syndrome, perilymphatic fistula, acute low-tone sensorineural hearing loss, etc., there are currently no established diagnostic criteria for PET.

In view of these circumstances, the Japan Otological Society (JOS) Eustachian Tube Committee proposed the diagnostic criteria for Patulous Eustachian Tube in 2012, in order to promote clinical research on PET. A revision was made in 2016, maintaining the original concept that the criteria should be very simple, avoid any contamination of “Definite PET” with uncertain cases. Moreover, it was also intended to minimize the number of cases that could be accidentally excluded even in the presence of some suspected findings (“Possible PET”).

The criteria can be used by all otolaryngologists even without using the Eustachian tube function test apparatus. However, the use of such an apparatus may increase the chances of detecting “Definite PET”. The algorithm for the diagnosis of PET using the criteria has also been described.

The JOS diagnostic criteria for Patulous Eustachian Tube will further promote international scientific communication on PET.

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1. Background

The Patulous Eustachian Tube (PET) has long been considered a unique but relatively rare disorder [1–5]. In recent years, however, there has been a remarkable increase in the number of clinical reports and studies on PET [6–67], with regards to its clinical features, pathogenesis, diagnosis and treatments. In addition, the insufficiently closed Eustachian tube, a type of PET, is now regarded as an important etiologic factor for retraction type middle ear diseases such as cholesteatomas and adhesive otitis media [68–75]. It has also been postulated that PET may cause inner ear damage (sensorineural hearing loss and vestibular symptoms) due to excessive middle ear pressure changes [18]. Additionally, several reports have speculated that PET may be an aggravating factor for vertigo including Ménière's disease. PET is important in the differential diagnosis of disorders such as superior semicircular canal dehiscence syndrome (SCDS) [76], perilymphatic fistulas, acute low-tone sensorineural hearing loss, etc.

Despite the increasing importance of PET in otology, it has been challenging to fully understand the various clinical cases presented from different institutions under the diagnosis of PET or to compare studies published. These problems are mainly due to the lack of an established diagnostic criteria for PET.

In view of these circumstances, the Japan Otological Society (JOS) Eustachian Tube Committee first proposed diagnostic criteria for Patulous Eustachian Tube in 2012, in order to promote clinical research on PET by providing a common

platform. A revision was made in 2016, while maintaining the original concept of a set of simple criteria. These diagnostic criteria were written in Japanese.

Here, we have proposed the English version of the JOS diagnostic criteria of Patulous Eustachian Tube to aid international scientific communication on PET.

2. Concept of the JOS diagnostic criteria for Patulous Eustachian Tube 2016

The JOS diagnostic criteria for Patulous Eustachian Tube 2016 was formulated to avoid any contamination of “Definite PET” with uncertain cases, so that “Definite PET” accurately reflects PET cases. Moreover, it was also intended to minimize the number of cases that could be accidentally excluded even in the presence of some suspected findings (“Possible PET”).

The criteria can be used by all otolaryngologists even without using the Eustachian tube function test apparatus. However, the use of such an apparatus could increase the possibility of detecting “definite PET”.

3. JOS diagnostic criteria for Patulous Eustachian Tube 2016

The JOS diagnostic criteria for Patulous Eustachian Tube 2016 (Fig. 1), the notes for the criteria (Table 1, Figs. 2 and 3) and the algorithm for diagnosis of PET using the criteria (Fig. 4) are shown.

Definite PET: 1 + 2 + 3

Possible PET: 1+ (2 or 3)

1. There are subjective symptoms

One or more of the following symptoms included:
voice autophony, aural fullness, and breathing autophony

2. Tubal obstruction procedures (A or B) clearly improves symptoms

- A. Posture change to the supine / lordotic position
- B. Pharyngeal orifice obstruction procedure (swab, gel, etc.)

3. There is at least one of the following objective findings of patent E-tube:

- A. Respiratory fluctuation of the tympanic membrane
- B. Variations of external auditory canal pressure synchronized with nasopharyngeal pressure
- C. The sonotubometry shows (1) the probe tone sound pressure level less than 100 dB or (2) an open plateau pattern.

Fig. 1. JOS diagnostic criteria for Patulous Eustachian Tube 2016.

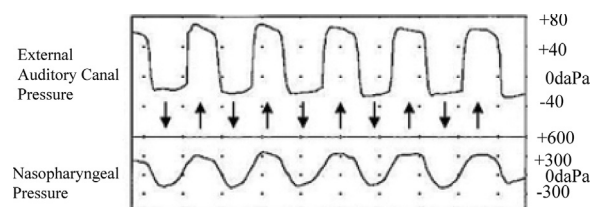


Fig. 2. Representative TTAG recording obtained from a patient with PET.

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