Fludrocortisone treatment in a child with Postural Orthostatic Tachycardia Syndrome (POTS): a case report

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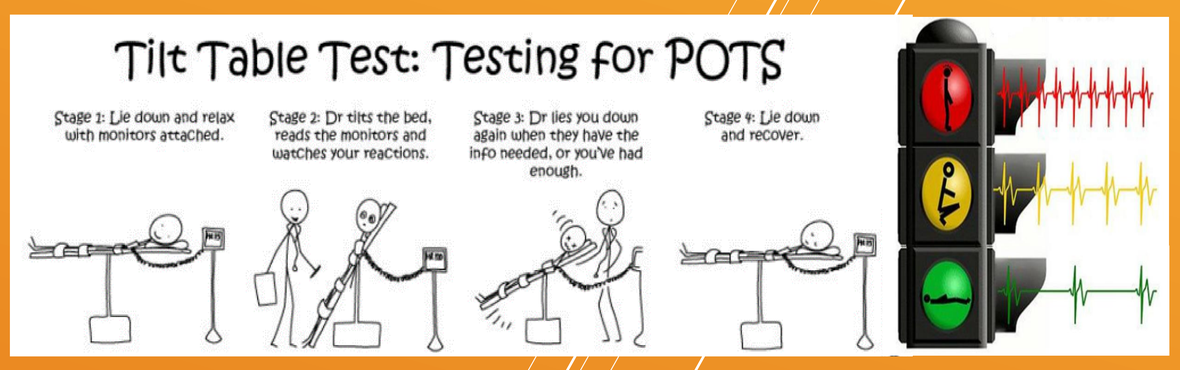
Background: Postural orthostatic tachycardia syndrome (POTS) is a multifactorial condition, which implies symptoms as fatigue, tachycardia, sleep disorders and autonomic symptoms. The fundamental clinical sign is the manifestation of an abnormal increase in heart rates of at least 40 bpm within 10 minutes assuming an upright position, delineating a condition of orthostatic intolerance and decreasing quality of life

Objective: To describe a case of a debilitated boy with POTS treated with fludrocortisone, justifying our therapeutic choice based on syndrome's pathophysiology.

Case report: An 8-year-old boy presented repeated episodes of tachycardia, pallor, periumbilical abdominal pain and frontal headache, followed by ground fall and loss of consciousness lasting a few seconds. Therefore, he performed first-level blood and diagnostic tests, including ECG, echocardiography, brain MRI and electroencephalography, resulting normal. Moreover, due to the worsening of the symptoms, a head-up tilt table test was performed, showing a vasovagal response, so the therapy with midodrine hydrochloride at the dose of 2.5mg/die was started.
After the hospitalization, his symptomatology has become more frequent. So he was admitted for second times in our Hospital, where he began to present increased vertigo in the immediate transition from supine position to standing up, with a blood pressure of 70/42mmHg and heart rate of 135bpm. He performed dosage of aldosterone, renin and catecholamines in supine position and after 10 minutes in orthostatism. Laboratory results showed normal values of catecholamines, but they indicated a paradoxical increase of renin and aldosterone values, higher in supine position (Table 1). A diagnosis of POTS was made and the therapy with fludrocortisone acetate, an aldosterone analogue, at dose of 0,05mg/die was started.
At demission our patient was good and, at first follow-up, the laboratory values did not show the paradoxical increase of renin and aldosterone.



	Normal values	Supine Position	Orthostatism
Renin (µUI/ml)	2-103	201,4	40,85
Aldosterone (ng/dl)	5,5-55,1	21,80	9,17
Epinephrine (pg/ml)	20-190	211	n.d.
Norepinephrine (pg/ml)	70-480	96	n.d.

Table 1 Dosage of aldosterone, renin, epinephrine and norepinephrine in supine position and orthostatism during an episode of tachycardia and vertigo in the immediate transition from supine position to standing up and normal range. (n.a.: not available)

Discussion and conclusion: The management of POTS paediatric patients is very controversial, because of lack of trial studies. A complete clinical and diagnostic evaluation can provide the basis for a right management, based on syndrome's pathophysiology. In our case, we identified a hypovolemic form, so we expanded plasma volume with fludrocortisone.
This empirical approach has allowed our patient a gradual recovery of his activities.

References

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