CLINICAL AND EPIDEMIOLOGICAL FEATURES OF THE COURSE OF MUMPS INFECTION IN THE ADULT POPULATION OF SAMARKAND REGION

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ABSTRACT

The purpose of this study was to examine the clinical and epidemiological features of mumps infection among adults in the Samarkand region over the past 10 years, for which a retrospective analysis of patients who were on inpatient treatment in the Regional Infectious Diseases Clinical Hospital (RIDCH) was conducted. Samarkand with a diagnosis of "Mumps infection" in 2009-2018. In the adult population, combined forms of the disease often occur against the background of concomitant diseases and occur mainly in severe and moderate-severe forms. Unlike children, orchitis is more common in men and pancreatitis and oophoritis in women.

I. INTRODUCTION

Mumps infection is a highly contagious infection, the contagious index of which is 50-85% [1, 2, 3]. Mumps infection is an acute infectious disease characterized by fever, general intoxication, damage to the internal glands and damage to the central nervous system [4, 5, 6]. Mumps epidemic disease belongs to the group of children's infectious diseases, the pathogen is highly contagious, characterized by rapid spread among children [10, 16]. In some cases, irreversible changes are observed during the disease. According to sources, in the Russian Federation in 2016, an increase in the incidence of mumps infection was recorded, in several regions of the country by 1.9 times, compared with 2015, and the incidence rate was 0.76 per 100 thousand population [15, 16, 17]. The localization of the process in mumps is the salivary glands, the pancreas, the sex glands, the central nervous system, the development of complications from the hearing organs and the vestibular apparatus is possible [2, 14]. In recent years, there has been a tendency to shift the incidence towards older and adolescent age, which is directly related to a decrease in the immune layer, both among children and adolescents, as well as adults [4, 8, 13, 20, 21, 22, 23, 24, 25].

Vaccination is an effective and cost-effective method in the prevention of infectious diseases [2, 7]. In particular, in the prevention of mumps, vaccination is the most important factor. With the introduction of vaccination, the incidence of mumps infection tends to decrease. The introduction of a vaccine against measles, mumps and rubella in 2007 in the national vaccination calendar of the Republic of Uzbekistan led to a reduction in the incidence several times than in previous years [11, 12]. As a result, the stability of the epidemiological situation in the republic was observed. Currently, vaccination against this disease is included in the national vaccination calendar of 38% of the countries of the world, and the implementation of measures to reduce the incidence of this disease and preventive measures has not lost its significance [18, 19]. However, this does not negate the fact that the disease occurs in adults.
In recent years, there have been some changes in the structure of the incidence of this disease. That is, the maturation of this disease is noted [8, 9]. The participation of adolescents and adults in the epidemic process is associated with their lack of collective immunity [13]. It is also inextricably linked with the process of migration between countries. As a result, mumps is spreading among this segment of the population. In adults, male infertility occurs because of mumps infection. According to other researchers, the development of orchitis as a specific complication in mumps infection is observed up to 70% [3]. In addition, mumps infection has complications from the pancreas: pancreatitis, diabetes mellitus and obesity. In adults, mumps infection has its characteristics. In adults, mumps infection is characterized by a severe course, a variety of complications, including such serious complications as pancreatitis and orchitis. In the case of a disease, the reproductive system can be seriously damaged as a result of the negligence of some doctors. In recent years, infertility caused by a complication of mumps infection has been increasing among men [8].

In addition, adults may experience deafness and diabetes, taking this into account, the analysis of the features of this disease is important. Mumps infection is a controlled infection, and at the present stage, the incidence rate is associated with vaccination [5, 6]. To prevent the spread of mumps infection among adults, the first step is to isolate and hospitalize the patient, taking into account the peculiarities of the clinical course of the disease in the patient. Regarding the information mentioned above, the purpose of this article was to study the clinical and epidemiological features of mumps infection among adults in the Samarkand region in recent years.

II. MATERIALS AND METHODS

The material of the study was patients who have applied to the Samarkand Regional Clinical Infectious Diseases Hospital over the past 10 years and their medical histories. The subject of the study is blood, urine, blood serum, protocols of the examined patients. The examination methods included clinical, epidemiological, general blood analysis, general urine analysis, general fecal analysis, biochemical, serological, enzyme-linked immunosorbent assay (ELISA) and statistical methods. The obtained data were statistically analyzed. Some patients, if necessary, underwent analysis of the prothrombin index, the blood clotting system, proteins and protein fractions in the blood, the level of alkaline phosphatase, amylase and cholesterol, as well as standard screening methods. From instrumental studies-ultrasound of the liver, pancreas, prostate, testicles. Research methods: anamnestic, epidemiological, clinical and laboratory.

III. RESULTS AND DISCUSSION

We conducted a retrospective analysis of the medical histories of patients who received inpatient treatment in the Regional Infectious Diseases Clinical Hospital (RIDCH) of Samarkand with a diagnosis of "Mumps infection" for the period 2009-2018. Among those admitted to the hospital with a diagnosis of "Mumps infection", adults accounted for 26.7%. In the analysis, we focused on the epidemiological factors of the disease under modern conditions, as well as on concomitant diseases, features of the course depending on age and gender.

According to the results of the analysis, the disease is relatively common in adults in the following age ranges: 18-59 years (75.4%). The remaining patients are lower at the age of 17 years – 24.6% (Fig. 1). Analyzing the age structure of patients, you can feel that the disease is maturing. An increase in the number of cases of mumps leads to an increase in the diagnosis of infertility in men. An increase in the incidence trend has a risk not only among men but also among women. Diseases in women of childbearing age can lead to congenital mumps in the fetus.
The reason is the absence of antibodies in the blood, in this regard, passive immunity is not observed, inborn children. As a result, children are more susceptible to this disease from birth. Therefore, children under the age of one year can also participate in the epidemic process.

**Figure 2. Distribution of patients by year (in %)**

The distribution of patients by year gives the following picture: 2009-4.5% 2010-4.8% 2011 -5.6% 2012 - 6.7% 2013-8.7% 2014 -10.8%, 2015-11.9%, 13.5% in 2016, 15.6% in 2017 and 17.9% in 2018 (Fig.2). As can be seen from the figure, in recent years the incidence among children has decreased, and among adults has increased. The decrease in the incidence among children can be explained by the fact that vaccination was introduced into the national vaccination calendar in 2007. The association of the decline in morbidity with vaccination against measles, mumps and rubella is more likely.

When distributed by gender, it can be seen from Fig. 3 that the majority of patients are men (73.8%). And also, concomitant diseases in adults who were under observation were studied. Thus, 56.7% of patients had the following concomitant diseases: obesity-13.4%, arterial hypertension-3.2%, cholecystitis-9.8%, chronic viral hepatitis-3.2%, chronic tonsillitis-25.3%, chronic colitis-1.7%, facial neuritis-4.3%, chronic gastritis-11.5%, chronic pancreatitis-8.7%, chronic sinusitis-7.6%, adnexitis-11.3% , etc.

Bed days in patients are distributed as follows: within 5-10 days - 11.3% of patients, 10-16 days-25.2%, 16-25 days-30.5%, 25-30 days-22.4%, over 30 days-10.6%. In patients with the combined form of the disease, there was an elongation of bed days (32.7%).

According to seasonality, patients are distributed: January-6.8%, February-12.9%, March-8.6%, April-8.6%, May-5.1%, June-5.1%, July-8.6 %, August-13.7%, September-10.3%, December-11.2%.

**Figure 3. Distribution of patients by gender**
During the study on the seasonality of the disease, it was found that spring and autumn played an important role (Fig. 4). During the analysis, the patients were also distributed by place of residence, where it was found that the majority of patients came from the districts of the Samarkand region (72.1%) and only 27.9% - from the city of Samarkand (Fig. 5).

Of the patients examined, 53.2% applied to the Samarkand Regional Infectious Diseases Clinical Hospital based on referrals. Most of the patients who apply are urban residents. This situation can be explained by the rapid access of urban residents to medical facilities. According to the analysis of the epidemiological history, in 56.7% of cases, it was found that there were patients with mumps in the family of patients. The majority of patients are intellectuals, employees of enterprises and individual institutions, students (30.7%). This is due to the rapid transmission of the disease through air droplets in large and densely populated institutions. The study revealed that students studying in higher and secondary specialized educational institutions applied to the hospital collectively (24.5%). When checking the immune status of patients, adults over the age of 16 were not vaccinated at all.

Patients were admitted on the 1st day – 6.5%, on the 2nd day – 43.3%, on the 3rd day – 45.6% and 4.6% on the 4th day of the disease, respectively. The patients were mostly hospitalized for 2-3 days of illness (88.9%).

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According to the researchers, the disease is most often found in adults in moderate to the severe form. This also coincides with our data. In our studies, the disease was moderate to severe (85.7%). The main age range is 18-59 years. A mild form of the disease was recorded in patients aged 17-18 years (Fig. 6).

In our studies, the disease began acutely in all patients. The disease began with an increase in body temperature (up to 100%), edema in the projection of the parotid glands. The main symptom of mumps infection is an increase in the parotid glands. This symptom occurred on the first day of the disease in 70% of cases. 16.9% of patients had unilateral glandular lesions, and 79.7% had bilateral parotid gland lesions. In all of them, the affected gland was soft, slightly painful when palpated. Filatov's symptom was positive in 100% of patients. The following symptoms were also observed: fever (100%), weakness (100%), nausea (55.7%), pain when chewing (98.7%), decreased salivation (56.7%), dryness of the oral mucosa (67.5%), reflex trism (34.5%), pain in the gastrointestinal tract (23.4%). The fever reached its peak within 1 to 3 days and lasted for 4-8 days. Fever was observed in patients up to 3 days in 80% of patients, up to 5-6 days in 16%, up to 7-8 days in 4% (Table 1).

Table 1. Clinical signs of mumps infection in the examined patients

<table>
<thead>
<tr>
<th>№</th>
<th>Symptoms of mumps infection</th>
<th>%</th>
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<tbody>
<tr>
<td>1.</td>
<td>High temperature</td>
<td>100%</td>
</tr>
<tr>
<td>2.</td>
<td>Unilateral enlargement of the gland</td>
<td>16.9%</td>
</tr>
<tr>
<td>3.</td>
<td>Bilateral enlargement of the gland</td>
<td>79.7%</td>
</tr>
<tr>
<td>4.</td>
<td>Murson's Symptom</td>
<td>56.8%</td>
</tr>
<tr>
<td>5.</td>
<td>Pain in the salivary glands</td>
<td>98.7%</td>
</tr>
<tr>
<td>6.</td>
<td>Headache</td>
<td>100%</td>
</tr>
<tr>
<td>7.</td>
<td>Nausea, vomiting</td>
<td>55.7%</td>
</tr>
<tr>
<td>8.</td>
<td>Dryness of the oral cavity</td>
<td>67.5%</td>
</tr>
<tr>
<td>9.</td>
<td>Filatov's symptom</td>
<td>100%</td>
</tr>
</tbody>
</table>

Among the examined patients with mumps infection, pancreatitis is often found in women (22.6%). Of these, 16.7% had an elongation of pancreatitis. A decrease in the clinical symptoms of the disease, normalization of the indicators of enzymes in the blood was noted in them on the 25-30 days of the disease. In the remaining patients, pancreatitis proceeded favorably, no side effects were observed. In the case of a disease with pancreatitis, blood amylase increased 2-10 times. An increase in the amount of amylase in the urine also indicates the likelihood of developing pancreatitis in patients. In our studies, the increase in the amount of amylase in the urine was 2 times in 23.7% of patients, 3-5 times in 25.3%, 5-8 times in 20.7% of patients, 8-10 times in 30.3% of patients.

According to our observations, the average duration of pancreatitis in mumps infection is 10-15 days, in 16.7% of cases, it is 25-30 days. The following combined forms of the disease were observed among women: mumps + submaxillitis (11.8%), mumps + pancreatitis (13.6%), mumps + submaxillitis + pancreatitis (12.7%), mumps + pancreatitis + oophoritis (9.5%), mumps + submaxillitis + sublinguitis (8.7%).

It should be noted that combined forms of mumps infection among women were observed against the background of concomitant pathology: obesity-7.2%, adnexitis-11.3%, cholecystitis-4.4%, pancreatitis-3.3%, chronic tonsillitis-12.1%.
Among men, orchitis is the leading symptom of mumps infection and was observed in 43.7% of cases in our observations. This trend has been recorded mainly in recent years, 8.7% of cases were observed under the age of 17. Experts say that orchitis can subsequently have serious consequences in men of childbearing age. In 80% of cases, orchitis appeared against the background of the disappearance of parotid edema. Unilateral orchitis occurred in 85.4% of patients.

According to the researchers, the nervous form of the disease occurs in children and is unusual for adults. The nervous form of the disease among adults was not recorded either in individual cases or in a combined form. Pronounced symptoms of orchitis usually do not last more than 3-5 days, and then the decrease and disappearance of clinical signs for 10-15 days. In 29.3% of patients on 5-9 days of the disease, the development of orchoepididymitis was noted.

Orchoepididymitis in mumps infection, unlike other etiology, quickly appeared and quickly disappeared. Among men, there were such combined forms of mumps infection: mumps + orchitis (17.7%), mumps + orchitis + pancreatitis (17.2%), mumps + orchitis + submaxillitis (8.8%).

It should be noted that combined forms of mumps infection among men, unlike women, were observed against the background of such concomitant pathologies as obesity – 6.2%, cholecystitis – 5.4%, chronic tonsillitis – 13.2%, chronic gastritis – 11.5%, chronic pancreatitis – 5.4 %.

IV. CONCLUSION

In the course of the study, in recent years, it is possible to see a decrease in the incidence of mumps infection among children, however, the incidence among adults has been significantly increased. This is due to the inclusion of the CPC in the National Vaccination Calendar in 2007. Adults, on the other hand, were excluded from vaccination during this period. The weakening of epidemiological measures led to the rapid spread of the disease through airborne droplets in public places. In adults, combined forms of the disease often occur against the background of concomitant diseases (obesity, chronic tonsillitis, chronic gastritis, chronic cholecystitis, chronic pancreatitis, chronic adenitis). It occurs mainly in severe and moderately severe forms. Unlike children, orchitis is more common in men and pancreatitis and oophoritis in women.

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