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Evaluation of the Management of Pharyngitis in Children by Family Doctors

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SUMMARY:
Pharyngitis is the most common acute respiratory infection in outpatient general practice. In order to investigate the diagnostic patterns of pharyngitis in children and their preferences for treatment, we carried out a prospective study on a group of 120 general practitioners.90% of the doctors surveyed believed that differentiating between viral and bacterial pharyngitis was necessary for proper management. Intense fever (80.83%) and cervical adenopathy (57.50%) are the main clinical signs of bacterial pharyngitis. Systematic antibiotic therapy was indicated by 3% of doctors and only 8% of doctors had previously used the rapid diagnostic test (RDT).Systematic use of RDTs could reduce over-antibiotic therapy while ensuring the prevention of possible complications.

Key words: *pharyngitis, pediatrics, Group A beta hemolytic streptococcus (GAS).*

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I. INTRODUCTION:

Childhood pharyngitis is a major global public health problem. More than a billion cases of pharyngitis occur each year in children worldwide, leading to a significant consumption of care and antibiotics[1].Viral pharyngitis is a mild infection that progresses spontaneously to healing in a few days.Conversely, group A hemolytic beta streptococcus (GAS) pharyngitis can lead to sometimes severe suppurative and non-suppurative complications, such as acute rheumatoid arthritis (ARA) [2, 3].The persistence of RAA in developing countries is secondary to inappropriate pharyngitis management.It poses diagnostic and therapeutic problems due to its frequency and morbidity, requiring heavy medication and costly follow-up in terms of health expenditures [4].The problem of diagnosis in children's pharyngitis is to distinguish cases related to (GAS) from cases of viral origin in order to limit the exposure of children to antibiotic treatments [5].The chosen diagnostic strategy should be sufficiently sensitive as patients with a false negative result may develop complications.It must be sufficiently specific because false positive results may lead to unnecessary consumption of antibiotics, contributing to the emergence of bacterial resistance and generating unnecessary health costs [6,7].Pharyngitis is still systematically treated with beta-lactamines or a macrolide, particularly in cases of penicillin allergy. Indeed, the SGA remained uniformly sensitive to amino-penicillins in vitro.

The aim of our work is to analyze through a survey, the diagnostic and therapeutic habits of general practitioners and the gap between daily practices and national and international recommendations.

II. MATERIALS AND METHODS:

This is a prospective, descriptive, cross-sectional study of general practitioners in Rabat and Temara in Morocco over a 3-month period (from 1 August to 30 October 2019), with the aim of assessing diagnostic and therapeutic habits for pharyngitis in children.The questionnaire was sent electronically to the valid e-mail addresses.It contains information on the definition of pharyngitis, the means of diagnosis, whether or not to distinguish bacterial pharyngitis from viral pharyngitis, clinical signs leading to bacterial pharyngitis, treatment modalities, the type of antibiotic used and the interest of antibiotic therapy.The data was then downloaded and analysed on an Excel spreadsheet.

III. RESULTS AND DISCUSSION:

Pharyngitis is acute inflammation of the pharynx and/or tonsils. The French terminology traditionally distinguishes between angina (with tonsillitis) and pharyngitis (without tonsillitis), however the Anglo-Saxons do not make this distinction and use the generic term pharyngitis.In our survey, 91% of the doctors considered

the term pharyngitis to be an inflammation of the pharynx, while 4% defined pharyngitis as an inflammation of the pharynx associated with tonsillitis.In a similar study conducted in Tunisia, 15% of general practitioners considered the terms angina, pharyngitis and tonsillitis to be the same clinical entity.This is due to the multiplicity of synonyms used in basic medical training, in literature and in hospital placements. This does not help practitioners in their management and causes each doctor to devise his own definition of pharyngitis.Therefore, the development of good practice recommendations with a high level of evidence should be accompanied by an operational and clear definition of clinical situations [8, 9, 2].The majority of pharyngitis is of viral origin (60-90%). The viruses most frequently involved are: adenovirus, Influenzae virus, respiratory syncytial virus, parainfluenzae virus) (Table I). GAS pharyngitis is the most common bacterial pharyngitis (20%). It occurs mainly from the age of 3 years.Its peak incidence is in children between 5 and 15 years of age. In infants and children under 3 years of age, the pharyngitis observed is generally of viral origin and streptococcus is rarely involved. Other beta hemolytic streptococci (especially C and G) may be involved in a morerare way [4,8].Pharyngitis is manifested by sore throat, fever, headache, previous cervical adenopathy or lymphadenitis and sometimes by abdominal pain, nausea, vomiting, fatigue or rash. When GAS is the etiological agent, tonsil exudates are common, fever is often above 38.5 °C and sometimes associated with chills and myalgia [9,10].

In our study, 90% of doctors found this distinction useful, with 80% of the doctors surveyed clearly stating fever as a criterion for bacterial pharyngitis followed by cervical adenopathies at 58%.Only 28% of doctors considered that the patient's age plays an important role in the diagnosis of bacterial pharyngitis. 24% of doctors cited other important clinical signs in favour of bacterial pharyngitis, such as impaired general condition, duration of progression, purulent discharge and absence of cold (Figure 1).The diagnosis of pharyngitis was clinically established for the majority of doctors interviewed in 98% and only 2% of doctors reported using an additional examination in addition to the clinical diagnosis.This is due to the fact that the diagnosis of pharyngitis is mainly clinical, but also to the lack of means to isolate the germ involved. The doctors' fear was that they would miss a SAG pharyngitis which they considered endemic in Morocco and responsible for serious complications such as heart attack and the risk of secondary valvular disease.It is essential to differentiate bacterial pharyngitis from viral pharyngitis, the aim of which is to prevent post-streptococcal complications, to limit the economic cost of systematic antibiotic therapy and to help reduce the selection of bacterial resistance.Distinguishing between viral and bacterial pharyngitis is not clinically easy, as none of the functional and physical criteria for acute pharyngitis is completely discriminatory.The combination of several clinical criteria such as exudate, previous cervical adenopathies, absence of cough and presence of fever can help the practitioner to only predict but not confirm the streptococcal origin of pharyngitis.In contrast, symptoms suggestive of viral pharyngitis include the absence of fever, the existence of cough, hoarseness, conjunctivitis, diarrhea and the presence of vesicles or stomatitis [9,10].In the literature, many authors have proposed clinical scores to help general practitioners indicate antibiotic therapy in cases of high suspicion of bacterial gas pharyngitis (Table II).The results of the clinical score distinguish 3 groups at risk of SGA: low-risk patients receive only symptomatic treatment, patients at intermediate risk undergo additional diagnostic testing (bacteriological testing) and receive antibiotic treatment if tested positive, and high-risk patients receive empirical antibiotic treatment.This strategy is efficient and limits the prescription of an antibiotic for streptococcal pharyngitis [11-17].

The diagnosis of certainty of streptococcal origin is necessarily based on bacteriological confirmation tests: RDT and bacterial culture.RDTs used in medical practices detect the presence of S. pyogenes in the throat sample. They allow the detection of an antigen specific for the bacterial wall of streptococcus (M protein) with a sensitivity over 90% and a specificity ranging from 80 to 98% depending on the material used.Culture is the reference microbiological method for the detection of gas with a sensitivity of 90 to 95%. However, it has several drawbacks: non-optimal performance, additional cost, inability to distinguish patients from carriers and above all the time required for the analysis, waiting 24 to 48 hours to obtain the results.In practice, the culture was poorly carried out and was not recommended except for rare indications including the search for resistance to macrolides and ketolides on the data of the susceptibility test [18,9].

In our study, only 8% of doctors use RDTs beforehand. It seems desirable to promote the dissemination of these tests and to ensure that doctors who so wish have free access to them in their offices.This strategy could be integrated into national policies with a view to better controlling the prescription of antibiotics in health centres. However, some limitations to the generalisation of this test should be noted:

The sensitivity of this test is less than 100% which means that GAS pharyngitis can go unnoticed, the test takes longer to perform than prescribing an antibiotic, and the cost of the test (5,64 euros in France, or almost 60 dirhams) can be a barrier in our context.However, a French study showed a considerable economic impact of the angina therapeutic strategy, based on the use of GAS RDTs, reducing the use of antibiotics up to 48% of cases, with a decrease in the average cost of care of € 17 per patient (i.e. a potential saving of more than € 27 million per year with extrapolation to the whole country) [18].

Systematic antibiotic therapy was indicated by 3% of doctors (Figure 2). The most commonly prescribed antibiotics in the first line of treatment were often amoxicillin alone, followed by protected amoxicillin and rarely macrolides. 90.83% of the doctors in our study felt that the aim of antibiotic therapy was to prevent the occurrence of post-streptococcal complication. Pharyngitis management involves two approaches: the first consists of systematically treating all pharyngitis with an antibiotic [19, 20], and the second consists of treating only GAS pharyngitis with an antibiotic after confirmation, either by culture or by rapid diagnostic tests [2, 21].The national infectious disease control programme followed the first approach of systematically treating all pharyngitis with antibiotics [19, 20].Yet, most of the doctors interviewed during our study thought they were able to differentiate viral pharyngitis from bacterial pharyngitis. Routine antibiotic therapy was used in only 3% of cases.

Antibiotic therapy is only warranted in case of GAS pharyngitis (except in rare cases of diphtheria, gonococcal or anaerobic angina) in order to reduce the contagiousness of the index case, the duration of symptoms and the frequency of suppurative and non-supurative complications. The recommended first-line treatment is amoxicillin for 6 days with an efficacy equivalent to penicillin V for 10 days, taking into account the rates of bacterial eradication and better adherence in children and adults. This was also the case for our study where amoxillin was the most used antibiotic with a rate of 68% [22,23].

In case of true allergy to penicillins without allergy to cephalosporins the recommended treatment is oral 2nd and 3rd generation cephalosporins. The use of macrolides is indicated only in case of contraindication to all beta-lactamines [23].

Clinical failure may occur despite well-conducted and properly prescribed treatment. They require clinical reassessment with the exclusion of another diagnosis. This may lead to a biological assessment, in particular for infectious mononucleosis or other bacterial etiology.Symptomatic treatments to improve comfort, including analgesics and antipyretic agents, are recommended. Neither nonsteroidal anti-inflammatory drugs at anti-inflammatory doses nor corticosteroids in general are recommended, as there is no data to establish their interest in the treatment of angina while their risks are significant.

IV. CONCLUSION

Although most pharyngitis is caused by viruses, up to 50% of patients consulting for a sore throat receive antibiotic treatment.Given the insufficient performance of the clinical evaluation to distinguish GAS pharyngitis from other causes. The diagnosis can be confirmed by a throat smear culture or a rapid test detecting streptococcal antigen.In a developing country such as Morocco, where resources and equipment are limited, there is currently only a call for awareness-raising on the concept of viral pharyngitis, in the hope that it will move towards the recommendation of the RDT. It would be desirable for the Ministry of Health to opt for the use of RDT to reduce the misuse of antibiotics, which is responsible for bacterial resistance, while ensuring the prevention of possible complications.

Figures and tables:

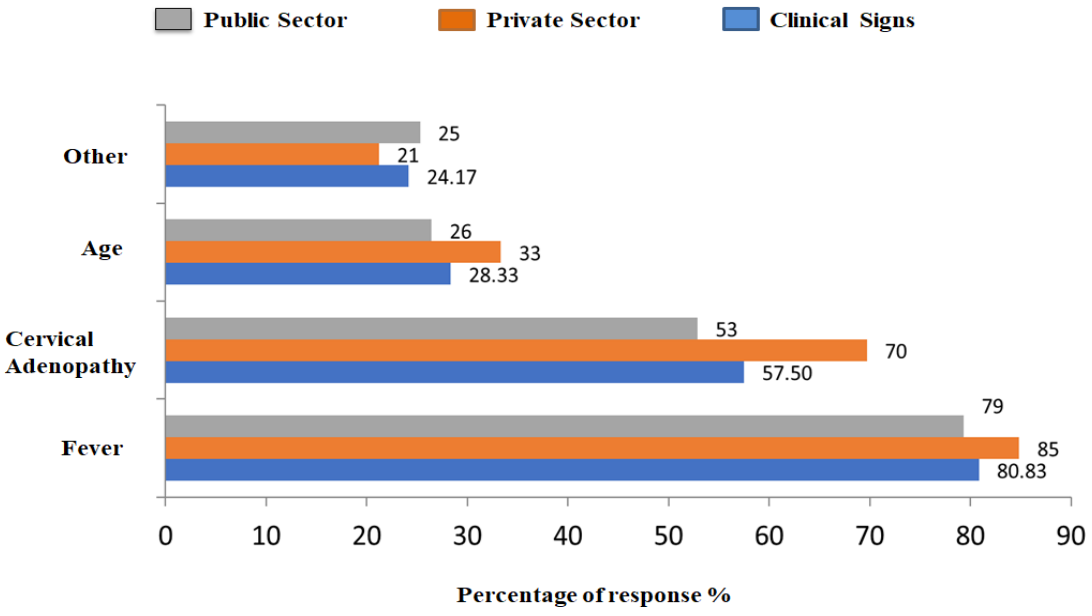

Figure 1: Clinical signs of bacterial pharyngitis

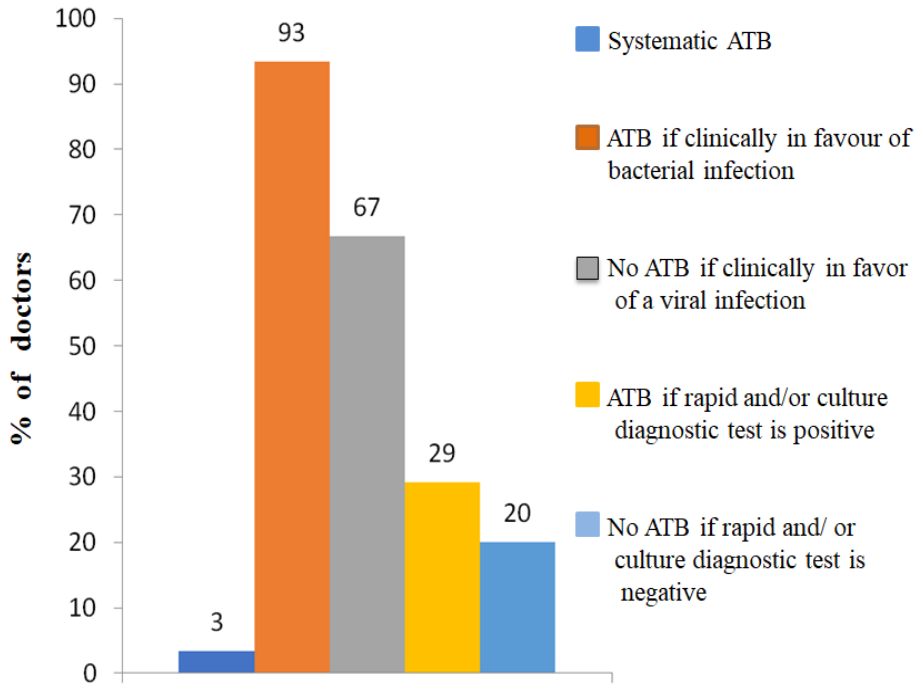

Figure2: Percentage of general practitioners using or not using systemic antibiotic therapy

Table I: Bacterial and viral agents associated with pharyngitis.[1]

Bacteria	Virus
PyogenicStreptococci	*Adenovirus*
StreptococciequisspequisimilisStreptococciequisspzooepidzmicus	*Epstein-Barr virus*
Group G hemolytic Streptococcus B	*Herpes simplex 1 et 2*
ArcanobacteriumhaemolyticumMycoplasmapneumoniae	*Enterovirus*
Chlamydia pneumoniae	*Rhinovirus*
Corynebacteriumdiphteriae	*Influenza A et B*
Corynebacteriumulcerans	*virus Parainfluenzae*
Yersinia enterocolitica	*Coronavirus*
Yersinia pestis	*Human immunodeficiency virus*
Treponemapallidurn	

Table I: Clinical scores for the diagnosis of streptococcal pharyngitis A.

Anthors	Clinical signs	Score if present	Score if absent Bacteria
Breese et a[11]	Season	1-4	
	Age of	1-4	
	White blood cell	1-6	
	count	4	2
	Fever > 38.50	4	2
	Sore throat	4	2
	Headache	4	2
	Abnormal mouth	4	2
	Cervical adenopathy	2	4
Centor et al [12]	Exudate	1	0
	Cervical adenopathy of the anterior	1	0
	Cough	0	1
		1	0
Wald et al	Age (5-15 years)	1	0

Anthors	Clinical signs	Score if present	Score if absent Bacteria
[13]	Season (November-May) Fever	1	0
	38.30c	1	0
	Anterior cervical	1	0
	Adenopathy	1	0
	Erythema, hypertrophy, exudate amygdala	0	1
	Signs of high respiratory infections		
Mc Isaac et al [14]	Temperature > 38oC	1	0
	Cough	0	1
	Cervical adenopathy of the anterior	1	0
	Hypertrophied or exudated	1	0
	amygdala	1	0
	Age: 3 to 14 years	0	0
	Age: 15 years	-1	0
	Age > 45 years		
Abu Reesh et al.[15]	Exudate or cervical adenopathy	1	0
Steinhoff et al[16]	Cervical adenopathy	1	0
	Skin rash	0	1
	rhinitis	0	1
OMS [17]	Exudate and cervical adenopathy	1	0

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[24]. ESSENTIAL POINTS:
[25]. 90% of pharyngitis is of viral origin. Abusive prescription of antibiotic therapy for all pharyngitis in children.

[26]. Difficulty differentiating clinically between viral pharyngitis and gas pharyngitis in children.
[27]. RAA, potential complication of pharyngitis with gas, public health problem in Morocco.
[28]. Interest in the systematic use of RDT to reduce abusive antibiotic therapy while ensuring the prevention of possible complications

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