

論文名 : Measurement of Pharyngeal Barometric Pressure During Swallowing  
in the Healthy Subjects

(健康者における嚥下時の咽頭内気圧変化の測定) (要約)

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We have developed a new device to measure the baropressure in the pharynx. A unique character of it includes that changes of pressure in the pharynx was assessed with a transducer placed in the silicon balloon that eliminates possible confounding factors like direct contacts of the bolus to the transducer. We determined the effects of different swallowing tasks on baropressure changes in the pharynx. Twelve healthy subjects completed 5 series of swallows including saliva, 15 ml and 45 ml water, 15 ml potage soup and mayonnaise. The suprahyoid muscle activity was recorded simultaneously. Three parameters including area under curve (AUC), peak amplitude and duration of pressure were analyzed from 225 swallowing sessions. Almost all of bolus swallowing tasks had biphasic responses consisting of the early and late phases (99 %), whereas 90 % of saliva swallowing had a single phase. Late phase displayed greater pressure responses than early phase. Pressure response of the early, but not late phase was significantly increased with increasing volume, while small but significant viscosity effects on pressure were seen in early and late phases. Muscle activity during swallowing was increased in bolus volume, but not viscosity dependent manner. Peak pressure of the late phase was preceded by maximum muscle activity, while that of the early phase was seen around the point when muscle activity displayed a peak response. These findings indicated that biphasic response patterns of intrapharyngeal pressure could reflect precise functional aspects for swallowing reflexes induced by coordination of the pharyngeal muscle contraction.