Short reports

Premature thelarche: a follow up study of 40 girls

Natural history and endocrine findings

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SUMMARY Follow up of 40 girls with premature thelarche showed that where this disorder occurred before age 2 years it usually regressed completely, thus representing a transient and isolated phenomenon. Premature thelarche after age 2 years persisted more frequently, however, and represented the first sign of sexual development, generally leading to simple early puberty.

There have been several recent published reports on the natural history of premature thelarche, but the conclusions reached are still controversial.¹⁻³ We report the results of a long term follow up of 40 girls with this disorder.

Patients and methods

Fifty two girls with isolated breast enlargement, observed in our Paediatric Endocrinology Unit during the past 10 years, were selected for our study on the basis of the following criteria: age at onset of thelarche under 7 years; breast development corresponding to Tanner stage B₂ or B₃; absence of pubic and axillary hair, vaginal bleeding, or other signs of sexual maturation; bone age within 2 SDs when plotted against chronological age; no history of oestrogen intake through drugs, ointments, or food; no signs of oestrogen secreting tumours; no evidence of true precocious puberty detected by luteinising hormone releasing hormone test (namely, peak values of luteinising hormone greater than 15 mU/ml, according to our laboratory).

Of these 52 patients, three subsequently developed true precocious puberty and were thus excluded; nine girls were lost to the follow up; and the remaining 40 girls were followed up for periods ranging between two and eight years.

Height was evaluated on the basis of Tonelli's centiles. Bone age was determined by hand and wrist radiographs, according to Greulich and Pyle's Atlas. Luteinising hormone releasing hormone test (100 µg/m² iv, one bolus) was carried out in 30 girls, and basal and peak values of follicle stimulating hormone and luteinising hormone were determined by radioimmunoassay. Twenty five prepubertal girls, aged 2 to 8 years undergoing the same test for vaginal bleeding or short stature, but not affected by endocrine disorders, served as controls. In 36 girls, at least one vaginal smear was performed, stained by Papanicolaou method, and interpreted according to Kaufman and Leeds.⁴

Statistical evaluation of the data was made using the Student's *t* test.

Results

In 26 of the 40 girls (Table 1), breast enlargement occurred before age 2 years, and in six it was already present at birth. In 21 of these 26 girls, complete regression of thelarche occurred at ages ranging between 7 months and 6 years. As the remaining five girls with persistent premature thelarche are still younger than 8 years, the outcome of breast enlargement cannot yet be properly evaluated.

Premature thelarche persisted in 12 of 14 girls with onset after age 2 years. All 12, who were followed up until they were older than 9 years, slowly developed other signs of early puberty at about 8 years of age.

All mothers of our 40 patients had had normal sexual development, with an age at menarche of mean (SD) 12 (1.5) years.

Bone age on follow up did not show any acceleration in 28 patients, but in 12 with persistent premature thelarche it gradually increased after age 8 years.

Table 1 Outcome of premature thelarche (PT), height centiles, vaginal smears, and gonadotrophins in all patients, grouped separately according to the age at onset of PT

	Outcome of PT		Height centiles at first observation				Height centiles at last observation				Oestrogenisation on vaginal smear*				Gonadotrophins (mean (SD)) [†]																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	Regression	Persistence	10th-25th		50th-75th		90th-97th		10th-25th		50th-75th		90th-97th		Absent		Slight		Fair		Strong		FSH mU/ml		LH mU/ml																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

Table 2 Baseline plasma values and responses to luteinising hormone releasing hormone (LHRH) stimulation of follicle stimulating hormone (FSH) and LH (means (SD)) in 25 girls with premature thelarche, tested at age above 2 years, matched with controls and girls with true precocious puberty

Group	Basal FSH (mU/ml)	Peak FSH (mU/ml)	Basal LH (mU/ml)	Peak LH (mU/ml)
Premature thelarche (n=25)	5.6 (1.9)	31.7 (15.9)	2 (0.7)	10.5 (4.2)
Control subjects (n=25)	3.7 (1.6)	17.6 (6.9)	1.4 (0.8)	5.7 (2)
Precocious puberty (n=25)	—	23.6 (9)	—	30.8 (12.9)
Significance of differences, P:				
Premature thelarche v controls	<0.001	<0.001	<0.001	<0.001
Premature thelarche v precocious puberty	—	NS	—	<0.001

NS=not significant (>0.01).

reasonable to assume that both findings are related to ovarian secretion. This, in turn, would be dependent on hypothalamo-pituitary overactivation and directed to end organs, such as the mammary glands and the vaginal epithelium, with variable sensitivity to oestrogens.²⁻³ This hormonal hyperactivity may explain the increased height velocity in our girls with longer lasting breast development, regardless of the age at onset and the outcome of premature thelarche, and the fact that most patients were taller than their parents.

In our patients, premature thelarche had more often occurred during the first 2 years of life, as has also been reported by others.³ Furthermore, as observed by Ilicki *et al.*,³ almost all the girls (21 out of 23) who later showed complete regression of breast enlargement, were those in whom breast enlargement had occurred before 2 years of age. The results of our study indicate that although signs of hormonal hyperactivity do exist in both groups of patients, premature thelarche with onset before age 2 years generally represents a transient and isolated phenomenon, while onset after this age represents the first sign of sexual development, leading more often to simple early puberty, but occasionally, as in

three girls later excluded from the follow up group, to precocious puberty.

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Duration of admission for febrile convulsions?

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SUMMARY Records of 199 children aged 5 to 71 months (mean 22.8) admitted after febrile convulsion were examined. Although 32 had recurrent convulsions (some before admission) none suffered a convulsion more than 24 hours after hospital admission.

Febrile convulsions are a frequent cause of hospital

admission in childhood. Duration of admission will reflect the concern about the risk of a further convulsion and diagnosis and treatment of the cause of the fever that precipitated the fit. This study was undertaken to assess the proportion of children who suffered a repeated fit during the same febrile episode and to determine when, after hospital admission, the risk of recurrence was sufficiently low to permit discharge from hospital.