

Researchers develop potentially safer general anesthetic

July 27 2009, by Sue McGreevey

(PhysOrg.com) -- A team of Harvard Medical School (HMS) researchers at Massachusetts General Hospital (MGH) has developed a new general anesthetic that may be safer for critically ill patients. In the August issue of *Anesthesiology*, they describe preclinical studies of the drug called MOC-etomidate - a chemically altered version of an existing anesthetic - which does not cause the sudden drop in blood pressure seen with most anesthetics or prolonged suppression of adrenal gland activity, a problem with the original version of the drug.

“We have shown that making a version of etomidate that is broken down very quickly in the body reduces the duration of adrenal suppression while retaining etomidate’s benefit of keeping blood pressure much more stable than other [anesthetics](#) do,” said HMS associate professor of [anesthesia](#) Douglas Raines of the MGH Department of Anesthesia, Critical Care and Pain Medicine, who led the study.

Almost all general anesthetic agents reduce blood pressure immediately after they are administered, which is not a problem for young and healthy patients but can have serious consequences for those who are elderly, critically ill, or suffering from blood loss. For such patients, etomidate is often used to induce anesthesia, but since adrenal suppression sets in quickly and can last for several hours to days, other agents are used to maintain anesthesia during a procedure, requiring very careful monitoring to avoid dangerous blood pressure drops.

In their search for a safer version of etomidate, the research team

mimicked the chemical structure of other “soft analogue” drugs - derivatives of parent drugs designed to be rapidly metabolized - by adding a molecule that causes the drug to be broken down by natural enzymes soon after producing its effects. Experiments in tadpoles and rats showed that the new agent, MOC-etomidate, quickly produced anesthesia from which the animals recovered rapidly after administration ceased. The rat study verified that MOC-etomidate had little effect on blood pressure levels and no effect on adrenal activity, even when administered at twice the dosage required to produce anesthesia.

The researchers note that, since the study only examined the effect of a single dose of MOC-etomidate, their next step will be to study continuous infusion of the drug. Additional data must be gathered from animal studies before testing the agent in human patients is feasible. “If all goes well, we expect that we could give a large dose of MOC-etomidate to induce anesthesia and then run a continuous infusion to maintain anesthesia without reducing [blood pressure](#) in even very sick patients,” Raines says. “We also anticipate that patients will wake more quickly and with less sedation after surgery and anesthesia.”

More information: journals.lww.com/anesthesiology/pages/default.aspx

Provided by Harvard University ([news](#) : [web](#))

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