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SCIENTIFIC LETTERS

Recurrent scarlet fever: A common entity☆

Escarlatina de repetición: una entidad frecuente

Dear Editor:

Scarlet fever is an exanthematous disease that occurs primarily in childhood. It is caused by group A beta-haemolytic *Streptococcus* strains that produce erythrogenic toxins (mainly A, B and C), which cause the characteristic exanthema through a delayed hypersensitivity reaction. In a previous study, in which we demonstrated that the pharyngotonsillitis associated with scarlet fever is not that similar to the typical streptococcal pharyngotonsillitis, we found a significant number of episodes of reinfection among our patients.[1] Historically, the literature has described recurrent episodes as rare.[2] A few recently published studies also reported low rates of reinfection in patients managed in paediatric emergency departments[3,4] and in primary care.[5] The availability of the rapid streptococcal antigen detection test (RST) in primary care clinics allows its diagnosis, and as we observed in the aforementioned study,[1] cases of mild pharyngotonsillitis with compatible exanthema in young children are confirmed to be scarlet fever. A study conducted very recently in children that received the diagnosis in a primary care setting also found a high incidence of recurrent scarlet fever (up to 16.5% of cases).[6]

Based on the series of patients under study, whom we followed up until November 2015, we estimated the frequency of reinfection and the differences in its clinical presentation. We conducted a retrospective, observational and descriptive study of the cases of scarlet fever diagnosed in four paediatrics caseloads in one urban primary care centre between 2004 and 2015 in patients that had at least 2 episodes of scarlet fever. All episodes were confirmed microbiologically by means of a RST (84%) or culture (16%), and we collected data for the following variables: episode number, fever, cold symptoms, cough, cervical lymphadenopathy, tonsillar hyperaemia and/or exudate, petechiae on the palate, strawberry tongue, circumoral pallor, Pastia lines, age, sex, seasonality, time interval between episodes, antibiotherapy and Centor score (maximum of 4 points, based on the presence or absence of the following criteria: fever >38 °C, absence of cough, exudate on tonsils and tender and swollen anterior cervical lymph nodes).

Of the 158 patients with microbiological confirmation of scarlet fever, 16 (10%) had more than one episode: 12 patients had two episodes, and 4 patients had three episodes. The mean age was 3.70 ± 1.38 years for first episodes, 4.72 ± 1.51 for second episodes and 5.34 ± 1.69 for third episodes, and the minimum interval between the recorded episodes was 14 days, while the maximum was 5 years and 4 months. We found no differences based on sex. The clinical manifestations were attenuated in episodes of reinfection: fever of 38 °C or higher in 53% of reinfections (95% confidence interval [CI], 29%–77%) compared to 71% of initial episodes (95% CI, 48%–95%); absence of cough in 66% reinfections (95% CI, 33%–79%) versus 77% of initial episodes (95% CI, 64%–100%); tonsillar exudate in 0% versus 20% (95% CI, 0%–40%), respectively; and lymphadenopathy in 89% (95% CI, 68%–100%) compared to 50% (95% CI, 15%–85%). The Centor score was higher than 3 in only one of the recurrent episodes (5%). The other classical signs of scarlet fever were observed in very few cases. The mean time interval between the first and the second episodes was of 1.02 years, while the mean interval between the second and third episodes was of 0.62 years. The prescribed duration of antibiotherapy was 9.63 ± 1.02 days for first episodes and 9.95 ± 123 days for reinfections. In the first episode as well as in reinfections, amoxicillin was prescribed significantly more frequently (81%; 95% CI, 68%–93%) than penicillin v (19%; 95% CI, 7%–32%).

In conclusion, now that we have the necessary diagnostic tools available in primary care, we are observing that the proportion of reinfections among cases of recurrent scarlet fever is in no way insignificant. Furthermore, the pharyngotonsillitis associated with scarlet fever in cases of reinfection also differs from the classical streptococcal pharyngitis,[1] as in our study, the fever was low-grade in half of the cases, and none presented with tonsillar exudate. The average interval of time between episodes suggests that these are true reinfections, as opposed to relapses. At any rate, the 10% and 15% of children with recurrent episodes found when tools that allow an accurate diagnosis are available in primary care[1,6] indicate that recurrent scarlet fever is a more common entity than previously described.

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Cardiac arrest resuscitation protocols in hospitals: A pending task☆

La organización de la atención a la parada cardiaca en los hospitales: una tarea pendiente

Dear Editor:

Despite the advances made in recent years, cardiac arrest in children carries a high mortality. In Spain, considerable progress has been made in its management,[1] the dissemination of guidelines on paediatric cardiopulmonary resuscitation (CPR)[2] and training of clinical and non-clinical staff in basic and advanced CPR techniques.[3] However, significant problems remain that hinder the appropriate prevention and management of cardiac arrest in children. In order to continue to improve outcomes, the survival chain must be implemented in a coordinated manner, and a key aspect in achieving this goal is to establish a structured approach to the management of cardiac arrest. The chain of survival must be adapted to the specific needs of each child and hospital.

To assess how the management of cardiac arrest is organised, the Spanish Group on Paediatric and Neonatal CPR (Grupo Español de Reanimación Cardiopulmonar Pediátrica y Neonatal [GERCPPyN]) developed a questionnaire on some aspects of its management in children. We submitted a link to an online version of the questionnaire to paediatric and neonatal CPR instructors accredited by the GERCPPyN.

Out of approximately 800 paediatric CPR instructors, 103 completed the questionnaire. The respondents worked in 66 hospitals (11 primary care, 22 secondary care and 33 tertiary care hospitals) in 15 autonomous communities. When we received more than one response for a given centre, we pooled the answers into a single response for the analysis.

Only 33 facilities (50%) had a specialised team for the management of cardiac arrest (63.6% of tertiary level hospitals, 40.9% of secondary level hospitals and 36.3% of primary care hospitals), although the questionnaire did not offer a specific definition of cardiac arrest team. The cardiac arrest team consisted of doctors and nurses from the paediatric intensive care unit (PICU) in 40% of the hospitals, paediatricians from the emergency department or the PICU in 44% of hospitals, and other professionals (adult critical care physicians, anaesthesiologists, etc.) in the remaining 12%. In hospitals without a cardiac arrest team, cardiac arrests were managed by the physician on duty (from the PICU, emergency department or adult services, based on the hospital) in 83% of the hospitals, and by a PICU paediatrician in the remaining 17%.

When it came to the call system, a very low percentage of hospitals (39%) had a specific pager or call system dedicated to cardiac arrest; the emergency department was paged in 42%, and the PICU was contacted by a page or phone call in the remaining 19%. The call was a direct call (which saves time) in 74% of hospitals, while in the remaining 26% it went through an operator.

Only 47% of hospitals had specific emergency call buttons; in 27% of them, these were only available in the emergency department, in 27% they were only available in nurses' stations in wards, in 43% they were available at different locations of the hospital, and in only 1 hospital they were only available in rooms reserved for VIP patients.

The cardiac arrest team could be contacted directly by parents in only 11% of hospitals, and by ward nurses in 95% of hospitals. It would be advisable for any individual with sufficient training to be able to use emergency buttons.

The findings of our questionnaire are fairly representative of the situation in Spain, as we received responses from

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