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FREQUENCY OF LYMPHOCYTIC MENINGITIS ASSOCIATED WITH MUMPS BEFORE AND AFTER A MASS CAMPAIGN FOR MUMPS VACCINATION IN CHILDREN FROM SALVADOR, NORTHEAST BRAZIL

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ABSTRACT - *Objective*: To describe the frequency of lymphocytic meningitis(LM) concomitant with mumps, before and after the mumps mass immunization campaign in 1997. *Method*: Demographic, clinical and cerebrospinal fluid(CSF) information was collected from the chart of all patients aged from 2 to 59 months, whose CSF exam was performed at the CSF Lab/FJS, between 1989 and 2001. LM was defined as pleocytosis composed by lymphomononuclear cells and negative exams for bacterial or mycologic infection. *Results*: Of 1,519 patients, 894(58.9%) had normal exams. LM was present in 301(19.8%) patients, out of which 22(7.3%) had concomitant mumps. The frequency of LM ranged from 15.8% in 1989 to 19.7% in 2001 and of LM with concomitant Mumps ranged from 10.5% in 1989 to 4.7% in 1995, when the last cases were registered. *Conclusion*: It is probable that the mumps vaccine campaign has influenced the absence of LM with concomitant Mumps, from 1996 to 2001.

KEY WORDS: meningitis, mumps, immunization, cerebrospinal fluid, lymphocytic meningitis.

Freqüência de meningite linfomonocitária associada a caxumba antes e depois da campanha para vacinação em massa para caxumba em crianças de Salvador, Nordeste do Brasil

RESUMO - *Objetivo*: Descrever a freqüência de meningite linfomonocitária(ML) associada a caxumba, antes e após o uso em massa da vacina para caxumba, em 1997. *Método*: Variáveis demográficas, clínicas e liquóricas foram coletadas da ficha dos pacientes com idade entre 2 e 59 meses, cujo exame de líquor foi realizado no Laboratório de Líquor/FJS, entre 1989 e 2001. ML foi definida como pleocitose às custas de células linfomononucleares e testes negativos para infecção bacteriana ou fúngica. *Resultados*: Dos 1.519 pacientes, 894(58,9%) tiveram exames normais. ML estava presente em 301(19,8%), entre os quais 22(7,3%) estavam no curso de caxumba. A freqüência de ML variou de 15,8% em 1989 a 19,7% em 2001 e ML no curso de caxumba variou de 10,5% em 1989 a 4,7% em 1995, quando os últimos casos foram registrados. *Conclusão*: É provável que o uso em massa da vacina para caxumba tenha influenciado na ausência de ML no curso de caxumba, entre 1996 e 2001.

PALAVRAS-CHAVE: meningite, caxumba, imunização, líquor, meningite linfomonocitária.

Lymphocytic meningitis (LM) is an inflammatory process of the meninges in which the pleocytosis is composed by lymphomononuclear cells[1]. Although 10% of patients with acute bacterial meningitis present with a predominance of lymphocytes in spinal fluid[2], mononuclear cells are usually predominant in viral meningitis[3], being viral infections of the Central Nervous System much more common than bacterial ones[4]. Therefore, LM is a syndromic diagnosis that results from several different etiologic agents, being viruses the cause of majority of those cases[5]. In the prevaccine era, mumps virus was the agent responsible for the greatest number of cases of LM in the United States, where use of vaccine has made mumps meningitis rare[6].

The mumps vaccine was introduced in clinical practice in 1968[7], when its use was initiated in private clinics in Brazil. In 1997, in the city of Salvador, Northeast Brazil, a mass immunization campaign with a Urabe-containing measles-mumps-rubella vaccine

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was carried out with a target population of children aged from 1 to 11 years old[8].

In this study, we aimed to describe the annual frequency of LM with emphasis on the cases with concomitant mumps, before and after the mass immunization campaign that was carried out in Salvador, in 1997.

METHOD

The charts of all patients whose cerebrospinal fluid (CSF) exam was performed at the CSF Lab, José Silveira Foundation, Salvador, Brazil, between January 1989 and December 2001, were reviewed. Those patients aged from 2 to 59 months old were identified and demographic, clinical and CSF information was collected from the chart to the study questionnaire. The CSF examination was performed by the same person, at the same Lab and included, in all samples, CSF white blood cell and differential cell counts, concentration of protein, glucose, chloride, AST (glutamic-oxaloacetic transaminase) and LDH (lactate dehydrogenase), bacteriologic and mycologic exams that included cultures for aerobic bacteria, fungus and *Mycobacterium tuberculosis*, specific stained-smears (Gram, Ziehl-Nielsen) and latex-agglutination tests. LM was defined as pleocytosis composed by lymphomononuclear cells and negative exams that investigate the bacterial or mycologic etiology. The reason for performing the CSF exam, as well as the clinical diagnosis, was informed by the assistant physician before the performance of the exam. The diagnosis of mumps was based on clinical exam and elevation in serum amylase level.

Statistical analyzes were performed by using the Statistical Package for the Social Sciences (SPSS 9.0) and were descriptive. The annual frequency of the LM and of LM with concomitant mumps was calculated by computing the total number of exams performed during each year as the denominator.

Table 1.Annual frequency of lymphocytic meningitis and lymphocytic meningitis with concomitant mumps in a sample of children aged 2 to 59 months old, in Salvador, Northeast Brazil, 1989-2001.

Year	Total	LM*	LMCM*
89	38	6 (15.8)	4 (10.5)
90	59	6 (10.2)	2 (3.4)
91	73	16 (21.9)	0
92	73	9 (12.3)	2 (2.7)
93	115	19 (16.5)	3 (2.6)
94	116	26 (22.4)	6 (5.2)
95	106	29 (27.4)	5 (4.7)
96	92	15 (16.3)	0
97	88	12 (13.6)	0
98	104	8 (7.7)	0
99	148	23 (15.5)	0
00	218	53 (24.3)	0
01	289	57 (19.7)	0

*Results in n (%); LM, lymphocytic meningitis; LMCM, lymphocytic meningitis with concomitant mumps.

RESULTS

Of 1,519 patients, 894 (58.9%) had normal exams. LM was present in 301 (19.8%) patients, out of which 22 (7.3%) had concomitant mumps. Table shows the annual frequency of LM and of LM with concomitant mumps.

DISCUSSION

Meningitis is the most frequent complication of mumps in childhood[7]. It is mild, but deafness due to damage of the 8th cranial nerve is not uncommon[3]. The true incidence is hard to estimate because subclinical infection of the central nervous system, as evidenced by CSF pleocytosis, has been reported in > 65% of patients with mumps parotiditis[7]. Widespread use of effective attenuated viral vaccines for mumps has almost eliminated Central Nervous System complications from this disease in the United States[9]. These vaccines induce antibody in 96% of seronegative recipients and has 97% protective efficacy[10].

From data presented in Table 1, it is possible to observe an absence of LM with concomitant Mumps as of 1996, in spite of the fact that LM cases continued to be registered. The patients included in this study constitute a sample from the population of Salvador that has private health insurance. It is possible that some of those patients had received mumps vaccine before the mass campaign carried out in 1997 and that the use of this vaccine may have been reinforced by this campaign. The disappearance of LM with concomitant Mumps was probably due to the increasing use of Mumps vaccine, as it has already been recorded in the United States[9].

Nonetheless, this study was conducted by using secondary data regarding unknown population at risk and catchment area[11]. Therefore, a population-based study is highly recommended in order to confirm the results presented herein.

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