

HISTOMORPHOLOGICAL STUDY ON THE CAROTID SINUS IN RABBIT

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ABSTRACT

Histomorphological study confirmed that the carotid sinus was characterized by an abrupt thinning of elastic tunica media which was rapidly replaced by the normal muscularity of the media on the distal progression in the internal carotid artery. The carotid sinus was richly supplied with sensory receptors which took the form of menisci and left the sinus as the nerve of Hering.

INTRODUCTION

The carotid sinus was a bulbus-like dilatation which located in the internal carotid artery at its junction with common carotid and was considered to subserve a baroreceptor function so that it led to a reflex slowing of the heart (1,2). Investigation on carotid sinus had been done by worker (3,4,5). The object of the present work was to describe the histomorphological of carotid sinus in rabbit.

MATERIALS AND METHODS

Blocks of tissue were taken from ten internal carotid arteries at the sites from one centimeter before branching and two centimeters after branching. Tissue were fixed in 10 %

formaline. They were passed into serial changes of alcohol, xylol, paraffine and finally sections were cut at a thickness of six micrometers and stained to demonstrate elastic tissue by Gomori one-step trichrome and counterstain was employed to demonstrate smooth muscle and collagen fibers. Sections were stained with haematoxylin and eosin, silver staining was employed to detect the sensory receptor (6).

RESULTS

Grossly, the carotid sinus was often looking as fusiform or triangular in shape and lying respectively proximal and distal to the internal carotid artery. Histological examination showed that the carotid sinus contains an abrupt a compact layers of elastic fibers (Fig. 1).

These elastic laminae run roughly parallel with one another. Such a structure suggests that the carotid sinus might be more distensible than its neighbouring common and side of the carotid sinus reverted rapidly and composed of tightly packed smooth muscle with few elastic fibers. There was an exceedingly dense Tunica adventitia. The wall of the carotid sinus was richly supplied with sensory receptors which terminate in a characteristic menisci.

DISCUSSION

The carotid sinus was formed nearby the origin of the internal carotid artery and as a dilatation arterial lumen. This sinus acted as a baroreceptor (7) and (5). Histologically, the wall of the carotid sinus showed a preponderantly increased elastic tissue content and a significantly reduced smooth muscle component (8). It was suggested that the preponderance of elastic tissue in the carotid sinus was an a morphological adaptation of the sinus to a baroreceptor function (9). The

sparity of muscular tissue in carotid sinus was noticeable in comparison with the structure of the internal carotid artery and the area of transition from elastic zones was usually gradual (4). The sensory menisci was rich in the adventitia which leave the sinus as the nerve of Hering (7). These Hering's nerves in the carotid sinus, through to produce a nervous mechanism which controlled the circulation directly or indirectly through chemical regulation (10,11).



Fig.1 Carotid sinus showing that the tunica media was composed of elastic fibers packed tightly together Gomori one -step trichome X 500.

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الخلاصة

تشير الدراسة النسيجية الشكلية للجيب السباتي ، وجود غلالة وسطى مرنة. تستبدل الألياف المرنة وبصورة تدريجية بألياف عضلية في الجزء القاصي من الشريان السباتي الداخلي. يزود الجيب السباتي بمستقبلات حسية تنتهي على شكل تضخمات هلالية صغيرة. تترك المستقبلات الحسية الجيب السباتي بشكل أعصاب تعرف بأعصاب هرينك.