Impaired Weight Gain and Renovascular Hypertension

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Abstract. Uhari, M. and Heikkinen, E. (Department of Paediatrics, University of Oulu, Oulu, Finland). An eight month old infant was admitted to hospital because of poor weight gain. During the hospitalization she became unconscious and had convulsions. On these occasions a high blood pressure (205/120 mm Hg) was measured. In further evaluation of the hypertension, high plasma renin activity (32.8 ug/l/h) with a high serum aldosterone concentration (13000 pmol/l) was measured. Because of these findings renal angiography was performed: this revealed a stenosis of the left renal artery. A reconstruction of the renal artery was performed by a microsurgical technique and nine months after the operation the child was only mildly hypertensive but still required antihypertensive medication (propranolol 10 mg×3, hydralazine 5 mg×2): with this treatment her blood pressure was 110/80 mm Hg. After the operation her weight rose from below 2.5 percentile to the 10th percentile. The importance of blood pressure measurement in all children and infants admitted to hospital, regardless of their symptoms, is stressed.

Key words: Impaired weight gain – Hypertension – Infancy

High blood pressure in infancy is rare [1]. Usually it is symptomless and only a hypertensive crisis causes symptoms, most commonly convulsions [2]. Renovascular hypertension is mediated via the renin-angiotensin system [3]. The diseased kidney secretes renin and this leads to secondary hyperaldosteronism with hypokalemic alkalosis [4]. We present an infant with poor weight gain and secondary hyperaldosteronism caused by a stenosis of the left renal artery.

Case Report

A five month old girl was referred to the Department of Paediatrics, University of Oulu, because of poor weight gain: her weight was 5780 g (Fig. 1). Microscopic haematuria was observed but this was thought to be an artefact. No further examinations were considered necessary at that time.

Three months later the infant was readmitted because the weight gain was still poor and she had even lost weight during the previous two weeks (Fig. 1). The following day an acute otitis media with high fever was diagnosed, and penicillin was given parenterally. In the evening of the same day the patient convulsed. The convolution was atypical for a febrile convolution because it was left sided. On this occasion a high blood pressure (205/120 mm Hg) was measured by ultrasound (Arteriosonde® 1010, Roche). During further follow-up the blood pressure remained at the same level. On laboratory examination hypokalemia (2.1 mmol/l), hyponatremia (128 mmol/l), mild alkalosis (pH 7.48), proteinuria, and haematuria were observed.
The hypertensive crisis was treated with diazoxide (25 mg i.v.) and antihypertensive therapy was continued with propranolol (5 mg x 3 per day) and hydralazine (2 mg x 2 per day). Further evaluation of the hypertension showed normal renal function, high peripheral plasma renin activity (32.8 ng/l/h) and an increased concentration of serum aldosterone, 13000 pmol/l [5]. On intravenous urography the secretion of the left kidney was delayed and stenosis with poststenotic dilatation of the left renal artery was observed on renal angiography (Fig. 2).

With antihypertensive treatment the blood pressure decreased to about 130/80 mm Hg. At the age of ten months the child was operated on. A juxta-aortal stenosis of the left renal artery was found and end-to-end anastomosis was performed between the renal and splenic arteries using a microsurgical technique. After the operation the antihypertensive therapy could be reduced but the blood pressure rose again. Because of lack of co-operation during blood pressure measurements the child was admitted to the hospital for more exact evaluation. Repeated measurements showed that her blood pressure was nearly normal under treatment with propranolol (10 mg x 3 per day) and hydralazine (5 mg x 2 per day). On intravenous urography the secretion of the left kidney was as delayed as before the operation. Further renal angiography has not been considered to be indicated because of the potential risks of this examination, especially in small children. The antihypertensive therapy has been reduced and the infant is at present normotensive. Weight gain improved markedly after the treatment of hypertension and reached the initial percentile (Fig. 1).

Discussion

Severe hypertension in infancy is rare but renal artery stenosis is not an uncommon finding as a cause of this disease [6]. Among 110 patients with renal hypertension, Olson and Lieberman found 11 patients with renovascular hypertension [7]. In an earlier survey of 164 Finnish patients 6 children with renovascular hypertension were seen [8].

Because of the difficulties of blood pressure measurement in infants, hypertension has not been easy to diagnose. The introduction of ultrasound devices for blood pressure measurement has made the procedure accurate and easy [9]. Today the measurement of blood pressure should be part of the examination of all children admitted to hospital. This is not yet the case, as has been reported earlier [10].

Hypertension rarely causes any specific symptoms, especially in infants who cannot complain of headache [3]. The most common symptom of hypertensive crisis in children is convulsions [2]. The poor weight gain found in our patient was very probably due to severe hypertension. This is supported by the fact that the