

ON THE INFORMATIVE VALUE OF CEREBROSPINAL-FLUID SYNDROME IN LATERAL AND MEDIAN DISCAL HERNIA

V. Drenski, S. Todorov

Key-words: lateral discal hernia — median discal hernia — cerebrospinal fluid — diagnosis

The problem of the diagnosis of lumbar discal hernia remains in everyday neurological and neurosurgical practice. Patient's complaints are genetically related with pathological changes in intervertebral discs when most diseases of the lumbo-sacral region of the vertebral column, i. e. no less than in 80 per cent of the cases, are concerned (2). The concept that the diagnosis «lumbar discal hernia» should be mainly a clinical one is not warrantable. Saculoradculography and recently, body scanning is introduced into the clinical practice although not rather accessible in our country yet. Data from the clinical examination, especially in some atypical cases, are insufficient and that is why one requires additional laboratory examinations. The question of the diagnostic value of lumbar puncture and cerebrospinal-fluid syndrome in lumbar discal hernia is still disputable, indeed. Kitov (1966, cited after 3) finds a normal cerebrospinal fluid in more than the half of the patients with lateral discal hernia and considers, therefore, the examination of the cerebrospinal fluid incapable to solve the problem of the differential kind diagnosis of discal hernia. Petrov (1980) accepts that lumbar puncture possesses not only a topical but also a kind diagnostic value in median discal hernia. Zlotnik (1960) and Brotmann (1962, both cited after 1) report an albumin-cellular dissociation expressed to one or another extent in most of their patients (in 90 per cent of the cases) with lumbar discal hernia.

Material and methods

In the present work we report the results from the analysis of the cerebrospinal-fluid syndrome concerning its informative value in 120 lumbar discal hernia patients hospitalized in the Neurological and in the Neurosurgical Clinic of the Higher Institute of Medicine, Varna. Discal hernia is proved by saculoradculography and in one fourth of the patients (30 cases) — additionally by a surgical intervention. The following methods are used to study the cerebrospinal fluid: cytology — native microscopy in Fuchs-Rosenthal's chamber; proteins — nephelometry; sugars — orthotolidine method; chlorides after the method of Schalles-Schalles (mercurimetric); microelectrophoresis after Chankov (1969) and immunoglobulins IgG and IgA after Mancini in Tzvetanova's modification (1974).

Results and discussion

Patients' distribution according to age and sex is demonstrated on table 1. There are 80 males (67.3 per cent) and 40 females (32.7 per cent). It is evident that patients in the age groups between 30 and 50 years (the most active age) predominate. 70 patients (58.3 per cent of the cases) are with lateral and 50

Table 1

Patients' distribution according to age and sex

Age (years)	Sex		total
	males	females	
Up to 20	4	1	5
21 — 30	15	5	20
31 — 40	22	15	37
41 — 50	21	10	31
51 — 60	12	6	18
Over 60	6	3	9
Total	80	40	120

patients (41.7 per cent of the cases) are with median discal hernia. A «storey» uncture is performed in 30 patients while lumbar puncture below the level of the discal hernia is carried out in 90 cases.

I. Lateral discal hernia

Cerebrospinal fluid pressure was normal. The fluid was clear, colourless and without any fibrin network. Normal cytosis was established in 65 cases (93.3 per cent) (i. e. up to 5 cells/mm³). Pleocytosis (between 10 and 40 cells/mm³ was observed in 4 cases (5.7 per cent) and up to 100 cells/mm³ in one case only. Meningogram indicated lymphocytes and monocytes. Proteinorachia was normal in 56 cases (80 per cent) (i. e. up to 0.45 g/l). A slightly expressed hyperproteinorachia (up to 0.55 g/l) was found out in 11 cases (15.7 per cent) and hyperproteinorachia between 0.55 and 1.0 g/l was estimated in 3 cases only (4.3 per cent). Both chlorides and sugars were in normal limits. Electrophoretic examination revealed unspecific changes in most cases with normally distributed protein fractions. Immunoglobulins IgG, IgA and IgM were studied in 30 patients and were within normal limits. Colloid curves were normal, too (table 2).

II. Median discal hernia

A normal cellular composition of the cerebrospinal fluid was established in 35 cases (70 per cent). A slightly expressed pleocytosis (between 20 and 50 cells/mm³) was observed in 12 cases (24 per cent) while pleocytosis between 50 and 100 cells/mm³ was found out in 3 cases only (6 per cent). Meningogram demonstrated lymphocytes, monocytes and single polynuclear leukocytes. There was

a normal proteinorachia in 25 cases (50 per cent) (i. e. up to 0.45 g/l). A slightly expressed proteinorachia (up to 0.5 g/l) was seen in 4 cases (8 per cent). Hyperproteinorachia (between 0.5 and 1.0 g/l) was established in 10 cases (20 per cent) but that one between 1.0 and 1.5 g/l — in 11 cases (22 per cent). Both chlorides and sugars showed normal levels. Colloidal curves possessed an outlined left peak in 5 cases (10 per cent). Electrophoretically, gamma globulins were more slightly or more significantly increased in 7 cases (14 per cent). Immunoglobulins IgG, IgA and IgM were studied in 20 patients. There was an IgG increase up to 65 mg/l (with normal levels between 5 and 50 mg/l) in 5 cases (25 per cent) and an IgM increase up to 0.7 mg/l (IgM is normally absent in the cerebrospinal fluid) in 6 cases (30 per cent). IgA levels were within normal limits (up to 5 mg/l) (table 3).

The examination of the cerebrospinal fluid taken by «storey» puncture revealed a more strongly expressed pleocytosis and hyperproteinorachia than that of the material taken below the level of the discal hernia.

Shamburov (1954) established a slightly increased cerebrospinal fluid pressure (between 200 and 250 mm Hg) and a moderate hyperproteinorachia. Fridman (1969) reported a protein-cellular dissociation in discal hernia patients. Vanev (1972) found out a normal protein content in 73.5 per cent and a normal cellular composition in 94.7 per cent of the cases with lateral discal hernia. He found out a normal protein content in 44 per cent and hyperalbuminorachia (between 0.5 and 2.0 g/l) in 43 per cent of the cases with median discal hernia. Therefore, our results are rather similar to Vanev's ones. Tzvetanova established a slightly elevated cellular number (up to 50 cells/mm³) and predominantly lymphocytes and monocytes as well as hyperproteinorachia (up to 0.7 g/l and more seldom — up to 1.5 g/l) in patients with discal hernia (1980). Chankov (1969) reported gamma-globulin increase in 10 out of 22 discal hernia patients.

We can conclude that the analysis of numerical data demonstrates convincingly that cerebrospinal fluid changes possess a smaller topical and kind differential diagnostic value when lateral discal hernia is concerned. The results with the median discal hernia indicate a more strongly expressed protein-cellular dissociation, a more significant proteinorachia combined with moderate electrophoretic and immunologic alterations. That is why the examination of the cerebrospinal fluid possesses a greater informative value for the median discal hernia and, therefore, helps kind and topical diagnosis of the disease.

REFERENCES

1. В а н е в, М. Дискогенни радикулити. София, Медицина и физкултура, 1972, 135—139. — 2. П е т р о в, П. Диагностика и лечение на неврохирургичните заболявания. София, Медицина и физкултура, 1973, 346—356. — 3. П е т р о в, П. Поясно-дискова болест. София, Медицина и физкултура, 1980, 87—91. — 4. Ф р и д м а н, А. П. Основы ликворологии. Москва, Медицина, 1969, 581—583. — 5. Ц в е т а н о в а, Е. Ликворология. София, Медицина и физкултура, 1980, 218 с. — 6. Ц в е т а н о в а, Е. Ликворология. София, Медицина и физкултура, 1984, 188 с. — 7. Ч а н к о в, И. Электрофореза на мозъчната течност и нейното клинично значение в неврологията и психиатрията. Пловдив, Хр. Г. Данов, 1969, с. 83. — 8. Ш а м б у р о в, Д. Н. Спинномозгова жидкост. Москва, 1954, 231—232.

Table 2
Cerebrospinal fluid parameters studied in patients with lateral discal hernia: normal values

Colour	Cells	Protein	Electrophoregrams	Colloidal curve	Chlorides	Sugars	IgG	IgM	IgA
transparent, clear	up to 5 in 1 mm ³ in 65 cases (93.5 per cent) between 20 and 40 in 4 cases (5.7 per cent), up to 100 — in 1 case (1 per cent)	up to 0.45 g/l in 56 cases (80 per cent), up to 0.55 g/l in 11 cases (15.7 per cent), up to 1.0 g/l in 3 cases (4.3 per cent)	normal distribution of protein fractions	normal	122 mg/l normal	between 2.22 and 4.44 mg/l	up to 50 mg/l	0 normal	up to 5 mg/l normal

Table 3
Cerebrospinal fluid changes in patients with median discal hernia

Colour	Cells	Protein	Electrophoregrams	Colloidal curve	Chlorides	Sugars	IgG	IgM	IgA
transparent, clear	up to 5 in 1 mm ³ in 35 cases (70 per cent), between 20 and 50 in 12 cases (24 per cent), up to 100 in 3 cases (6 per cent)	up to 0.45 g/l in 25 cases (50 per cent), up to 0.5 g/l in 4 cases (8 per cent), up to 1.0 g/l in 10 cases (20 per cent), up to 1.5 g/l in 11 cases (22 per cent)	gammaglobulin increased in 7 cases (14 per cent) (5 cases (10 per cent))	an outlined peak in 5 cases (cent)	122 mg/l normal	between 2.22 and 4.44 mg/l normal	up to 65 mg/l	up to 0.7 mg/l	up to 5 mg/l normal

ОБ ИНФОРМАТИВНОЙ ЦЕННОСТИ ЛИКВОРНОГО СИНДРОМА ПРИ БОКОВОЙ И СЕРЕДИННОЙ ГРЫЖАХ МЕЖПОЗВОНОЧНЫХ ДИСКОВ

В. Дренски, С. Тодоров

РЕЗЮМЕ

Авторы прослеживают изменения ликвора у 120 больных, 70 из которых с боковой грыжей поясничных позвонков и 50 — с серединной грыжей этих позвонков. Используются современные ликворологические методики как агаровый электрофорез и исследование иммуноглобулинов ИгГ, ИгА и ИгМ по методу Цветановой.

В случаях боковой грыжи поясничных позвонков устанавливается гиперпротеинрафия от 0,55 г/л до 1,0 г/л с нормальными фореграммами и иммуноглобулинами. При серединной грыже поясничных позвонков устанавливается умеренный плеоцитоз до 50 клеток в 1 мм³, а также гиперпротеинрафия до 1,5 г/л. Фореграммы показывают повышение гамма-глобулинов и умеренное увеличение ИгГ до 65 мг/л и ИгМ до 0,7 мг/л.

Устанавливается, что ликворное исследование серединной грыжи поясничных позвонков имеет большую информативную ценность для видовой и топической диагностики.