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VAN DIE REDAKSIE : EDITORIAL

TORAKOSKOPIESE INGREPE OP DIE OUTONOME SENUWEESTELSEL—DIE SOGENAAMDE KUX-OPERASIE

Daar is verskeie redes waarom die gemiddelde Suid-Afrikaanse geneesheer teenoor die prosedure, wat as die Kux-operasie bekend is, ietwat skepties staan. Eerstens is die operasie op die gewone sensasionele manier, wat aan die moderne joernalistiek eie is, deur 'n bekende weekblad aan die publiek voorgestel as 'n wonderbehandeling vir verskeie toestande. Tweedens het Kux self by verskillende geleenthede die prosedure vir so 'n verskeidenheid van toestande (insluitende maag- en duodenumulsera, kardiospasme, angina, hipertensie, long-tuberkulose, asma, icterus catarrhalis, diabetes en selfs leukemie) voorgestel, dat wetenskaplik-georiënteerde geneeshere dit moeilik vind om selfs die helfte van die indikasies te aanvaar. Derdens bots Kux se bevindings en teorieë dikwels met die algemeen aanvaarde menings oor die fisiologie van die outonome senuweestelsel. Al hierdie faktore maak dit vir die geneesheer, wat homself afvra of daar onder al hierdie rook tog 'n vuurtjie brand, moeilik om die werklike waarde van die prosedure (indien enige) te bepaal.

Dr. E. Kux is 'n torakale chirurg wat in die chirurgiese universiteitskliniek te Innsbrück, Oostenryk, werk. By die operasie wat na hom heet, word simpatiese of parasimpatiese senuwees in die borskas deur die torakoskoop deurgebrand. Dit word vir verskillende toestande, waarvan die bekendstes peptiese ulserasie en asma is, toegepas.

Wat peptiese ulserasie betref, pas Kux deesdae die operasie hoofsaaklik vir duodenale ulserasie toe. Maagulserasie word omrede van die moontlikheid van maagkanker gewoonlik nie deur sy operasie behandel nie. By die operasie vir duodenale ulserasie word deur die torakoskoop (gewoonlik onder plaaslike narkose) aan die regterkant die vagus, die simpatiese string (op verskeie plekke tussen omtrent ganglia 4 tot 9) en die nervus splanchnicus major met die galvanokouter deurklief. In 'n minderheid van gevalle is dit ook nodig om aan die linkerkant die simpatikus en splanchnicus, en af en toe ook die vagus, te deurklief. Kux maak daarop aanspraak dat selfs met die eensydige ‚vago-simpatikotomie' die oorgrote meerderheid van die pasiënte dadelik simptoomvry word en dat omtrent 80% (uit 'n reeks van 56 wat oor 'n tydperk van 3 jaar opgevolg is) ook roentgenologies genees is. In sy verklaring vir die sukses van hierdie prosedure beklemtoon hy in verskillende artikels[1-4] soms die een en soms die ander van die volgende faktore:

1. Eensydige vagotomie veroorsaak verminderde afskeiding van maagsuur (in direkte teenstelling met die bevinding van Dragstedt,[5] wat die uitwerking van eensydige vagotomie op suurafskeiding as minimaal beskou), verminderde motiliteit van die maag, en ongelukkig ook pilorospasme.

2. Simpatikotomie en splanchnikotomie onderbreek die pynvesels van die distale maag en duodenum, hef die pilorospasme op wat die vagotomie veroorsaak het, en lei tot toename in die bloedsomloop as gevolg van vasodilatasie.

3. 'n Perifere orgaan, wat van sentrale inmenging vrygestel word, kan as outonome eenheid beter funksioneer.[2]

In hierdie kort uiteensetting kan die verskillende betwisbare punte in verband met die uitwerking van die operasie nie bespreek word nie. Vir ons, altans, is die fisiologiese grondslag nog glad nie helder nie. Die moontlikheid bestaan dat die uitskakeling van pyn deur onderbreking van die bose kringloop van spanning—verhoogde suur-pepsienafskeiding—ulcus—pyn—spanning, die belangrikste faktor is. Kux het self hierdie moontlikheid ondersoek deurdat hy vir sy eerste 400 gevalle net simpatikotomie en splanchnikotomie gedoen het. Omdat die resultate veel swakker was as met die ‚vago-simpatikotomie' wat hy later toegepas het, glo hy dat vagotomie ook 'n belangrike rol speel, en beveel hy gevolglik aan dat sowel die simpatikus as die vagus deurklief word.

Deurkliewing van pynvesels kan meebring dat die viscerale pyn van ander organe in die regter-bobuik, soos die galblaas, ook uitgeskakel word, wat moontlik daartoe kan lei dat ontstekingstoestande van hierdie organe relatief asimptomaties en derhalwe gevaarlik kan wees. Hoewel hierdie gevaar bestaan, bly dit uit die ervaring van ander chirurge met gevalle van simpatektomie vir hipertensie dat dit van min praktiese belang is.

Kux het by 800 operasies vir peptiese ulserasie geen sterfgevalle en min komplikasies gehad.[2] Die feit dat daar in ons land gedurende die jaar sedert die eerste operasie hier uitgevoer is, minstens twee sterfgevalle en verskeie komplikasies voorgekom het, behoort vir diegene wat meen dat die prosedure deur enigeen sonder gevaar uitgevoer kan word, 'n waarskuwing te wees.

Om ten opsigte van peptiese ulserasie op te som: Ten gunste van die operasie is die goeie resultate waarop Kux aanspraak maak, die klein ingreep met kort hospitalisasie, en die geringe gevaar daaraan verbonde. Dit is 'n behandelingsmetode wat tussen interne behandeling en die betreklike groot operasie van gedeeltelike gastrektomie (met onherroeplike verlies van 'n groot deel van 'n belangrike orgaan staan. Teen die operasie moet die onsekere fisiologiese grondslag waarop dit berus, gereken word.

Hoewel niemand daarvan hou om 'n operasie wat op onsekere fisiologiese grondslag berus, toe te pas nie, wil ons aan die hand doen dat die Kux-operasie onder die volgende omstandighede in die behandeling van *duodenale* ulserasie op die proef gestel mag word (maagulsera behoort in die meeste gevalle nie met hierdie metode behandel te word nie): Die diagnose moet roentgenologies bewys wees en ander moontlike oorsake van simptome, soos galblaassiekte, moet uitgeskakel word. Die geskikte geval sou dié wees wat op interne behandeling nie genees nie, of na genesing herhaal, maar tegelykertyd nie kliniese of roentgenologiese bewys van diep penetrasie, uitgebreide fibrose, pilorusstenose

of kwaai bloeding toon nie. Laasgenoemde gevalle behoort deur oop operasie, soos gedeeltelike gastrektomie, behandel te word. Wat die uitvoer van die operasie betref, behoort dit alleen gedoen te word deur iemand wat ervaring van torakoskopie het of wat die moeite gedoen het om die tegniek aan te leer. Ook behoort dit in 'n hospitaal gedoen te word waar fasiliteite vir die diagnose en behandeling van moontlike komplikasies bestaan, dit wil sê, fasiliteite vir roentgenondersoeke, bloedoorgieting, intratracheale narkose en torakotomie.

Dit sou vir die beroep en die publiek in ons land van groot waarde wees as 'n wetenskaplike ondersoek, nie alleen na die resultate nie, maar na die fisiologiese uitwerking van die operasie, deur bevoegde persone, veral in 'n geneeskundige fakulteit, uitgevoer kon word.

In die behandeling van *asma* maak Kux[6] ook op redelike goeie resultate aanspraak. Weer is die fisiologiese grondslag waarop sy operasie berus nie duidelik nie. Asma is berug vir die moeilike beoordeling van die resultate van enige soort behandeling, veral omdat sielkundige faktore die toestand so sterk beïnvloed. Die sukses waarop Kux aanspraak maak, is behaal in gevalle wat deur interne behandeling nie verder verbeter kon word nie. Ander chirurge, wat by oop operasie simpatektomie of vagotomie vir asma gedoen het, het oor die algemeen teleurstellende resultate gehad, maar tog af en toe sukses. Daar is dus moontlik, in uitgesoekte gevalle wat deur 'n internis gediagnoseer en sonder sukses behandel is, 'n plek vir die gebruik van die Kux-operasie as proefneming. Die finale beoordeling van die waarde van die operasie vir asma sal eers na jare gemaak kan word.

Die Kux-prosedure word vir verskeie ander toestande gebruik wat nie hier bespreek kan word nie. Ten slotte moet net daarop gewys word dat dit geweldig vatbaar is vir uitbuiting, te meer omdat die publiek op die oomblik dikwels om die operasie vra en wel vir simptome wat dit nie regverdig nie. Die geneesheer, wat die operasie links en regs vir enige vae buikpyn of amborstigheid toepas, handel nie reg teenoor sy pasiënt of teenoor sy beroep nie.

1. Kux, E. (1954): *Thorakoskopische Eingriffe am Nervensystem.* Stuttgart: Georg Thieme Verlag.
2. *Idem* (1955): Münch. med. Wschr., **97**, 413.
3. *Idem* (1953): Dtsch. med. Wschr., **78**, 1590.
4. Kux, E. en Batschwaroff, A. (1953/1954): Thoraxchirurgie, **1**, 377.
5. Dragstedt, L. R. (1958): Persoonlike mededeling.
6. Kux, E. en Kurrek, H. (1958): Münch. med. Wschr., **100**, 1049.

THORACOSCOPIC INTERRUPTION OF THE AUTONOMIC NERVOUS SYSTEM—THE SO-CALLED KUX OPERATION

There are several reasons why the average South African doctor is somewhat sceptical about the procedure known as the Kux operation. Firstly, the operation has been introduced to the public by a well-known weekly journal in the usual sensational way as a wonder cure for several conditions. Secondly, Kux himself advised this operation for such a wide variety of conditions—ulcers of the stomach and duodenum, cardiospasm, angina, hypertension, tuberculosis of the lungs, asthma, icterus catarrhalis, diabetes and even leukaemia—that doctors with a scientific orientation find it difficult to accept even one half of these indications. Thirdly, Kux's findings and theories are at variance with the accepted conceptions of the physiology of the autonomic nervous system. All these factors make it difficult for the doctor who wonders whether there is in fact some validity in this procedure to assess its value.

Dr. E. Kux is a thoracic surgeon attached to the surgical clinic of the Innsbrück University, Austria. In the operation which is named after him, sympathetic and parasympathetic nerves in the thorax are severed through a thoracoscope. This procedure is carried out for several conditions, of which peptic ulceration and asthma are the best known.

In peptic ulceration Kux reserves the operation for duodenal ulcers. Ulceration of the stomach is not treated by this method because of the possibility of carcinoma. In the treatment of duodenal ulcer the vagus, the sympathetic chain (in several places between, approximately, ganglia 4 and 9), and the major splanchnic nerve, are severed under local anaesthesia through the thoracoscope by a galvano-coulter. In a minority of cases it is considered necessary to repeat the performance on the left side. Kux claims that most patients immediately lose their symptoms—even after unilateral vago-sympathectomy; and that approximately 80% of a series of 56 cases followed up over a period of 3 years remained free from signs on X-ray examination.

In his explanation for the success of this procedure Kux in a number of articles[1-4] stresses one or more of the following factors:

1. Unilateral vagotomy causes decreased secretion of acid by the stomach (in direct contrast to the findings of Dragstedt,[5] who considers that the effect of unilateral vagotomy on acid secretion is minimal), decreased motility of the stomach, and unfortunately also pylorospasm.

2. Sympathectomy and splanchnicotomy interrupt the pain fibres of the distal part of the stomach and duodenum, terminate the pylorospasm caused by the vagotomy, and cause an increase in the circulation of the blood as a result of vasodilatation.

3. A peripheral organ, when released from central control, can function better as an autonomous unit.

In this brief review it is not possible to discuss the various controversial points regarding the effects of the operation. To us the physiological basis of the operation is not at all clear. The possibility does exist that the exclusion of pain by interruption of the vicious circle, tension—increased secretion of acid and pepsin—ulcer—pain—tension, is the most important factor. Kux himself investigated this possibility—in his first 400 cases he performed only a sympathectomy and splanchnicotomy. Because his results in these cases were not as good as in the cases for which he performed a vago-sympathectomy he believes that vagotomy has a definite place in the treatment, and consequently he advises severance of both the sympathetic nerves and the vagus.

Severing of pain fibres may result in the exclusion of visceral pain from other organs in the upper abdomen, e.g. the gall-bladder, and this may precipitate a dangerous situation in infection of these organs. Although this danger does exist it does not appear to be of too great

significance in the light of the experience of other surgeons after sympathectomy for hypertension.

In 800 operations for peptic ulcer Kux had no deaths and only a few complications.[2] The fact that at least 2 deaths and several complications occurred in this country during the year since this operation was first performed here, should serve as a warning to those who think that the operation is without danger and that anybody can attempt it.

The position regarding the treatment of peptic ulcer can be summarized as follows: In favour of the operation are the good results claimed by Kux, the relatively minor nature of the procedure, and the short hospitalization and the small danger attached to it. It is an intermediate procedure between medical treatment and partial gastrectomy with irreversible loss of a large part of an important organ. Against the operation must be mentioned its uncertain physiological basis.

Although nobody is in favour of carrying out an operation based on an uncertain physiological thesis, we feel that the Kux operation might be tried out as a treatment for duodenal ulcer under the following conditions. (Ulcers of the stomach should not be treated by this method.) The diagnosis must be proved on X-ray examination and other possible causes of symptoms, such as gall-bladder disease, must be excluded. A case which cannot be cured with medical treatment, or which recurs after cure, and which at the same time shows no clinical or X-ray evidence of deep penetration, extensive fibrosis, pyloric stenosis or severe bleeding, would appear to be a suitable case for a trial application of the Kux operation. Cases showing signs of the complications mentioned should be treated by open operation, e.g. partial gastrectomy. The Kux procedure in these trial cases should be carried out only by somebody well versed in thoracoscopy or who has taken pains to learn the technique. Moreover, the operation should be carried out in a hospital where facilities exist for the diagnosis and treatment of possible complications, viz. for X-ray investigations, blood transfusion, intratracheal anaesthesia and thoracotomy.

It would be of great value to the profession and the public in this country if a scientific investigation were carried out not only of the results of the operation, but also of its physiological effects. An investigation such as this should be attempted by a team of experts at a medical school.

Kux[5] also claims good results in the treatment of asthma. Here, too, the physiological basis of this treatment is not clear. Asthma is notorious for the difficulty in assessing the results of any type of treatment, especially in view of the importance of psychological factors present in asthma. The successes claimed by Kux have been achieved after medical treatment had failed. Other surgeons who have attempted sympathectomy or vagotomy by open operation have in general experienced disappointing results. They have, however, had an occasional success. It is therefore possible that the Kux operation might have a place in the experimental treatment of selected cases that have failed to respond to conservative medical treatment. It will not, however, be possible until some years have passed to arrive at a final assessment of the significance of the operation in cases of asthma.

The Kux procedure is being applied in several other conditions. It is, however, our duty to point out that the procedure is open to abuse, especially because the public often demand the operation on the grounds of symptoms that do not justify its performance. The doctor who indiscriminately carries out this operation for vague abdominal pains and tightness of the chest does not act in the best interests of his patient or his profession.

1. Kux, E. (1954): *Thorakoskopische Eingriffe am Nervensystem.* Stuttgart: Georg Thieme Verlag.
2. *Idem* (1955): Münch. med. Wschr., **97**, 413.
3. *Idem* (1953): Dtsch. med. Wschr., **78**, 1590.
4. Kux, E. and Batschwaroff, A. (1954): Thoraxchirurgie, **1**, 377.
5. Dragstedt, L. R. (1958): Personal communication.
6. Kux, E. and Kurrek, H. (1958): Münch. med. Wschr., **100**, 1049.