twice as active on the rat's duodenum and on the blood-pressure of the rabbit.

These differences in biological activity between bradykinin and 'Kallidin' were even more pronounced in experiments with a highly purified preparation of Kallidin. The relative potency of Kallidin in lowering blood-pressure was about 6 times stronger than that of bradykinin.

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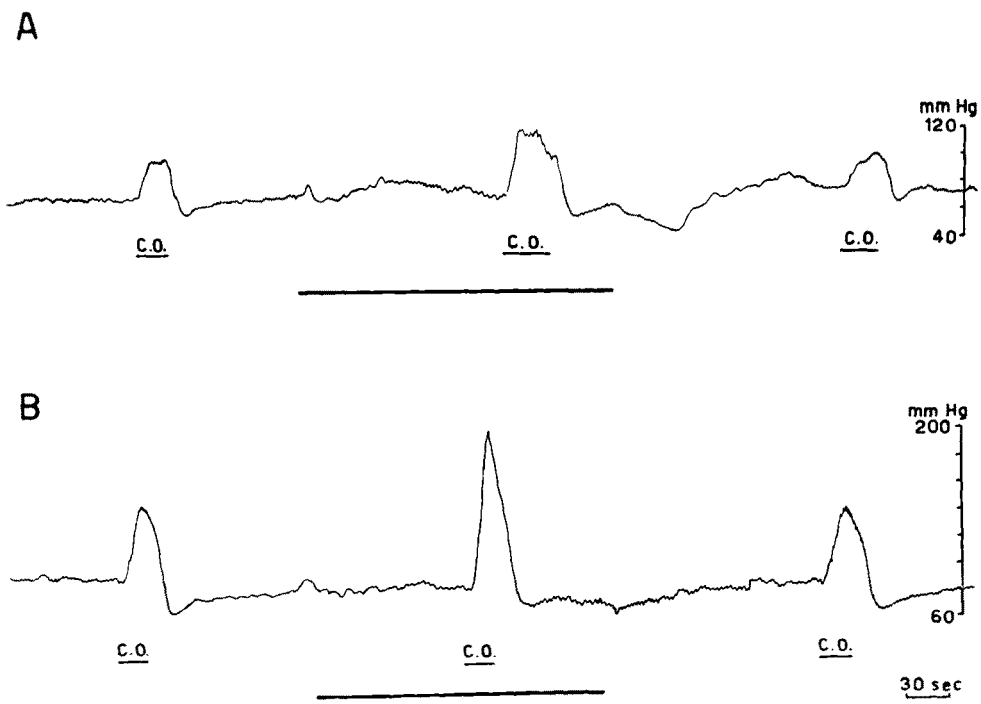
Tonic Reflex Regulation of the Cat's Blood Pressure through Vagal 'Non-Aortic' Afferents[1]

It has been known for several years, particularly as a result of experiments on chronic neurogenic hypertension in the rabbit[2,3], that section of the cervical vagi, following previous carotid sinus and aortic denervation, brings about further increase of arterial pressure. This observation has variously been interpreted by different authors. Nonidez[4] has suggested that the blood pressure increase results from severing baroceptive afferents of aortic origin (accessory aortic fibers) which would take a devious course through the vagus trunk, thus avoiding the aortic nerve proper. In more recent times, growing evidence for baroceptive afferents from atria, ventricles, and pulmonary vessels[5,6] has made these receptive areas indicted for the reflex circulatory regulation exerted by vagal fibers.

The present experiments have been undertaken with three aims: (I) to get a better quantitative assessment of the pressor release phenomenon ensuing upon vagal interruption; (II) to establish its independence of concomitant respiratory changes; (III) to test whether it is related to section of accessory aortic fibers.

Methods. The experiments have been carried out on midcollicular decerebrate cats, and on a few intact animals under chloralose anesthesia. Arterial pressure, continuously measured from a femoral artery with a mercury manometer, and respiratory movements were recorded on a smoked drum kymograph. After blocking vagal efferent activity by intravenous administration of suitable doses of atropine, the left, and sometimes also the right, aortic nerves were separated from the vagal trunks. The right vago-sympathetic trunk was severed, and the rest of the experiment performed by working only on the aortic nerves and the left vagus. Other techniques are described under Results.



Amplitude of the pressor response to carotid occlusion during cooling of the left cervical vagus (heavy line), with both aortic nerves intact (A) or severed (B). Decerebrate preparation with previous section of the right vago-sympathetic trunk: 75 µg/kg atropine i.v.

Results. Quantitative assessment of the pressor release phenomenon following upon vagal interruption was carried out using as a test either the amplitude of the pressor response to transient carotid occlusion or, in sino-carotid denervated animals, the basal arterial pressure level. The Figure (B) shows the remarkable increase in the height of the carotid occlusion pressor response during transitory blockade of left vagal conduction by local cooling. The

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reaction was usually impressive when both the aortic nerves had previously been severed, as in B, but was also evident (A) when the aortic nerves had been left intact and allowed to compensate for interruption of the homologous afferents in the vagus. Also the effects of vagal blockade upon basal blood pressure, which were barely apparent when other baroceptive pathways were working, became constantly clear, and often dramatic (up to 40 mm Hg increase of the pre-existing hypertension), when in addition to aortic nerves severing both carotid sinuses were previously denervated.

As vagal section constantly induces respiratory changes, it was thought essential to test whether the pressor response to vagal interruption might not be secondary either to a rise in alveolar carbon dioxide concentration or to hemodynamic alterations resulting from the changed respiratory mechanics. The first possibility was ruled out in a large series of animals in which alveolar CO_2 concentration was continuously measured by means of an infrared analyzer. In most preparations, vagal section or blockade, although inducing definite increases of the carotid occlusion response or of basal arterial pressure, did not modify alveolar CO_2 concentration. Also the second possibility could be excluded, by showing persistence of the circulatory effects of vagal interruption in decerebrate animals immobilized with gallamined, triethiodide and artificially ventilated.

Finally, a third series of experiments was conceived to appraise the role played by aortic accessory afferents (i.e. fibers originating from the aortic region, although running in the vagus rather than in the aortic nerve) in the circulatory effects of vagal sectioning. As baro- and chemoceptive fibers from the aortic region are likely to run intermingled along the peripheral afferent paths, completeness of aortic receptive area deafferentation after interruption of the aortic nerves was tested by intraventricular injection of small amounts (50–100 μg) of potassium cyanide, a classical stimulant of aortic and carotid bodies chemoceptors. The respiratory and circulatory responses to the drug, always clear-cut whenever at least one aortic nerve was intact (both carotid sinuses being preliminarly ablated in this group of experiments) completely disappeared upon section of the aortic nerve in spite of the fact that the left vagus remained untouched. This demonstrates than no important contribution of chemoceptive (and presumably baroceptive) afferents from the aortic region is carried though the left vagus nerve.

To sum up, our experiments have succeeded in demonstrating the quantitative importance of the tonic reflex influence exerted by afferent vagal fibers on arterial pressure, its independence of concomitant respiratory changes, and that its origin is different from that of the classical afferent fibers running in the aortic nerve. A more precise localization of the origin of the vagal afferents will be the subject of a subsequent report.

Riassunto. La sezione del vago cervicale, dopo precedente sezione dei nervi aortici, produce un cospicuo aumento della risposta pressoria all'occlusione carotidea, o, nell'animale con denervazione seno-carotidea, della pressione arteriosa basale. Questo fenomeno non dipende dalle concomitanti variazioni respiratorie, né dalla sezione di eventuali fibre di origine aortica decorrenti nel vago.

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Tumor-Producing Capacity of Transplanted Lung and Spleen Taken from Yoshida Sarcoma Bearing Rats

Clinical and experimental evidence accumulated in recent years indicates that tumor cells, in general, circulate earlier and with greater frequency than it was formerly supposed[1–4]. This fact has a special bearing on the problem of metastases, and many questions must be answered before the precise relationship between circulating tumor cells and localized secondary growth can be established. We report here some preliminary observations on the problem.

Yoshida sarcoma cells circulate very precociously. Our unpublished observations have shown that heart-blood taken from tumor-bearing animals, as early as four days after tumor implant, is able to reproduce the growth when injected subcutaneously to recipient animals. Nodular metastases are not seen in Yoshida tumor-bearing rats, even in terminal stages, although a considerable number of tumor cells can always be seen within vessels of practically every organ. The reason why these cells do not give rise to nodular metastases is not entirely understood as yet.

One first approach to the problem is to determine, by means of a biological test, if these cells observed in several organs are viable or not. In order to assess this point, fragments of lung and the whole spleen were removed from tumor-bearing Wistar rats, at 3, 5, 7, 9, and 11 days after tumor implantation, and transplanted subcutaneously to recipient normal animals. The results are registered in the Table.

Days after tumor implant	Organs transplanted			
	Lung		Spleen	
	Tot. No.	No. Pos.	Tot. No.	No. Pos.
3	4	0	5	0
5	4	3	5	2
7	4	4	5	4
9	4	4	5	5
11	4	4	5	5

No significant differences were seen between lung and spleen with regard to their capacity to give rise to tumors when transplanted. This finding is of particular interest when we consider that it is a well established fact in oncology that the spleen is an exceedingly uncommon site for metastases localization[5,6]. These observations indicate that Yoshida sarcoma cells present in these organs are viable and that their inability to produce a secondary growth, when the organs are *in situ*, must be due to other

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