Title: Exposure to high pressure may produce the 5-HT behavioral syndrome in rats

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Abstract: In addition to the motor events associated with high pressure neurologic syndrome (HPNS), we have observed behavioral changes that resemble the 5-hydroxytryptamine (5-HT) syndrome in free-moving rats exposed to pressures up to 70 ATA. These include a flat body posture, head weaving, reciprocal forepaw treading, and hyperlocomotion. Such changes occur when brain 5-HT levels are raised or when 5-HT receptors are activated. We have therefore studied the behavior of rats at pressure treated either with saline or with one of the following drugs: p-chlorophenylalanine (pCPA) which depletes brain 5-HT by 85-90%, Wy 27587 which inhibits 5-HT reuptake, 5-hydroxytryptophan (5-HTP) and carbidopa which increase brain 5-HT synthesis, and quipazine which is a 5-HT receptor-agonist. After treatment, rats were individually exposed to pressure, and behavioral scores were made for 5 min every 10 ATA up to 70 ATA by an unbiased observer who was not aware of the treatment given. Analysis of all control rats indicated that only a flat body posture, forepaw treading, and hyperlocomotion were positively correlated with pressure, and these events were used in all subsequent analysis. Rats treated with pCPA with whole brain 5-HT levels reduced by 90% had scores significantly less than controls. Rats treated with Wy 27587 showed significantly increased scores. Rats treated with 5-HTP and quipazine failed to show a significant increase in scores. These results suggest that a modified form of the 5-HT

	syndrome occurs when rats are exposed to increased pressure, and the behavioral events seen are consistent with some activation of the 5-HT1A receptor subtype.
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