OPTO-CHIASMATIC ARACHNOIDITIS

SURGICAL TREATMENT AND RESULTS

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(Received for publication September 19, 1950)

Manuel Balado was the first to explore the opto-chiasmatic region
in a patient suffering from optic neuritis. In 1929, with Satanowsky, he
reported the results of the operations and prescribed the surgical
therapeutics for cases of what was later to be identified as opto-chiasmatic
arachnoiditis or "Syndrome of Balado."

A few months later (October 1929), Cushing described the chiasmal
syndrome at the XIII International Congress of Ophthalmology held
at Amsterdam, and stated that surgical treatment could improve certain
disturbances produced by lesions of the arachnoid restricted to the opto-
chiasmatic region.

The process was later studied by many authors, Frazier, Davis and
Haven, Vincent, Puech and David, Bollack, David and Puech, Ala-
jouanine and Thurel, Feld and Auvert, Bruetsch, Taptas and Dimop-
oulos, and others.

It is true, as Feld and Auvert have stressed, that the anatomo-clinical
definition of opto-chiasmatic arachnoiditis should be revised. A leptomeningeal
form of the chiasmal cistern undoubtedly is a lesion that indicates the existence of other disturbances in that zone and by no
means constitutes in itself the entity producing loss of vision.

Essentially, the basic cause of the arachnoiditis is a disturbance of
capillary permeability resulting from a vasodilatation reflex process pro-
duced by unknown factors in a predisposed terrain. Opto-chiasmatic arach-

noiditis fundamentally is a neurovascular disturbance, which affects capil-
lar permeability and produces exudative and cicatricial reactions.

The leptomeningeal formations involving the optic nerves do not in them-
selves constitute the lesion, but indicate the existence of focal neurovascular dis-
turbances.

Endocrine disorders and allergic disturbances have been found to be the
principal predisposing factors. Infections of the paranasal cavities, neuro-

virus processes, lues, tuberculosis, etc., are frequently factors in the onset
of the lesion. The action of the Koch bacilli is marked by aggression on

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the neurovascular system and by a tendency to produce vasodilatations in contrast to a true meningitis limited to the opto-chiasmatic region.

Cranio-encephalic traumas may also be factors that hasten neurovascular disturbances of the infundibulo-chiasmatic region, as is the case in other post-traumatic processes in which neurovascular action is universally accepted as the pathogeny.

It is our opinion, in agreement with Taptas and Dimopoulos, that neurovascular disturbance is a perfect explanation for the anatomical lesions and symptomatology of opto-chiasmatic arachnoiditis. The different etiologies mentioned by various authors as true causes of these circumscribed leptomeningitides are simply non-specific factors in the onset of the disorder.

Many authors consider liberation of the chiasm and the optic nerves by means of a frontal craniotomy, similar to that performed for operations on the hypophysis, to be the most convenient therapeutic procedure in cases of opto-chiasmatic arachnoiditis. Statistics are not encouraging in this respect, as the operation was not successful in 72 per cent of a total 148 cases of the Neurological Service of the Pitié Hospital.\

Our figures are based on the study of 47 patients operated upon in the Department of Neurosurgery of the Post-Graduate Municipal School of Surgery of the Rawson Hospital, in the Institute of Neurosurgery of the Buenos Aires Faculty of Medical Sciences and in the Ophthalmological Hospital. Postoperative results may be considered unsuccessful in 63 per cent of these cases. We believe that true therapy should aim primarily at the functional condition of the disease, endeavouring to obtain a modification of those factors that cause the neurovascular lesion, which is the real substratum of arachnoiditis of the opto-chiasmatic region.

Different medications have been prescribed in this stage. Barbiturates, parasympathetic tonics, nicotinic acid, vitamin therapy, testosterone propionate, have been administered because of the favourable modifying action they have on neurovascular disturbances. Some authors consider male sexual hormonotherapy a "true medicine of the vascular wall."

Surgical treatment of the opto-chiasmatic region may be of use. It has a precise indication only when the arachnoiditic process has already set in. The accompanying mechanical factor can be of importance. Liberation of the optic tracts from the surrounding and imprisoning leptomeningeal membranes is at times beneficial or, if not, arrests the optic atrophy.

Undoubtedly, a better knowledge of the causes determining and favouring arachnoiditic lesions at the site of the optic nerves and chiasm will lead to the cure or modification of the neurovascular disturbance, before the mechanical factor, represented by the leptomeningeal formations, makes an opto-chiasmatic exploration necessary.

RESULTS OF OPERATION FOR OPTO-CHIASMATIC ARACHNOIDITIS

Operations have been performed in 47 cases from 1933 to March 1950. Of these, 25 cases are from the Institute of Neurosurgery, directed by Prof.
R. Carillo. Patients operated upon by Prof. Balado are included in this group. Twelve are from the Service of Neurosurgery of the Santa Lucía Ophthalmological Hospital, directed by Prof. M. Oribe. Several of these patients were also operated upon by Prof. Balado. Ten cases are from the Department of Neurosurgery of the Post-Graduate Municipal School of Surgery of the Rawson Hospital.

Postoperative follow-up data, including fields of vision, fundus oculi, and visual acuity, were obtained in 19 cases (Inst. of Neurosurgery, 8; Ophth. Hosp., 4; Rawson Hosp., 7).

Number of patients operated upon: 47.
Sex: Male, 36; female, 11.
Age of patients at time of operation:

<table>
<thead>
<tr>
<th>Years</th>
<th>No. of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>-</td>
</tr>
<tr>
<td>6-10</td>
<td>-</td>
</tr>
<tr>
<td>11-15</td>
<td>5</td>
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<tr>
<td>16-20</td>
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<tr>
<td>21-30</td>
<td>9</td>
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<tr>
<td>31-40</td>
<td>7</td>
</tr>
<tr>
<td>41-50</td>
<td>15</td>
</tr>
<tr>
<td>51-60</td>
<td>4</td>
</tr>
<tr>
<td>over 61</td>
<td>1</td>
</tr>
<tr>
<td>data missing</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
</tr>
</tbody>
</table>

Operative mortality: 1 case (2 per cent).
Postoperative results:

<table>
<thead>
<tr>
<th>Status</th>
<th>No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved</td>
<td>6</td>
<td>37 per cent</td>
</tr>
<tr>
<td>Stationary</td>
<td>1</td>
<td>37 per cent</td>
</tr>
<tr>
<td>Aggravated</td>
<td>12</td>
<td>63 per cent</td>
</tr>
</tbody>
</table>

Time interval between operation and last ophthalmological follow-up:

<table>
<thead>
<tr>
<th>Years</th>
<th>No. of Cases</th>
</tr>
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<tbody>
<tr>
<td>0-1</td>
<td>3</td>
</tr>
<tr>
<td>1-2</td>
<td>2</td>
</tr>
<tr>
<td>2-3</td>
<td>1</td>
</tr>
<tr>
<td>3-4</td>
<td>1</td>
</tr>
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<td>4-5</td>
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<td>5-6</td>
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<td>6-7</td>
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<td>7-8</td>
<td>1</td>
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<tr>
<td>8-9</td>
<td>-</td>
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<tr>
<td>9-10</td>
<td>3</td>
</tr>
<tr>
<td>10-11</td>
<td>1</td>
</tr>
<tr>
<td>11-12</td>
<td>1</td>
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</tbody>
</table>
Time interval between onset of symptoms and operation in those cases in which operation was of benefit:

<table>
<thead>
<tr>
<th>Years</th>
<th>No. of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>under 1</td>
<td>1</td>
</tr>
<tr>
<td>1-2</td>
<td>1</td>
</tr>
<tr>
<td>2-3</td>
<td>2</td>
</tr>
<tr>
<td>3-4</td>
<td>1</td>
</tr>
<tr>
<td>4-5</td>
<td>2</td>
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Radiotherapy. Four patients received immediate postoperative radiotherapy, and 3 received late postoperative radiotherapy. Results as regards vision of those patients receiving immediate postoperative radiotherapy over the opto-chiasmatic region can be considered improved in 3 cases and stationary in 1. The 3 patients receiving late postoperative radiotherapy showed no improvement.

The above results lead us to believe that immediate postoperative radiotherapy is of benefit and should be prescribed systematically.

CONCLUSIONS

1) Treatment of opto-chiasmatic arachnoiditis should be immediate and should aim at the correction of the predisposing condition and the modification of the factors in the onset of the neurovascular process which is the actual cause of the formation of exudative, adhesive and membranous leptomeningeal lesions.

2) Operation is of benefit, once the opto-chiasmatic formations have set in, because of the mechanical liberation of the optic nerves and chiasm. Surgical exploration can produce favourable modifications in the neurovascular condition of the region.

Infiltrations of the cervicothoracic sympathetic nerve, if carried out at an early date, can be of benefit in modifying the neurovascular condition.

SUMMARY

The study of 47 patients operated upon for opto-chiasmatic arachnoiditis is reported. Postoperative follow-up was obtained in 19 cases (fields of vision, fundus oculi, visual acuity).

The ideal treatment consists in immediate action to combat the predisposing condition and factors in the onset of the neurovascular affection, which constitutes the substratum of the inflammatory leptomeningeal reaction.

The operation can be of benefit, when the opto-chiasmatic lesions have set in, by liberating the optic nerves and chiasm.

In 63 per cent of the cases postoperative results are considered unsuccessful.

In the rest of the cases, that is in 37 per cent, the operation has brought about a variable degree of improvement or an arrest of the process.
REFERENCES