

INTRAOPERATIVE STAINING OF N. N. VAGI IN SURGICAL TREATMENT OF DUODENAL ULCER

T. Todorov

Vagotomy in combination with draining operation or economical resection has been adopted and ever more frequently employed in the treatment of duodenal ulcer. There are numerous reports on highly selective (proximal) vagotomy with and without additional operations in the treatment of the condition referred to. The success in the various types of interventions definitely depends, on the one hand, on the possibility of denervating of the stomach alone, and on the other, on the possibility of performing complete truncal vagotomy in selected cases (e. g. vagotomy for peptic ulcer, perforation or acute massive bleeding).

At present, a better possibility of performing the respective vagotomy is achieved by means of intraoperative staining of the vagus nerves, and by means of intraoperative pH-metry. Initially, we decided to introduce the first of the two methods — to master the technique and estimate the value of intraoperative staining of the vagus nerves and their branches in the gastric region. For the purpose, K. Gushev prepared a staining solution according to the staining technology described by Lee (2), and coined with the term Leucomethylene blue. — Chemical composition, principles of action and method of work. The chemical composition of the staining medium is the following: solution containing 0.4 per cent methylene blue, 7.02 per cent acid ascorbinici and 1.68 per cent natrii bicarbonici. This solution is filtered, sterilized and ampulated, securing pH 4.0 at the time of ampulation. According to the author cited above, the solution is virtually colorless, whereas the solution obtained by us was with a slight yellow-brown ring. The staining solution becomes dark blue after entering in contact with the air and tissues. It is necessary to be preserved in the dark. Applied to tissues, the solution produces a dark-blue staining, with the dye being retained more durably by tissues with a rather rich oxygen content, such as the nerves. Method of work: the trunks of the vagus nerves are exposed and the area is sprayed with the staining solution (the whole region becomes dark blue), and then the tissues are washed from the dye using physiological-saline-impregnated gauze pieces. The tissues are readily cleansed from the dye, and the nerve fibers only remain permanently stained. This allows for their adequate tracing, and eventual transection at the site where deemed necessary.

Material and method

Intraoperative staining of the vagus nerves and their branches was applied in two groups of patients:

Group one — five patients with diagnosis duodenal ulcer. These patients were subjected to the listed below operations: vagotomy truncularis + pyloroplastica Finney — 1, vagotomy truncularis + gastro + entero — anastomosis — 3 and vagotomy truncularis + hemigastrectomia — 1.

The aim in this group of patients was to check the completeness of vagotomy, and accordingly, the possibility of improving the quality of its execution. Hence, after transection of the vagus trunks, the staining solution was applied subdiaphragmatically. Within 5 minutes, the dye was washed out with gauze serviettes impregnated in physiological saline, and unsevered nerve fibers were sought for in the neighbourhood of the divided trunk.

Group two — five patients subjected to the following operations: pyloroplastica after Mikulic — 1, vagotomy selectiva + pyloroplastica after Finney — 1, vagotomy selectiva proximalis + gastro-entero-anastomosis — 1, vagotomy proximalis + pyloroplastica after Finney — 2.

In this group of patients, selective, respectively selective proximal vagotomy was performed subsequent to intraoperative staining of the vagus nerves and their branches beneath the cardiac part and along the lesser curvature of the stomach.

Results

The results were recorded separately for the two groups, and refer mainly to the values of intraoperative staining, and not to the ultimate result of the operation. All patients were subjected to surgery during 1974. No intraoperative and postoperative complications, related to the staining method were observed.

Results of the operation in group one: After transection of the trunks of the left and right vagus nerve, the intraoperative staining enables us to establish unsevered nerve fibers in the area in four patients, distributed as follows: 1 — with four undivided nerve fibers, 2 — three undivided nerve fibers each, and 1 patient with two undivided nerve fibers. In the fifth patient, following truncal vagotomy and staining, unsevered nerve fibers were not detected. The histological study showed that in all instances it was the nerve tissue that was stained.

Results of the operation in group two: The results in this group are recorded indirectly through insulin testing, performed at the end of the second postoperative week. Four patients were studied out of the total number (5) subjected to operation. In all cases under study the Hollender test (insulin test) was negative, that is, the reading proved complete vagotomy with respect to the acid-producing section of the stomach.

The solution employed in work was prepared on the basis of Lee's prescription. In terms of the solution's outer appearance, it was by no means equal to the latter author's description (slightly yellow-brown instead of colorless) but, in contact with tissues, it yielded sufficiently intense dark-blue staining. Complete discoloration of the solution during its preparation was not achieved, most likely, because of the different quality of the constituents, or because of some patent details not reported by the author in his original paper. Ne-

vertheless, we were fully satisfied by the staining solution used. During truncal vagotomy, Fermin (1) employs common solution of methylene blue for detecting unsevered fibers after transection of the trunks. All 29 cases operated in this manner, and verified by him were with negative Hollender's test which points to the fact that vagotomy was complete. Although we have never used ordinary methylene blue solution, we believe that decoloration of other tissues by the latter solution would be more difficult. In any case, this trial should be heared in mind, especially if there is no possibility of producing or importing a special decoloured staining solution.

REFERENCES

1. Fermin, N. G. *Rev. Cub. Chirurg.*, 1971, 10, 3, 253—256. — 2. Lee, M. *Brit. J. Surg.*, 1969, 56, 1, 10—13.

ИНТРАОПЕРАТИВНОЕ ОКРАШИВАНИЕ NN. VAGI ПРИ ОПЕРАТИВНОМ ЛЕЧЕНИИ ДУОДЕНАЛЬНОЙ ЯЗВЫ

Т. Тодоров

РЕЗЮМЕ

Автор использовал предложенный Maurice Zee красящий раствор для интраоперативного открытия разветвлений вагусного нерва. Использован раствор по прописи указанного автора, схожий с оригинальным. У 5 оперированных окрашивание имело цель установить комплектность стволовой ваготомии (у 4 установлены неперерезанные нервные волокна), а у других 5 оценена возможность более полного проведения селективной ваготомии. Наблюдения автора подтверждают целесообразность использования метода во время операции.