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Mild course of mumps in patients with acute lymphoblastic leukaemia

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Abstract. Few details exist on the course of mumps during cytostatic treatment. We therefore describe our observations on the course of mumps seen between 1974 and 1988 in eight children suffering from acute lymphocytic leukaemia (ALL). Our data suggest that in malignant disease the course is rarely severe and that the infection often remains subclinical, as in healthy children. Mumps was accidentally diagnosed by routine lumbar puncture in four of the eight patients. Literature data suggest that the intrinsic low cytopathological effect of the virus, together with a parallelism between T cell response and clinical severity, may explain the usual mild course in immunodepressed patients, contrasting with the severe course of measles and *Varicella zoster*.

Key words: Cytostatic drugs – Immunosuppressive drugs – Mumps – Acute lymphoblastic leukaemia – Malignant disease

Introduction

Mumps is an acute infectious disease in which painful enlargement of the salivary glands, mainly the parotids, is a common presenting feature [7, 8]. It is caused by *Myxovirus parotidis*, an RNA-virus, member of the Myxovirus group, which also includes the viruses causing parainfluenza, measles and Newcastle disease. Fever of up to 40°C is present which may persist for up to a week, with parotitis and malaise, usually lasting for 3–4 days. As many as half of the patients seroconvert after a mild non-specific illness or with no signs of infection [7]. It is stated that 60%–65% of patients with clinical parotitis will have a cerebrospinal fluid (CSF) pleiocytosis, although clinically manifest in only 10% [8]. Symptoms vary from slight headache and vomiting to severe meningism.

Cytostatic drugs and corticosteroids lead to immunosuppression. Their negative influence on the course of *Varicella zoster* and measles is well known [1, 2, 9], however, no mention is made of the interaction between this immunosuppressive effect and the course of mumps. Rupprecht and Naiman reported on one patient [10] and some data were recently mentioned by Long et al. [6]. We had the oppportunity to study retrospectively the course of mumps in eight patients treated for acute lymphoblastic leukaemia (ALL). In view of the lack of current information, it seems worthwhile to report on these observations.

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Abbreviations: ALL = acute lymphoblastic leukaemia; CBR = complement binding reaction; CSF = cerebrospinal fluid

Patients and methods

The data on our eight patients are compiled in Table 1. The diagnosis of mumps was confirmed by at least one of the following criteria: positive mumps history in recent contacts (household, school etc.), increase in antibody titre as determined by complement binding reaction (CBR), increase in serum amylase.

In patients 1 and 2, clearcut clinical features (headache, vomiting, meningism) prompted a CSF examination. The course of the meningitis differed only very slightly from that seen in children not suffering from malignant disease.

In the other six cases, the patients were seen for a routine check-up, which included CSF analysis, interval history and physical examination. Patient 3 showed definite symptoms of mumps, while in patients 4, 6 and 7 mumps might have gone unnoticed if they had not been due for their check-up.

In patients 5 and 8 mumps was reported to be present in contacts not seen by us. However, the course of their meningitis remained subclinical. In patient 8, however, CBR and serum amylase determinations were not performed.

Discussion

Our observations concern only ALL patients, probably due to the fact that in this disease we perform routine CSF examinations. As symptoms are often minimal or absent, we presume that we have frequently missed the diagnosis of mumps in our ALL patients and even more so in our other paediatric cancer patients. The patients reported here had had previous cranial irradiation as part of their prophylactic treatment. This does not seem to have worsened the course of the mumps.

Why is the course of some viral infections (*Varicella zoster*, measles) so greatly disturbed by anticancer drugs and why does this not seem to be the case with mumps? We offer the following tentative answer to this puzzling question: mumps is a virus with a weak cytopathological effect as compared with Varicella and measles [4]. It induces specific cytotoxic T-lymphocytes which pass from the blood into the CSF [3, 5]. It seems probable that the severity of the clinical course depends more on the host response than on the virus itself [3–5], and this may explain the observed mild course in our patients, who have an underlying compromised T cell response.

Review articles [1, 2, 9] do not mention mumps, and in a recent report by Long et al. [6] on the importance of viral in-

Table 1. Data of mumps-patients

No.	Sex/age at diagnosis ALL (years/ months)	Age at diagnosis of mumps	On/off therapy	Symptoms/signs of mumps	Menin-gism	Mumps[a] anti-body titre – amylase	CSF[b] cells/ µl	Course of the mumps
1	F 5;10	7;2	On	Headache vomiting	+	CBR not done – Amylase (urine) ↑	242	Transient diabetes insipidus, therapy interrupted for 10 days
2	F 5;8	7;4	On	Headache vomiting parotitis transient anorexia	+	CBR 1:64 – Not done	127	Uneventful therapy interrupted for 9 days
3	M 3;8	4;11	On	Swelling left parotic region fever transient anorexia	–	CBR not done – Serum amylase ↑	5	Uneventful therapy interrupted for 4 days
4	M 2;4	3;7	On	Slight swelling of left cheek	–	CBR 1:32 – Not done	478	Asymptomatic
5	F 1;10	5	Off	None	–	CBR 1:32 – Not done	330	Asymptomatic
6	M 2;10	5;6	Off	Earache with chew-ing/slight swelling of submandibular gland	–	CBR 1:16 – Serum amylase ↑↑	318	Asymptomatic
7	M 3;4	5;5	On	Earache minimal signs of parotitis	–	CBR 1:16 – Serum amylase ↑↑	5	Asymptomatic
8	F 8;11	12	On	None	–	Not done – Not done	173	Asymptomatic non-leukaemic pleiocytosis

[a] by CBR = complement binding reaction
[b] CSF = cerebrospinal fluid

fections in childhood malignant disease, mumps played only a minor role.

From our observations we conclude:

1. If a CSF pleiocytosis is found at routine check-up in children with ALL, the possibility of a viral meningitis (e.g. mumps) should be considered, even if all symptoms of mumps are absent. Additional investigations (mumps CBR, serum amylase, immunological and cytological typing of CSF cells) can lead to the correct diagnosis.

2. In children with ALL, who develop symptoms and signs of mumps meningitis, the course does not seem to be more severe than in healthy children, despite preceding or concurrent cytostatic therapy and previous cranial irradiation.

3. In four of the eight patients mumps meningitis was diagnosed by routine CSF examination, so we assume that in the whole population of children with malignant disease, there will be a fairly frequent occurrence of asymptomatic mumps meningitis.

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