VAN DIE REDAKSIE : EDITORIAL

VERNOUING VAN DIE ARTERIA RENALIS

In die meerderheid van gevalle van verhoogde arteriële bloeddruk is die oorsaak en patogenese onbekend en word daar met die benaming ‚selfstandige' of ‚essensiële' hipertensie volstaan. Ten spyte van groot vooruitgang by die behandeling van hierdie groep gevalle, bly die behandeling palliatief en nie genesend nie. Onder die bekende oorsake van arteriële hipertensie is glomerulonefritis belangrik, maar ongeneeslik. In 'n betreklike klein minderheid van gevalle kan 'n bepaalde oorsaak, wat wel soms geneesbaar is, vir die arteriële hipertensie gevind word, bv. koarktasie van die aorta (hipertensie in boonste deel van die liggaam), feokromositoom, primêre aldosteronisme, Cushing se sindroom, en sekere gevalle van chroniese atrofiese piëlonefritis of hipoplasie van die nier. By hierdie klein reeks oorsake wat soms geneesbaar is, is in die afgelope jare bygevoeg vernouing van die arteria renalis of een van sy takke.[1]

Goldblatt en sy medewerkers[2] het reeds in 1934 die aandag gevestig op verhoogde arteriële bloeddruk wat in eksperimentele diere veroorsaak kon word deur die arteria renalis met 'n klem te vernou. Ten spyte van 'n groot hoeveelheid navorsingswerk op hierdie gebied is die Goldblatt-meganisme nie algemeen aanvaar as die oorsaak van ‚essensiële' hipertensie by die mens nie. Tog is daar in die afgelope jare verskeie gevalle beskryf waarin vernouing van die arteria renalis verhoogde arteriële bloeddruk verooksaak het, net soos die vernouende klem van Goldblatt by sy diere. Hoewel seldsaam, is hierdie gevalle in dié sin belangrik dat hulle soms volkome genees kan word.

Die belangrikste oorsake van vernouing van die arteria renalis is aangebore afwykings en aterosklerose. In albei gevalle kan die arteria renalis, sy uitmonding in die aorta, of die aorta self aangetas word. Soms is daar 'n gepaardgaande aneurisma van die arteria renalis. Trombose, embolisme of selfs besering mag ook 'n rol speel. Solank daar vernouing veroorsaak word, kan ernstige arteriële hipertensie ontstaan ongeag die patologiese aard van die oorsaak van die vernouing.

Die simptome en tekens is die wat in die geval van enige ernstige hipertensie gevind word. Die sistoliese sowel as die diastoliese bloeddruk is aansienlik verhoog. Af en toe word geruise oor die aorta of arteriae femorales gehoor. Die gewone chemiese en mikroskopiese ondersoeke van die urine toon meestal geen afwyking nie. Die bloedureum en ureum-opruimingstoets is ook gewoonlik binne normale perke. Röntgenondersoeke van die niere self, insluitende piëlografie, toon dikwels 'n heeltemal normale beeld, behalwe dat die twee niere soms nie ewe groot is nie. Nog meer gespesialiseerde ondersoeke is nodig om die fout aan te dui, naamlik:

(1) Differensiële nier-opruimingstoetse, bv. met inulin of para-aminohippuursuur, mag 'n verskil tussen die twee niere aandui, waarvan daar afgelei kan word watter een aangetas is.

(2) Renale arteriografie, deur aortagrafie (translumbaal of opwaarts vanuit die arteria femoralis—Seldinger), toon gewoonlik die vernouing van die arteria renalis. Dit is op die oomblik die akkuraatste diagnostiese ondersoekmetode.

Dit is dus duidelik dat dit moeilik is om in 'n bepaalde geval met arteriële hipertensie te bewys dat vernouing van die arteria renalis die oorsaak van die toestand is, behalwe deur middel van aortagrafie. Hoewel aortagrafie veel minder gevaarlik is as wat die deursnee geneesheer dink, is dit nie heeltemal sonder risiko nie en sou dit nie op die oomblik aanvaar word as 'n geregverdigde roetineondersoek vir alle gevalle van hipertensie nie. Om te besluit watter gevalle aortagrafies ondersoek moet word, is moeilik, maar die volgende kan as leidraad dien, omdat (nadat ander oorsake uitgesluit is) hulle in die rigting van vernouing van die arteria renalis as oorsaak wys:

(i) Die verskyning van hipertensie voor dertigjarige ouderdom (aangebore afwykings).

(ii) Die verskyning van hipertensie vir die eerste maal na vyf-en-vyftigjarige ouderdom (aterosklerose).

(iii) Die skielike verergering van bestaande hipertensie.

(iv) Waar 'n sistoliese arteriële geruis in die buik hoorbaar is.

(v) Waar 'n verskil in die grootte van die twee niere nie aan ander oorsake toegeskryf kan word nie.

Chirurgiese behandeling is dikwels moontlik mits die hipertensie nie reeds so lank teenwoordig was dat onomkeerbare veranderinge veroorsaak is nie. In hierdie verband is dit interessant dat by eensydige vernouings die nier met die normale arteria renalis gewoonlik erger onder die hipertensie ly as die een met die vernouing, omdat laasgenoemde deur die vernouing teen 'n te hoë druk beskerm word. Dit is 'n besondere rede waarom daar probeer moet word om die arteriële lumen te herstel en die nier te behou liewer as om dit net te verwyder. Chirurgiese ingrepe op die arteria renalis sluit in: Eksisie van stenose en hegting; lienorenale arteriële anastomose; aortarenale transplantasie, en endarterektomie. Waar vatherstel nie moontlik is nie, en die toestand van die ander nier bevredigend is, word nefrektomie aangedui. By geskikte gevalle is die resultate dramaties en kan van *genesing* van die toestand gepraat word; by minder geskikte gevalle word *opvallende verbetering* dikwels behaal.

Hoewel hierdie toestand op die oomblik selde gevind word, is dit moontlik dat fynere chemiese en röntgenologiese ondersoeke mettertyd meer sulke gevalle aan die lig sal bring. Daar is trouens reeds spekulasie oor die moontlikheid dat hierdie meganisme in takke van die arteria renalis en selfs in die klein intrarenale vate vir ‚essensiële' hipertensie verantwoordelik kan wees. Vir hierdie teorie ontbreek die bewys op die oomblik, maar vir die enkele pasiënte

by wie die bloeddrukverhoging deur vernouing van die nierslagaar veroorsaak word, is dit van groot belang om die toestand te herken en chirurgies te behandel.

1. DeCamp, P. T., Birchall, R. en Batson, H. (1958): Wetenskaplike Uitstalling by 'n vergadering van die Amerikaanse Mediese Vereniging in San Francisco.
2. Goldblatt, H., Lynch, J., Hanzal, R. F. en Summerville, W. W. (1934): J. Exper. Med., 59, 374.

NARROWING OF THE RENAL ARTERY

In most cases of raised arterial blood pressure the aetiology and pathogenesis of the condition are obscure and the label 'essential hypertension' is used. Moreover, treatment in cases of essential hypertension is still often palliative and not curative, in spite of great progress in this field. Glomerulonephritis is one of the known causes of arterial hypertension, but it is incurable. In a minority of cases a definite cause for the hypertension can be found, viz. coarctation of the aorta, phæochromocytoma, primary aldosteronism, Cushing's disease, and in some cases chronic atrophic pyelonephritis or hypoplasia of the kidney. In some of these cases the hypertension can be cured.[1]

During recent years the condition of narrowing of the renal artery has been added to the short list of curable hypertensive conditions. Goldblatt and his associates[2] have already (1934) drawn attention to the raised arterial blood pressure which could be brought about in experimental animals by clamping the renal artery. This mechanism, suggested by Goldblatt, has not been generally accepted as a cause of 'essential hypertension' in Man, in spite of a great deal of research work in this field. Yet, a number of cases have been described during the past years in which narrowing of the renal artery caused raised arterial blood pressure—like the clamp in Goldblatt's animals. These cases, although rarely encountered, are nevertheless important because they can often be cured completely.

Congenital malformations and atherosclerosis are some of the most important causes of narrowing of the renal artery. In both cases the renal artery can be involved, or its junction to the aorta, or the aorta itself. An associated aneurysm of the renal artery is sometimes present. Thrombosis, embolism and even injury may also be causative factors. A serious degree of arterial hypertension can arise while narrowing of the artery is present, irrespective of the pathological nature of the narrowing.

The symptoms and signs are those found in any severe hypertensive condition. Both the systolic and diastolic blood pressures are raised considerably. Murmurs are sometimes heard over the aorta or the femoral arteries. The usual chemical and microscopical examinations of the urine are generally normal. The blood urea and the urea-clearance test are also, as a rule, within normal limits. X-rays of the kidneys, including pyelography, often fail to show any abnormality except perhaps an inequality of the two kidneys. The following special investigations are necessary to make the diagnosis, viz.

1. Differential clearance tests, e.g. inulin or para-aminohippuric acid may indicate a difference between the two kidneys—from which a deduction can be made regarding which artery is affected.

2. Renal arteriography (through a translumbar route or through the aorta or upwards from the femoral artery—Seldinger), usually shows narrowing of the renal artery. This is at present the most accurate diagnostic method.

It must be evident that it is difficult to prove that a specific case of arterial hypertension is caused by narrowing of the renal artery except on aortography and, although aortography is much less dangerous than the average doctor thinks it is, a certain risk is still attached to the procedure so that aortography cannot at this stage be accepted as a legitimate routine investigation in all cases of hypertension.

It is difficult to decide in which cases to do an aortography; the following findings can, however, serve as a guide because they point to narrowing of the renal artery as a causative factor (after the exclusion of other possible causes):

i. The onset of hypertension before the age of thirty years (congenital malformations).

ii. The onset, for the first time, of hypertension after the age of fifty-five years (atherosclerosis).

iii. A sudden exacerbation of existing hypertension.

iv. In cases in which a systolic murmur can be heard in the abdomen.

v. In cases in which a difference in size of the two kidneys cannot be explained on other grounds.

Surgical treatment is often possible provided irreversible changes have not set in as a result of the long duration of the condition. In this connection it is interesting to observe that in unilateral narrowing of the artery, the kidney with a normal blood supply is usually subject to more damage from the hypertension than the kidney with the narrowed artery, because the latter kidney is protected against the raised pressure by the constriction. This is one of the special reasons why an attempt is made to repair the arterial lumen rather than to remove the kidney.

Surgical operations on the renal artery include excision of the stenosis and stitching, lienorenal anastomosis, aortorenal transplantation and endarterectomy. Nephrectomy is indicated in cases in which repair of the vessels is not possible and in which the condition of the other artery is satisfactory. The results are dramatic in suitable cases and it is then permissible to refer to the condition as having been 'cured'. Marked improvement is often achieved in less suitable cases.

Although this condition is seen only rarely at present, it is possible that finer chemical and X-ray investigations might in due course lead to the diagnosis of more cases of this nature. In fact, the possibility of this mechanism operating in branches of the renal artery, and even in the small intrarenal vessels thus causing 'essential' hypertension, is being discussed at present. The proof of these theories is still lacking, but it is of great importance to the patient in whose case a raised blood pressure is caused by narrowing of the renal artery, to have the condition diagnosed and treated surgically.

1. DeCamp, P. T., Birchall, R. and Batson, H. (1958): Scientific Exhibition held at a meeting of the American Medical Association in San Francisco.
2. Goldblatt, H., Lynch, J., Hanzal, R. F. and Summerville, W. W. (1934): J. Exper. Med., 59, 374.