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DIE OUDERDOM VAN DIE FETUS

Die bepaling van die groeistadium van die vrug kan van verloskundige sowel as medies-geregtelike belang wees. Enige besluit om 'n swangerskap te beëindig hang geheel en al van die vasstelling van lewensvatbaarheid af, en dit is soms nodig om die vrug se ouderdom tot die naaste week te bepaal, bv. wanneer 'n keisersnee in die 36ste week van swangerskap uitgevoer moet word. Gewoonlik duik hierdie vraagstuk eers ná die 7de maand op; die medies-geregtelike deskundiges se belang het betrekking op die ouderdom waarop lewensvatbaarheid wetlik tot stand kom (in die Unie van Suid-Afrika word dit op die 28ste week van baarmoederlike lewe gestel), en die verloskundiges stel belang in die 36ste week.

Die geldigheid van die eeue-oue kliniese metode van bepaling—betasting van die hoogte van die baarmoedergewelf bo die rand van die bekken—kan beswaarlik betwis word, hoewel niemand daarop aanspraak maak dat dit altyd akkuraat of betroubaar is nie. Wetenskaplik gesproke is dit maar 'n ru metode, ongetwyfeld nuttig, maar nouliks juis genoeg vir alle verloskundige doeleindes, of, natuurlik, as 'n bruikbare metode vir die medies-geregtelike deskundige. Dan ook hang die grootte van die baarmoeder tot 'n sekere mate van die grootte van die vrug af, wat nie noodwendig ooreenstem met die ‚rypheid' van die vrug nie. 'n Baba van 6½-lb kan ontydig gebore wees terwyl 'n 6-lb baba voldrae kan wees. Die kruin-rompmate, wat ook tot 'n mate beïnvloed word deur die fetale gewig, word beskou as 'n juister aanduiding van die ouderdom, en 23 cm. word beskou as die kritiese lengte vir die 28ste week. Vir alle praktiese doeleindes, hang die ouderdomsbepaling van die vrug af van die mate van ontwikkeling van sekondêre verbening in die onderste ledemate. Die medies-geregtelike deskundiges beskou die tweesydige teenwoordigheid van die boonste epifise van die skeenbeen as onteenseglike bewys dat die fetus voldrae was en beskou die teenwoordigheid van die verbeningsentrum van die enkelbeen as teken van ‚geregtelike' lewensvatbaarheid.

Onlangs het J. Blair Hartley die saak van die radioloog by die ouderdomsbepaling van die vrug aangevoer.[1] Sy referaat was geskrywe ondanks volgehoue afkeuring van die blootstelling ter enige tyd van die fetus se liggaamsdele aan direkte X-bestraling, en hy bespreek vooraf die gevare en voordele van hierdie metode. Hy keur dit ten strengste af dat X-straalondersoeke as roetine voorgeboortelike hulpmiddel gebruik word, en haal aan uit Stewart en haar medewerkers in die Departement Volksgeneeskunde te Oxford: ‚Ons het nog nooit gevoel dat ons bevindings algemene afkeuring van voorgeboortelike radiografie regverdig nie. In 'n behoorlik uitgevoerde ondersoek is daar ongetwyfeld min

EDITORIAL

THE AGE OF THE FOETUS

Assessing the maturity of the foetus may be a subject of obstetrical as well as medico-legal importance. Any decision to terminate pregnancy is wholly dependent on establishing viability, and sometimes it may be necessary to estimate foetal age to the nearest week, e.g. when a Caesarean section has to be performed at the 36th week of gestation. In general, only after the 7th month does the question arise; forensic experts are interested in establishing relationship to the age of legal viability (defined in the Union of South Africa as the 28th week of intra-uterine life), and obstetricians are interested in the 36th week.

The validity of the age-old clinical method of assessment—by palpating the height of the fundus above the brim of the pelvis—can hardly be challenged, although no one will claim that it is invariably accurate or reliable. By scientific standards it is a rough-and-ready measure, undoubtedly useful but hardly accurate enough for all obstetrical purposes or, indeed, as a method available to the medico-legal expert. Moreover, the size of the uterus depends to a certain extent on the size of the foetus, which does not necessarily accord with maturity. A 6½-lb. baby may be born prematurely while a 6-lb. baby may be mature. However, the crown-rump measurement—also dependent to a degree upon foetal weight—is held to be a more accurate index of maturity and 23 cm. is regarded as the critical value for the 28th week. For all practical purposes, the assessment of foetal maturity depends upon examination of the state of development of the secondary centres of ossification in the lower limb. Medico-legal experts view the bilateral presence of upper tibial epiphyses as definite evidence that the foetus was full-term, and the presence of the centre of ossification for the talus as evidence of legal viability.

Recently J. Blair Hartley advanced the claim of the radiologist in the diagnosis of foetal maturity.[1] His paper was written in the face of sustained adverse criticism against the exposure of foetal parts to the direct X-ray beam at any time, and he prefaces it with a discussion of the dangers and advantages of the technique. He roundly denounces those who use X-ray examination as a routine antenatal ancillary, and quotes Stewart and her co-workers in the Department of Social Medicine at Oxford: 'We have never felt our findings justified a broad and sweeping condemnation of antenatal

gevaar vir die fetus, en voorgeboortelike radiografie moet nog steeds beskou word as 'n waardevolle en noodsaaklike lewensredmiddel, mits dit beperk word tot gevalle waar daar 'n duidelike kliniese rede vir die ondersoek is.'[2]

Hartley baseer sy bevindings op die ondersoek van meer as 10,000 gevalle wat in die afgelope 8 jaar in die St. Mary-hospitalegroep te Manchester behandel is (nie minder as 'n kwart van die versoeke wat aan die X-straaldepartemente gerig was, was vir die bepaling van die fetale ouderdom nie), en hy stel voor dat dit die radioloog is, en nie die ontleedkundige nie, wat die bekwaamste is om uitspraak te lewer oor die verskyningstye van die verskillende epifise. Indien hierdie sekondêre sentra teenwoordig is, sal hulle aangetoon word op 'n duidelike radiograaf, en daar is maar min ontleedkundiges wat daarop aanspraak kan maak dat hulle die epifise van 10,000 fetusse so volledig as wat hulle op 'n radiograaf aangedui word, ondersoek het.

Volgens die radiologiese ‚bakens' wat teenwoordig is, is dit moontlik om die ontwikkeling van die groeiende vrug in 4 stadiums te verdeel, nl. 10-24 weke, 24-36 weke, 36 weke en ouer, en die tydperk van ‚oorvoldrae'. In die eerste periode (10-24 weke) is spesiale metodes nodig om die sentrums van verbening van die fetale rugwerwels en die buitelyn van die skedel aan te toon. Op hierdie vroeë stadium is die grootte van die kop en die graad van digtheid van die fetale liggaamsdele seker die beste aanduidings van die ouderdom, maar hulle verskil só in voorkoms dat hulle nie altyd akkurate tekens is nie. Die sentrum vir die hakskeenbeen kom tussen die 24ste en 26ste week te voorskyn (dit is bepaald teenwoordig teen die einde van die 26ste week) en die sentrum vir die enkelbeen verskyn teen die einde van die 28ste week. Dan kom die knie-epifise (onder-dybeen op die 36ste week, en die boskeenbeen op die 38ste week). Die onderskeiding van die 4de radiologiese groep—‚oorrypheid' verg meer ondervinding; om dit te diagnoseer moet die skedel dig wees en die bene 'n hoë graad van verbening toon. Maar Hartley benadruk die ander maklik herkenbare punte; die boonste epifise van die skeenbeen moet net so groot (of nog groter) as die onderste epifise van die dybeen wees, en 'n derde voetwortelsentrum (vir die kubusbeen) behoort teenwoordig te wees. Hy lê ook nadruk op sekere valstrikke. Die kubusbeen, wat tradisioneel beskou is as teken van volle ontwikkeling, kan byvoorbeeld reeds op die 37ste week verskyn. Desgelyks kan plasenta-verkalking vóór die geboortedatum of ná die 42ste week verskyn, en dit is hoegenaamd geen teken van volgroeidheid nie. Ossifikasie van die sternumsentrums is heeltemal onbetroubaar. Die uitslae van hierdie groot toetsreeks was bevredigend, en Hartley meen dat die *Royal College of Obstetricians* in radiologiese ouderdomsbepaling die nuwe maatstaf vir vrugontwikkeling waarna hulle soek, gevind het. Hy verklaar dat, volgens die beheerde metode van radiologiese diagnose wat in sy departement toegepas word, 50% van die swanger vroue wie se plate ondersoek was binne 7 dae van die radiologies aangegewe datum geboorte geskenk het, en 75% binne 14 dae. As hierdie reeks slegs gevalle *ná* die 24ste week ingesluit het, sou die toets met nog groter juistheid bekroon gewees het.

1. Hartley, J. B. (1957): Brit. J. Radiol., **30**, 561.
2. Stewart, A., Webb. J. W., Giles, B. D. en Hewitt, D. (1956): Lancet, **2**, 1355.

radiography. The risk to the foetus in a properly conducted examination is undoubtedly small, and antenatal radiography should continue to be regarded as a valuable and essential means of saving life, provided it is restricted to the cases in which there is a definite clinical reason for the examination.'[2]

Hartley, basing his findings upon the examination of over 10,000 cases in the last 8 years in the St. Mary's hospitals group at Manchester (where no less than one-quarter of the requests to the X-ray departments are now for foetal maturity), suggests that the radiologist, and not the anatomist, is best qualified to speak on the times of appearance of the various epiphyses. If these secondary centres are present they will be shown on a good radiograph, and few anatomists can claim to have examined the epiphyses of 10,000 foetuses as completely as they are demonstrated on a radiograph. According to the radiological 'landmarks' that are present, it is possible to separate the development of the growing foetus into 4 stages, i.e. 10-24 weeks, 24-36 weeks, 36 weeks onwards, and 'post-maturity'. In the first period (10-24 weeks) special techniques are required to show the centres of ossification of the foetal vertebrae and the outline of the skull. In this early stage the size of the head and the degree of density of the foetal parts are probably the best indices of maturity, but their appearance is too variable for them to be accurate. The centre for the calcaneum appears between the 24th and 26th weeks (definitely present at the end of the 26th week), and that for the talus at the end of the 28th week. Then follow the knee epiphyses (lower femoral 36th week, upper tibial 38th week). The 4th radiological group—'postmaturity'—requires more experience to identify; to diagnose it the skull must be dense and the bones well ossified. But Hartley emphasizes the additional easily identifiable points, viz. that the upper tibial epiphysis should be as large as (or larger than) the lower femoral, and that a 3rd tarsal centre (for the cuboid) should be present. He also stresses certain pitfalls. For instance, the cuboid—traditionally held to be a sign of full development—may appear as early as the 37th week. Similarly, placental calcification may appear before term or after the 42nd week and is no indication whatever of maturity, and ossification of the sternal centres is quite unreliable. The results of this large series were gratifying, and Hartley ventures the opinion that the Royal College of Obstetricians may have found in radiological assessment the new yardstick they are known to be seeking to judge maturity by. He found that, by the controlled method of radiological diagnosis employed in his department, 50% of the pregnant women whose films were examined were delivered within 7 days of the radiologically estimated date of birth, and over 75% within 14 days. If the series had not included cases earlier than the 24th week, the accuracy would have been stil greater.

1. Hartley, J. B. (1957): Brit. J. Radiol., **30**, 561.
2. Stewart, A., Webb, J. W., Giles, B. D. en Hewitt, D (1956): Lancet, **2**, 1355.

INCOME TAX: DEDUCTION OF EXPENSES IN RESPECT OF POSTGRADUATE STUDY COURSES

The position in regard to deduction from taxable income in respect of postgraduate study courses attended by dentists or medical practitioners has been modified by section 6 of the Income Tax Act 1957. The concessions embodied in this section were arrived at after discussions between the Medical Association's Parliamentary Committee and the Commissioner for Inland Revenue. On the basis of this section the Commissioner, in a letter published in this issue of the *Journal* (page 50), has set the position out and detailed the procedure to be followed. These details are of interest both to the doctors concerned and to the Medical Association and its Branch officers.

The new section has effect from the income-tax year ended 30 June 1957. It provides that any medical practitioner who has practised his profession for not less than 3 years may claim an allowance from his taxable income for expenditure incurred during the year of assessment in attending a postgraduate study course approved by the Medical Association (but not a medical congress). The practitioner may also claim for expenses incurred in attending an examination connected with such a course. The amount of the deduction allowed will be determined by the Commissioner for Inland Revenue, whose decision will not be subject to objection and appeal, but will be final and conclusive. The expenses to be allowed will include travelling expenses, and living expenses on a flat rate of £2 5s. 0d. a day if the course is attended in the Union at a centre other than that in which the taxpayer ordinarily resides or carries on his practice, £5 a day in Great Britain or the Continent of Europe, and £7 10s. 0d. a day in America and Canada. The taxpayer need not submit particulars of his living expenses unless they exceed this flat rate. The deduction allowed may include the full amount calculated on these rates, or only a portion, or none at all, according to circumstances such as the length of stay in the foreign country or the holding of a paid appointment there, or the maintenance of a home or the support of a wife or family in the Union during the course. The allowance will be in respect of the taxpayer's personal expenses and not those of any other person, such as a wife or child. If the attendance at the study course is associated with a holiday on the part of the taxpayer, or with travelling for some other purpose, an apportionment will be made in determining the deduction to be allowed.

Considerable responsibility is placed on the Medical Association of South Africa in connection with claims by medical practitioners. A certificate must be issued in respect of each claim and this will be done by the Branches of the Association for their own members and for non-members residing within their areas. The certificate will be signed by the President of the Branch. The form of the certificate has been left to the Association, no special form having been prescribed, but it must comply with the conditions laid down in paragraph 4.1 of the Commissioner's letter and cover the points set out in that paragraph. The Commissioner asks the Association to satisfy itself by obtaining written confirmation from the person or institution conducting the course, or by other adequate means, that the expenditure was incurred by the taxpayer in respect of the attendance by him of a postgraduate study course approved by the Association to improve his qualifications for carrying on his profession in the Union.

It appears that it will be necessary for the taxpayer to obtain the certificate from the Branch; the Commissioner asks the Association to send a copy of the certificate to the local departmental Receiver of Revenue.