

A Histological Study on the Prenatal Development of the Palatal Rugae in the White Rat

Mohamed Akram Motabagani

Department of Anatomy, College of Medicine King Faisal University, Dammam, Saudi Arabia

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SUMMARY

This study was designed to investigate the prenatal development of the palatal rugae in the White Rat and to discuss the possible role played by the developing rugae in palatal shelf elevation.

Extraction of embryos from twenty pregnant female rats was carried out in the 12th, 13th, 14th, 15th and 16th day of pregnancy. Four embryos from each age were decapitated and their heads were fixed and processed. Serial coronal and sagittal sections were made and stained with haematoxylin and eosin and with Mallory's trichrome stains.

The results of the present study revealed that in the 12th day rat embryo the lateral and medial surfaces of the vertical palatine processes were covered with epithelium of uniform thickness but there was marked epithelial thickening at the junction between the lateral surface of the palatine process and the maxillary process with increased condensation in the subjacent mesenchyme. In the 13th day, the thickened epithelium was invaginated into the underlying mesenchyme to form a well-marked groove. In the 14th day, the anterior set of palatal rugae started to appear on the future oral surface of the vertical palatine process as three vertically arranged areas of epithelial thickenings. In the 15th day, the palatine processes became horizontal and the anterior set of rugae became apparent in coronal and sagittal sections. In the 16th day, the anterior set of rugae became well developed and their thickened epithelium became invaded by the subjacent mesenchyme. The posterior set of rugae started to appear as localized epithelial thickenings.

It was concluded that the anterior set of rugae is developed prior to shelf elevation while the posterior set is developed only after palatal shelf elevation. The rugae may act as struts which help in keeping the palatine shelves horizontal when they have been elevated.

INTRODUCTION

Palatal rugae, also called rugae palatinae and plicae palatinae transversae, refer to a series of transverse ridges on the anterior part of the mammalian palatal mucosa, each side of the median palatal raphe' and behind the incisive papilla. They probably assist the tongue to transport food during mastication and play a role in suck-