Aquagenic Pruritus: Epidemiological And Clinical Features In Abidjan (Côte D'ivoire)

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ABSTRACT

Pityriasis rosea (PR) is a common papulosquamous disorder. It is seen mostly in children and young adults. The underlying cause of PR is unclear but a viral aetiology has been postulated. It is characterized by scaly papules and plaques distributed mainly on the trunk parallel to Langer's skin lines in a Christmas tree pattern. The generalized eruptions are often preceded by the appearance of a single larger lesion known as the herald patch. Prodromal symptoms of fever, sore throat or arthralgia may occur in a minority of patients. Itching is often mild to moderate. The eruptions disappear spontaneously within 6 to 8 weeks with temporary post inflammatory hypo- or hyperpigmentation. Thus, treatment is supportive, although mid-potency topical corticosteroids can reduce pruritus; high-dose acyclovir may speed up recovery. Recurrence or relapse is very rare.

INTRODUCTION

Aquagenic pruritus (AP) is the appearance of itching after contact with water [1]. This pruritus can sometimes affect the quality of a patient's life. Because to have a bath is a daily act in life. It can be found in certain pathologies which are dermatological [2, 3, 4] or non dermatological [5-13]. There may be no obvious cause, so it is an aquagenic idiopathic pruritus. The mechanism is poorly understood. In 2010, at Dermatology service of CHU Treichville in Abidjan, out 3973 consultations, 25 complained of itchlng after bath; giving 0.62% prevalence. The frequency in dermatological consultation is below the real figure because most often health care providers are approached by a close friend to tender a complain that feel uncomfotable after bath. The diagnostic is easy but the prescribed treatments are not always effective. No study on aquagenic pruritus has been done in Ivory Coast. Are there simple means to improve our patient's life quality in hot and humid tropical environment? Are these AP seen in dermatological practices idiopathic or the expression of an associated internal pathology? To answer these questions, we conducted a study which aims to describe the epidemiogical, etiological, clinical, and therapeutic features of AP.

MATERIALS AND METHODS

It was a longitudinal study with descriptive and analytical aim, during 10 months from December 2012 to September 2013.It has been realized by both, Treichville academic center and north general hospital of Abobo dermatology services situated in Abidjan. The patients complaining of water related itches were included, whatever the age, the sex, the etiologic as well as those who agreed to participate in the study after informed consent. Before our investigation, we calculated the sample size for the study.

For 0.62 prevalence, the minimal desire seize of the sample was 10 people. An index card of investigation was established for the data collection fates to the statistical analysis. The data collection was made to Jo ,J15,M1and M3.It focused on the socio demographic parameters (age ,sex, profession) The personal and family medical history of allergy ,the clinical data(the beginning of the aquagenic pruritus ,the onset pruritus after contact with water, the duration of the pruritus ,the aggravating and improving factors ; the supports signs, the means undertaken by the patient to relieve himself) ;the laboratory data (serum uremia, creatinine, glucose ; transaminas,alkaline phosphatase, H.I.V infection status, parasitilogy screen.) and the therapeutic and evolutionary data .

The evolution was documented according to 4 criteria defined under treatment as follows:

- Improvement if there was decrease of pruritus frequency after bath,
- Disappearance or absence of pruritus;
- Stationnary if no change;
- Recurrence if there is reappearance of the pruritus after discontinuation of treatment

The data were analyzed with the computer program Epi Info 2008 version 3.5.1 .We realized a description

of the various variables examined in the study .For the statistical analysis comparing the percentages of the aggravating and improving factors for aquagenic pruritus, we used the test of reduced gap.

RESULTS

Socio demographic characteristics: Our study focused on a study sample of 33 patients. The average age was 30.3 years with extremes of 7 and 56 years. In 87.9% cases the patients were between 16 and 45 years. The m:f sex ratio was 0: 6.

Personal and family allergy history: The atopic subjects represented 61% of the patients, allergic conjunctivitis (30.3%); allergic rhinitis (24.2%) urticaria (21.2%) and asthma (15.2%) were the personal history of allergy that was found. 16 (48 %) of patients having aquagenic pruritus had a family history of allergy. The family links were in 14 cases (87.5) links of first degree (father, mother, brothers and sisters). The family history of allergy was related to aquagenic pruritus (36.4%) and to asthma (24.2%).

Clinical Characteristics: Average age of the pruritus rate was 26 years with a range of 7 years and 55 years old (standard deviation=10.7 years). For 57.6% of the patients; the age of onset of the aquagenic pruritus was between 16 and 25 years.

The pruritus began less than one minute after the bath in 26 (78,8%), from 1 to 5 minutes after the bath in 10 (30.3 %) cases and after 8 minutes (24.2%) cases. It occurred during the bath in 10 (30.3%) cases and 8 (24.2%) cases during the bath. The duration of the itches was more than 5 minutes in 21(63.7 %) cases.

Cold water and sweating were aggravating factors, of itching in 36.4% and 33.3% of the cases respectively. The hot water was improving factor at 45.5%. The observed differences were significant for the cold water, the hot water, the rainwater and perspiration (Table 1).

Action taken for relief apart from scratching: Less than half (45.5 %) had undertaken the actions to relieve the pruritus beyond scratching. The breakdown was the means the most used by the patients to relieve their itches (15.2%) followed by the cosmetic application (12.1%). In 3% for each, it was about actions such as the exposure in the heat, the dress without sponge, consumption of alcohol drinks before the bath, self medication with anti histamine. Finally 6% used corticosteroid injection to delay/ reduce the symptom.

Associated Pathologies: In 19 of the 33 cases (57.6%) the AP was idiopathic. On the other hand, in 12 cases (36.6%) there was an associated dermatological pathology in which 4 cases of aquagenic pruritus was associated with urticaria, 4 cases with cutaneous xerosis and 4 cases with dermographism.

Finally in 4 cases (12.1%) the PA was associated with internal pathologies (2 cases of viral hepatitis, 1 case of diabetis mellitus, and 1 case of chronic renal insufficiency).

Medication: With regards to therapeutic approach in both sanitary establishments, medicines by general way were prescribed in 100% of the cases whereas cosmetics were prescribed in 36.4% of cases. Among others non therapeutics means, bathing without sponge was suggested. 63.6% cases were managed with antihistamines and additionally received advice for bathing (figure 2)

Evolution: A patient (3%) was lost to follow up out of the 33 subjects in our series. Out of the 32 remainders, 25 (78.1%) had a treatment duration of follow up more than or equal to 2 months. For the idiopathic PA 12 (63.2%, n=19) of treatment duration superior or equal to 2 months. From the second month of follow-up, we observe an improvement or a disappearance of prutitus in 90.6 % of the cases. But recurrences occurred when we stopped the treatment. At least 84% of our subjects remarked that from two months there was either an amelioration or a disappearance of pruritus. However, we noticed 3 cases of recurrence on the face (figure 1)

DISCUSSION

In our study, the age of the recruited patients varied from 7 to 56years. The average age was 30.3years old. These results differ from those of Tina heitkemper and collaborators in Germany (15) which reveals an average age equal to 53.6-years old with a range of 12 and 81 years. In this study ,the majority of the patients were on aged between 65-81 years. This difference could give some explanation by the fact that the life expectancy in west particularly in Germany is greater (80 years in 2009)(16).and the aging population compared with our populations in developing countries mostly young people and with a shorter life expectancy (50 years in 2009)(16). Besides, some hemopathy such as the disease of Vaquez and the cutaneous xerosis of the elders are frequently associated with the aquagenic pruritus [6].

The sex-ratio was of 0,6. This result was in agreement with the one of Tina Heitkemper and collaborators [15] which had found 61.5% of female sex on a series of 39patients and the sex ratio was 0,6. On the contrary ,this result is not in accordance with the one of the Salami TA and collaborators in Nigeria who found a sex ratio of 1.7[17] on a greater sample of 240 people. However, according of Treichville dermatology department report in 2010, 54, 14% of the subjects received in consultation were women.

The atopic subjects represented 61% of patients with an ascendancy of the conjunctivitis (30.3%) followed by the allergic rhinitis (24.2%), the nettle rash (21.2%) and the asthma (15.2%) .

This result was in accordance with that of Salami TA and collaborators [17] who had however lower

proportions among which 18.75 % of allergic conjunctives, 12.5 % of allergic rhinitis and 4% of asthmatic. On the contrary the study of Steinman HK and Greaves MV in America [18] carrying on 36 patients, did not show a predominance of atopic ground. This unconformity according to the studies could be bound to a co dominance of the PA to the atopic subject or not, or bound to the environment. Indeed, the atmospheric pollution, the tabacco and alcohol consumption have bad effects on the skin [19] as the aging and the dryness .These can be responsible of AP .As for the allergy family history; they represented 48% of the cases. This rate was upper to the 31; 25 of Salami TA [17].As for aquagenic pruritus was found at least another member of the family in 36.4%.It was close to 33 % of Potasman I and collaborators in Israel [20] and Steinman HK and Greaves MV [18] but far 23, 1% of our patients had declared family asthma .All these data consolidate the idea of genetic transmission.

In fact, the first degree of family ties (father, mother, brothers and sisters) were 91.7 % of patients having a family history of aquagenic pruritus .

In Germany, Treudler and collaborators had noticed an association between the intolerance in the lactose and the aquagenic pruritus or with the aquagenic nettle rash on 3 generations of a family [21].This observation supported the idea that there would be a link between the AP and the transfer responsible for the intolerance in the lactose.

As any allergy the release of the AP is made after a period of raising awareness. However, in our study, the acquisition was premature toward 7 years or late toward 55 years. The late appearance of the AP could bind to pathology at the late onset. The beginning average age in our study was of 26 years. This average age was close to that Postman I and collaborators [20] which were of 30 years. They were 37, 7 years of Heitkemper and collaborators [15]. However, in Argentina a case of intense aquagenic nettle rash had been described in 2004 at 3-years-child [22], suggesting the possibility of a PA to an age lower than that noticed in our study 7 years old.

As any allergic process, after the sensitization, there is a phase of release, one time between the new contact and the appearance of signs. In our study, the aquagenic pruritus began prematurely in near one ¼ of the cases during the bath and less than one minute after the bath in about 78,8% in the cases. In 87, 9% of the cases, it appeared in the 5 minutes of the bath. This result was superposable in the 76% of Potasman I and collaborators [20] where the PA began less than 5 minutes after the exposure. According to Steinman HK and Greaves MW [18] PA started in a few minutes of contact with the water to the other half. The duration of the itches was furthermore than 5 minutes in 63, 7% in the cases. This duration was in accordance with the Steinman HK and Greaves MW [18] which found that the itches lasted usually 10 at 120 minutes with an average duration of 40, 6 minutes. Postman and al [20] also found a long lasting from 10 at 30 minutes, to most of their cases. This long lasting of the itches observed to our recruited had an impact on their life quality because to have a bath became a source of anxiety.

We had appreciated the aggravating and improving factors on the following elements :cold or hot water ,hot or cold climate, rainwater, of oxbow lake or well, sweat ,sponge of dress ;unhealthy dress ,toilet soap ,and physical effort (table 1).The cold water deteriorated the pruritus in about 36.4%.The cold was known as a cause of mastocytes degranulation and the degranulation frees the histamine which is a mediator of the pruritus [17].The rainwater worsened the pruritus to 21.2 % of our recruited .This could be bound to his acidity [17] this theory could explain the use of bicarbonate of sodium as a way of treatment of the PA. The perspiration was a factor aggravating the PA to 33.3 % of our patients and could give some explanation by the physico –chemical properties of the swear which is also an acid substance. The sponge of dress was not insignificant factor of worsening of the PA in 21.2 % of the cases. The toweling most of the time are in stitch or net; sometimes hard in our environment, led to the scouring of the skin. What would be at the origin of micro hurts of the skin which free peptides and also degranulation of the mastocytes skin, so increasing the concentration of the blood histamine[17].This theory explains why certain practitioners prescribe the bath without sponge .The hot water was the main factor improving with a 45 ;5 %proportion. This gives some explanation by the fact that the patients would prefer the pain generated by the hot water compared with the aquagenic pruritus. Besides ,the heat is a factor stabilizing mastocytes by preventing their degranulation[17].The comparative study of the percentages of various elements on the criteria of worsening and improvement asserted by our patients showed a significant difference of worsening for the cold water ,the rainwater, the perspiration and improvement for the hot water(tableau 1)Another large-scale study comparing the various factors in two groups of patients with a size of more important population could better appreciate our reports.

Most of the patients did not undertake any action beyond scratching to relieve the pruritus (54, 5%) before seeking consultation of a doctor.

Among those who have a means of relief (45,5%), 15,2 % used the airconditioner (the 'ventilator') accelerated the drying and moderate cooling of the skin) ; 12,1 % applied cosmetics ; 6,1% were engaged in injections of corticosteroids and 3 % took antihistamine .Salami TA et al had a little higher proportions with 83. 33 % for those who did nothing, 10, 42 % for those who applied cosmetics and 6, 25 % for those who took antihistamine.

Besides, in our series a patient provided information that he got relief by the consumption of alcoholic before bathing .This report was also made in the study of Norris with a patient who evoked that the ingestion of 2 bottle of fair beer before each shower.That prevent totally his AP [23].

In 19 (57,6%) cases , the AP were without associated pathology ; 12 (36,6%) cases of AP were associated with a dermatological pathology (nettle rashes aquagenic , xerosis ,dermographism) .The internal pathologies were also counted in 4 cases (12,1%) .

This report shows the importance of clinical and paraclinical examinations in front of any case of aquagenic pruritus .A PA says "idiopathic "can be a warning or precursor of a disease .In fact, a PA can precede by 13 years the appearance of a polycythemia [2].

The aquagenic nettle rash and the xerosis are classic dermatological etiology of the AP and widely explored in the literature .However, the dermographism (12, 1 %) as other dermatological pathology associated with the AP is a dermatosis excluded from the AP.

The purpose of our patients treatment was the relief of their discomfort to improve their life quality .The life quality which can be improved by the reduction of the frequency and if possible by the disappearance of the AP.In our study, medicines by general was prescribed in 100 % of the case, the topical in 36.4 and the other means in 75.5 of the cases .All the medicine by general way was antihistamine (anti H1) and 2nd generation. Their result in the blocking of the histaminergic receivers (chap) h1 by specific and competitive antagonism in the histamine. They represented the top-grade treatment. But they are for the majority of the insufficient authors to eliminate the AP because they manage to decrease. Every topical prescribed (n= 12) were moisturizing creams and also a case of prescription of hypoallergenic cleansing bar superfatted (Table 2) .This can justify itself by the cases of xerosis often appreciated and diagnosed .Indeed numerous are the ones, especially the women who show to use moisturizers to calm their pruritus.

Among the hygenic advice, the dress without sponge was the most prescribed in about 63 .6 % of the cases .We saw above that 22.6 % incriminated the sponge as an aggravating element. These sponges led to cutaneous hurts. These Hurts increase the concentration of the blood histamine who is the main mediator .So 27.3 % of the patients used neutral knowledges less agressive and less perfumed for the toilet (figure 2).This recommendation of the practioners can give some explanation by the fact that regarding AP,it is necessary to avoid any irriting substances which can hurt the skin or favor an allergy. To 15.2 % was prescribed the alkalinization of bath water (table 2).It consists in adding 200-500g of bicarbonate of sodium in every water of bath. This average good that it is binding allowed to relieve cases of PA brought back in the literature (24-26).however, his efficiency would decrease in the long term [27] .The tepid water was also prescribed at 15.2 % of our patients with a significant difference (Table 1).It's about an accessible means ,widely used in our African companies. The hot water was a factor significantly improving .It would stabilize mastocytes by preventing their degranulation. They were appreciated on the idiophatic aquagenic pruritus (figure1). The general evolution in two weeks was clearly favorable with 19 patients under treatment with an improvement in 73.7 % of the cases and the disappearance of the PA to 21%.Only 5.3% had not noted change under treatment. From one month, the number of patients presenting a disappearance of the PA increased to stabilize from two months.

Second recurrence appeared from two weeks after the end of treatment. The proposed treatments gave relief to the majority of our patients .However in three months, the pruritus recurred in 42, 1 % even though 75 % had felt an improvement. This result gives evidence of coverage difficulty of the PA but also the search for etiology associated for a better coverage. This therapeutic difficulty lies in the knowledge of its pathophysiology which always remains a mystery .Somewhere else , particularly in west ,other means to know the phototherapy in the ultraviolet A or B are practiced .Even with this therapy ,cases of second recurrence were reported, [2].

CONCLUSION

The aquagenic pruritus appears to be of much concern in the general population. However the situation is not the same in dermatological clinics where the frequency is low. Are the people complaining being seen by the general practitioners or do the sufferers resign themselves to the symptom because of therapeutics difficulties? Our study with regard to the pathologies which can be associated has shown that most cases are idiopathic but some laboratory abnormalities may be associated. History taking is important as well meticulous clinical examination. Such can provide a basis for therapeutic intervention and practical bathing advice to bring relief or complete ceasation of the discomfort. The pathophysiology of PA remains a mystery and more studies are still required.

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Table 1 : Aggravating and improving comparison

Factors	Aggravating	Improving	Statistic(p) degree of signification
Cold water	12 (36,4%)	4 (12,1%)	**P = 0,022 (ds)**
Transpiration	11 (33,3%)	0 (0%)	**P = 0,00028 (ds)**
Rain water	7 (21,2%)	0 (0%)	**P = 0,01 (ds)**
Warm water	3 (9,1%)	15 (45,5%)	**P = 0,0009 (ds)**
Warm climate	6 (18,2%)	1 (3,0%)	P = 0,11(dns)
Cold Climate	4 (12,1%)	3 (9,1%)	P = 1 (dns)
Bath room	4 (12,1%)	0 (0%)	P = 0,12 (dns)
Physic effort	3 (9,1%)	1 (3,0%)	P = 0,61 (dns)
sponge	7 (21,2%)	2 (6,1%)	P =0,15 (dns)
Soap	2 (6,1%)	2 (6,1%)	P = 0,6 (dns)
Well water	1 (3,0%)	0 (0%)	NA
River water	1 (3,0%)	0 (0%)	NA
Dirty bath towel	1 (3,0%)	0 (0%)	NA

Test of reduced gap ; α=5% ;NA= Not Applicable

Table 2 : **Subjects having Pa repartition according to hygienic advices prescriptions**

Means used for the idiophatic PA	Effectif n=19	Pourcentage
Bath without sponge	19	100
Lukewarm water	4	21,1
Bicarbonatre of sodium in the bath water	4	21,1
antiseptic liquid soap	7	36,8
Superfatted dermatological bath	1	5,3
Moisturizers creams after bath	6	31,6

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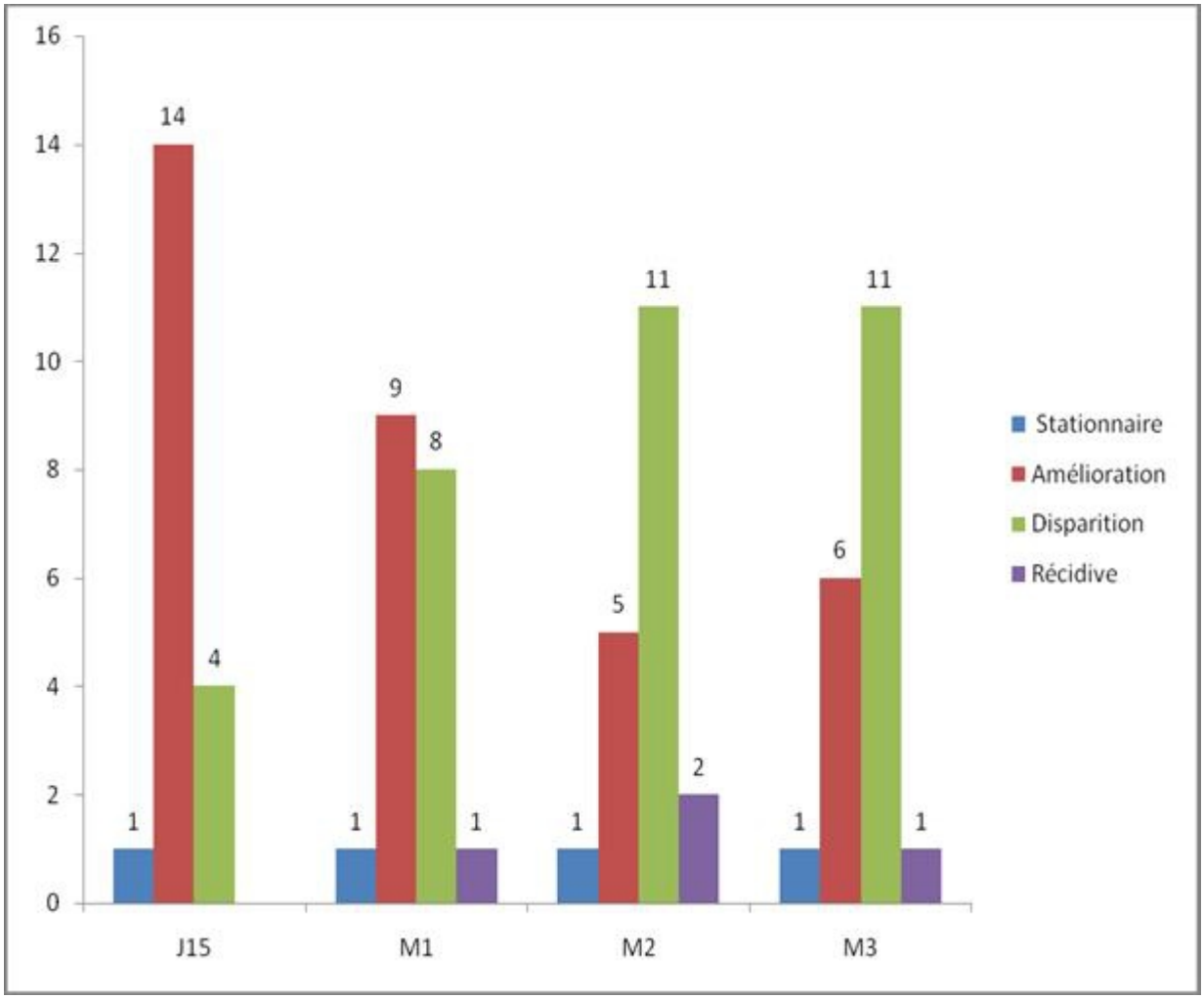

Figure 1: Repartition of subjects presenting one idiophatic Pa according to the evolution after treatment.

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