had moderate elevation of hepatic enzymes and abdominal ultrasonography showed fatty liver.

Menarche occurred at age 11·5 years, with regular menstruation for 6 months, but she has subsequently developed oligomenorrhoea at age 12·5 years. Follicle stimulating hormone (FSH) was 1·9 U/L (0·6–3·4), luteinizing hormone (LH) was 4·6 U/L (1·7–5·0), testosterone was 2·9 nmol/L (0·19–2·67). Dehydroepiandrosterone sulphate (DHEAS) was 7·4 nmol/L (0·9–5·2), suggesting androgen excess. The cortisol value at 8 a.m. was 12·1 μg/dL and was suppressed by a short dexamethasone test to 2 μg/dL, thus Cushing syndrome was excluded from the differential diagnosis. She has had frequent urinary and renal infections and lung infections during her adolescence.

At the age of 10 years her hair gradually became sparse and slow growing, and partial alopecia was visible (Fig. 1b). Hair loss at the beginning was limited to thinning at the front, sides and crown without itching or pain. She maintained the frontal hairline, eyebrows and hair on other parts of the body. Hirsutism, affecting the chin, back of the neck, back (Fig. 1d), gluteal region, and both arms and legs (Fig. 1c) progressed as the patient approached pubertal age.

Genetic analysis revealed novel compound heterozygous mutations in *ALMS1* (c.5283delA; p.H1762fsX1779 and c.8039G>A; p.W2680X) (Fig. 1e). Both mutations result in a premature termination codon and truncation of the resulting protein.

Several phenotypes observed in this patient, including alopecia, acanthosis nigricans and hyperandrogenism (hirsutism) are of interest for dermatology specialists. There are other rare disorders characterized by dermatological phenotypes in combination with ocular alterations (Table 1), but the association of alopecia, hirsutism and acanthosis nigricans with nystagmus, photophobia, cone-dystrophy, or blindness is unique to ALMS.

This case illustrates the necessity to consider the range of possibilities for diagnosis in young-onset hyperandrogenism, particularly with obesity and other concomitant pathological conditions. Although there is still significant lack of knowledge on the specific mechanism that causes all of the complex features of ALMS, therapeutic intervention with weight loss and medication can alleviate some of the secondary consequences for the patient.

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Compliance with indoor tanning advertising regulations in France

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Madam, Recent studies have shown an increased risk of skin cancers associated with sunbed use.[1] In 2009, the International Agency for Research on Cancer classified 'UV-emitting tanning devices' as 'carcinogenic to humans' (Group 1).[2] However, the popularity of indoor tanning salons has grown significantly in recent years and discount pricing packages make indoor tanning inexpensive.[3] This growing sunbed industry has prompted the developed countries to issue laws regulating artificial tanning. The manufacture and sale of suntan devices in Europe are subject to European standard EN 60335-2-27, which is the same as the international IEC 60335-2-27 standard, approved by the International Electrotechnical Commission (IEC).[4] France has adopted the strictest legislation which restricts sunbed access to adults aged 18 years and over, and stipulates that the beds must be operated by trained staff and customers must be given adequate information.[5,6] Claiming any beneficial health effect of indoor tanning is forbidden and the 'black box' legal warning: 'Artificial ultraviolet radiation may damage the skin and eyes. These biological effects depend on the type and intensity of the radi-

ation dose and on individual skin sensitivity (skin phototype)' must be shown.

Few reports have been published on the enforcement of state laws and regulations governing indoor tanning.[7–9] In France, the National Division for Competition, Consumption and Fraud Repression carried out a series of controls and enquiries into indoor tanning facilities. However, no study has as yet evaluated the compliance of sunbed use advertising with the legislation. Our study assesses the compliance of web-based advertising for French tanning centres with national legislation.

Our internet search was conducted in two steps. Firstly, we searched the whole French-speaking internet with Google (http://www.google.fr) between 24 and 30 September 2009, using the key words '*salon de bronzage*' (tanning centre), '*centre de bronzage*' (tanning facility), '*salon UV*' (UV centre) and '*cabine UV*' (indoor tanning). The search was limited to mainland French websites. The top 100 links were evaluated. We then

Table 1 Compliance with French legislation on sunbed centre advertising

	Tanning centre (n = 38), n (%)	Fitness centre (n = 33), n (%)	Total (n = 71), n (%)
Mention of the 'black box' legal warning[a]	16 (42)	9 (27)	25 (35)
No mention of beneficial health effects	36 (95)	30 (91)	66 (93)
'Black box' warning and no mention of beneficial health effects	15 (40)	7 (21)	22 (31)

[a]'Black box' legal warning: 'Artificial ultraviolet radiation may damage the skin and eyes. These biological effects depend on the type and intensity of the radiation dose and on individual skin sensitivity (skin phototype)'. Frequencies were compared via the χ^2 test. $P < 0{\cdot}05$ was considered as statistically significant.

Table 2 Websites and compliance with recommendations of French decree No. 97-617

	Tanning centre (n = 38), n (%)	Fitness centre (n = 33), n (%)	Total (n = 71), n (%)
Tanning devices should not be used if…			
… under 18 years of age (banned)	10 (26)	1 (3)	11 (15)
… fair phototype (sunburn without tanning)	5 (13)	0	5 (7)
… premalignant or malignant skin lesions	4 (11)	0	4 (6)
… current sunburn lesions	3 (8)	0	3 (4)
Information and guidance provided to the customer			
Precaution if last UV exposure > 6 months ago	4 (11)	0	4 (6)
Phototype definition and its classification	16 (42)***	2 (6)	18 (25)
Timer and frequency of exposure adapted to phototype	14 (37)**	3 (9)	17 (24)
Precaution if photosensitizing medications and/or cosmetics	16 (42)***	1 (3)	17 (24)
Advertisement for suntan accelerator	14 (37)***	0	14 (20)
Information on the safe use of tanning devices			
Wear appropriate UV-protective eyewear	21 (55)**	7 (21)	28 (39)
Make-up removal before a tanning session	13 (34)***	1 (3)	14 (20)
Allow 2-day interval between the first two sessions	11 (29)**	1 (3)	12 (17)
No indoor tanning and direct sun exposure on the same day	8 (21)*	1 (3)	9 (13)
Information on tanning devices			
Used under supervision of professional	18 (47)**	6 (18)	24 (34)
Tanning devices of IEC type 1 and/or type 3	6 (16)	1 (3)	7 (10)
Comply with technical standard EN 60335-2-27	2 (5)	1 (3)	3 (4)
UVB dose delivered < 1·5% of the total dose	3 (8)	0	3 (4)
Annual effective dose < 25 kJ m^{-2} (IEC, 1989)	0	0	0
Technical control performed every 2 years	6 (16)	1 (3)	7 (10)

IEC, International Electrotechnical Commission; UV, ultraviolet. Frequencies were compared via the χ^2 test. $P < 0{\cdot}05$ was considered as statistically significant. *$P < 0{\cdot}05$; **$P < 0{\cdot}01$; ***$P < 0{\cdot}001$.

analysed websites found in the online Yellow Pages (http://www.pagesjaunes.fr) between 1 and 7 October 2009, using one key phrase: '*centre de bronzage*' (tanning facility), successively for the 21 mainland French regions. We evaluated the first 20% of the hits. We distinguished between dedicated 'tanning centres' whose sole activity is tanning, and 'fitness centres' which provide other services (e.g. hotels, spas, etc.). The following information was recorded: (i) type of site: tanning or fitness centre; (ii) presence of the 'black box'; (iii) mention of the beneficial medical effects of indoor tanning; and (iv) other information irrespective of whether it fulfilled the recommendations of the French decree No. 97-617 or of the European EUROSKIN tanning accelerator.[6]

Seventy-one websites were identified: 38 (54%) were 'tanning centres' and 33 (46%) 'fitness centres'. The 'black box' was present on 25 (35%) of the websites. Over 90% of all the websites respected the ban on associating indoor tanning with beneficial health effects. Five (7%) websites claimed that sunbeds had health benefits. Twenty-two (31%) mentioned the 'black box' and respected the ban on claiming beneficial health effects (Table 1). Less than 40% of centres respected other recommendations of the French legislation (Table 2). These recommendations were more frequently adhered to by 'tanning centres' (0–47%) than by 'fitness centres' (0–21%) (Table 2).

In this study, we showed that most of the websites did not comply with the two main advertising rules – they must show the 'black box' and must not mention potential health benefits. General information was provided by < 40% of websites. However, the latter concerns rules to be applied in the salons, and not information to be mentioned in advertisements.

Advertising is central to shaping the consumer's perception of indoor tanning. As an example, a recent study has compared the strategies used in this industry with those employed by tobacco marketers to mitigate health concerns. Medical studies are cited, emphasizing the health advantages and sunburn prevention capability of sunbed use.[10] Price incentives and discounts also probably incite individuals to frequent tanning centres, which raises the question of banning promotional discounts in new legislation.

One limitation of this study is that the data were based on our exploration of tanning salon websites. It is likely that compliance with legal standards is higher in the salons themselves. However, our data reflect the message promoted by commercial advertisements for indoor tanning, which reaches a very large public. Enforcement of French legislation concerning indoor tanning was assessed objectively, and compliance may not have been over-reported.

This study highlights the contrast between the widely accepted link between sunbed use and skin cancer, national and institutional regulations and warnings, and the failure of suntan centre professionals to comply with current legislation. Regulation in this industry is a very important issue but our study shows that as the risk of legal action is nil, about 70% of suntan centres do not comply with advertising standards.

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