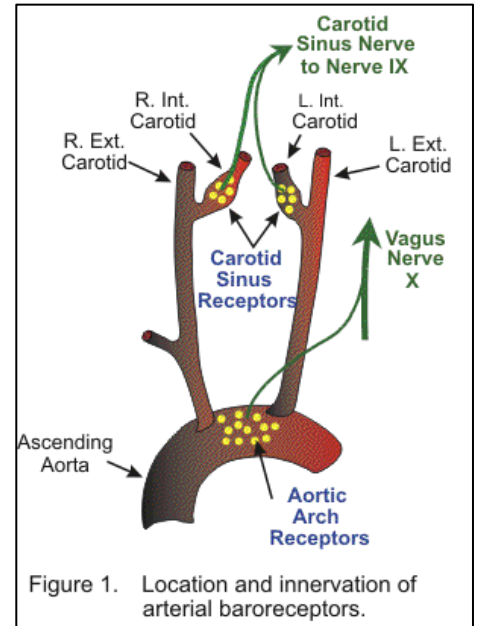


Baroreceptors & Aging

Anesthetic Pearls: Anesthetic Implications of Baroreceptor Dysfunction and Aging

Baroreceptors are sensors located in the wall of blood vessels in mammals. Specifically, these receptors are a type of mechanoreceptor that detects the pressure of blood flow and send signals to the CNS to increase or decrease total peripheral resistance and cardiac output. Baroreceptors act immediately as part of a negative feedback system called the **baroreflex**, as soon as there is a change from the usual mean arterial blood pressure and therefore returns the pressure to a normal homeostatic level. These receptors are an example of a short-term blood pressure regulation mechanism. Baroreceptors detect the amount of stretch of the blood vessel walls, and send the signal to the nervous system in response to this stretch. The **Nucleus Tractus Solitarius** in the medulla oblongata recognizes changes in the firing rate of action potentials from the baroreceptors and therefore influences cardiac output and systemic vascular resistance through changes in the autonomic nervous system. Baroreceptors can be divided into two categories: **high-pressure arterial baroreceptors** and **low-pressure baroreceptors** (also known as cardiopulmonary or volume receptors).



Aging is associated with alterations in vascular reactivity manifest clinically as exaggerated changes in blood pressure (hypertension from luminal thickening / atherosclerosis and orthostatic hypotension from blunting of baroreceptors). Orthostatic hypotension is quite common (20%) in the elderly and largely results from diminished baroreceptor responsiveness. Heart rate response to changes in blood pressure, Valsalva maneuver, and the respiratory cycle also become blunted with aging.

