Current Research on Multiple Births

ANNUAL BIBLIOGRAPHY – 1988

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Subject Sections*

Title, authors, and journal source, alphabetized by journal:

- ◊ Behavior and Physiology
- ◊ Genetic Traits and Methods
- ◊ Obstetrics and Pediatrics
- ◊ General

Author Section

Authors, titles, journal source, and abstract (if available), alphabetized and cross-indexed by all authors.

*The first three subject sections include other topics related to these headings. Classification is performed automatically on the basis of keywords. Some articles may appear in two or three of the specific subject sections.

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† A twin study of amino acid concentrations in cerebrospinal fluid. Hagenfeldt L, et al. **J Psychiatr Res** 1988;22(1):51–6

† Papillary thyroid cancer in identical twins. Chandler JJ, et al. **J Surg Oncol** 1988 Mar; 37(3):175–6

† Membrane thickness in ultrasound prediction of chorionicity of twin gestations. Townsend RR, et al. **J Ultrasound Med** 1988 Jun;7(6):327–32

† Sonographic detection of monoamniotic twins. Blane CE, et al. **JCU** 1987 Jul–Aug;15(6):394–6

Ceruletide to treat neonatal cholestasis [letter] Schwartz JB, et al. **Lancet** 1988 May 28; 1(8596):1219–20

Bilateral renal agenesis--an unusual case. Lulembo O, et al. **Med J Zambia** 1984 Sep;18(3):39–41

† Heritability of variation of plasma cortisol levels. Meikle AW, et al. **Metabolism** 1988 Jun; 37(6):514–7

Respiratory distress in twins [letter] Abramowsky CR. **N Engl J Med** 1988 Apr 28;318(17):1128–9

Gestation of triplets after intrauterine implantation of two embryos [letter] Paulson RJ, et al. **N Engl J Med** 1988 May 19;318(20):1339–40

† Further evidence in support of the hypothesis that one cause of multiple sclerosis is childhood infection. James WH. **Neuroepidemiology** 1988; 7(3):130–3

† Parkinson's disease in a nationwide twin cohort. Marttila RJ, et al. **Neurology** 1988 Aug; 38(8):1217–9

Twinning rate in Finland [letter] James WH.

† indicates that an abstract appears with the citation in the author section.

Neurology 1988 Jun;38(6):997

† Regional cerebral glucose metabolism in identical twins. Clark CM, et al. **Neuropsychologia** 1988; 26(4):615–21

† Craniopagus twins: neuroradiological findings (CT, angiography, MRI). Schindler E, et al. **Neuroradiology** 1988;30(1):11–6

Triple time [interview by Bronwen Jones] McCafferty K. **Nurs Stand** 1988 Jun 4;2(35):40–1

† Amniotic band syndrome in monozygotic twins: prenatal diagnosis and pathogenesis. Lockwood C, et al. **Obstet Gynecol** 1988 Jun;71(6 Pt 2):1012–6

† Genetic control of serotonin uptake in blood platelets: a twin study. Meltzer HY, et al. **Psychiatry Res** 1988 Jun;24(3):263–9

Antenatal diagnosis of conjoined twins. Hsieh FJ, et al. **Taiwan I Hsueh Hui Tsa Chih** 1988 Mar; 87(3):393–7

† indicates that an abstract appears with the citation in the author section.

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A

Abramowsky CR: Respiratory distress in twins [letter] N Engl J Med 1988 Apr 28;318(17):1128–9

Adam M see **Clark CM**

Adler SP see **Bodurtha J**

Alfredsson G see **Hagenfeldt L**

Allen G, Hrubec Z: The monozygotic twinning rate: is it really constant?
Acta Genet Med Gemellol (Roma) 1987; 36(3):389–96
Weinberg's difference method, applied to twin birth statistics, usually shows a dependence of the MZ rate on maternal age, like a thin shadow of the DZ rate. Some of this MZ variation could be explained away by James' finding of more same-sex (SS) than opposite-sex (OS) DZ twins, the excess being mistakenly classified as MZ by Weinberg's assumption of equal numbers. By several methods one can extract a constant value for the MZ rate and a constant or nearly constant value for the DZ SS/OS ratio, but these "constants" are actually arbitrary and they vary between populations.

Allen G: The non-decline in U.S. twin birth rates, 1964–1983. Acta Genet Med Gemellol (Roma) 1987; 36(3):313–23
Detailed twin birth rates for the United States are unavailable since 1964. In 1983 the crude twinning rate for women of white race was higher than in 1964, but there had been great changes in maternal age and parity. Indirect standardization for maternal age and birth order provides estimated total twinning rates that can be compared over the entire period. The adjusted rates for whites show a nearly continuous increase except after a 2-year reporting hiatus, 1969–70, when rates dropped back 10%. In blacks the adjusted rate increased between 1966 and 1978, except for the 1968–71 shift. The distributions of rate increases by maternal age and by race argue against effects of medical ovulation stimulants, but a disproportionate increase of triplets argues for such effects. Study is needed of rates specific for maternal age and parity, rather than of total rates.

Amau Y see **Nakamura I**

Andreoli A, Bonora G, Luciani L, Perletti L: Reye's syndrome and aspirin [letter] Lancet 1988 Sep 17; 2(8612):684

Andrews G see **Martin NG**

Antti-Poika M see **Matikainen E**

Arnold RW, Hohberger GG, Gould AB Jr: The oculocardiac reflex in identical twins [letter] Arch Ophthalmol 1988 Jul;106(7):879

Arora RC see **Meltzer HY**

Askins G, Ger E: Congenital constriction band syndrome. J Pediatr Orthop 1988 Jul-Aug;8(4):461–6
A retrospective study of 55 patients with congenital constriction band syndrome was performed. Multiple extremity involvement was found to be the most common clinical feature associated with the disease, and 34% of the patients studied were premature at birth. Malformations included constriction bands, clubfoot, intrauterine amputation, syndactyly, and acrosyndactyly (fenestrated syndactyly). The extremities were most often affected distally, involving the longer central fingers and medial two toes. More proximal involvement with constriction bands was associated with a higher frequency of neurologic deficit. Significant leg-length discrepancy exceeding 2.5 cm was seen in 9 of 38 patients (24%) with lower extremity involvement, a condition that has not been previously reported.

Atlas SW, Zimmerman RA, Bruce D, Schut L, Bilaniuk LT, Hackney DB, Goldberg HI, Grossman RI: Neurofibromatosis and agenesis of the corpus callosum in identical twins: MR diagnosis. AJNR 1988 May-Jun;9(3):598–601

Austoni M: Thyroid papillary carcinoma in identical twins [letter] Lancet 1988 May 14;1(8594):1115

B

Bak J see **Beck-Nielsen H**

Baraitser M see **Oley CA**

Bardurska B see **Rowland LP**

Beck-Nielsen H, Nielsen OH, Pedersen O, Bak J, Faber O, Schmitz O: Insulin action and insulin secretion in identical twins with MODY. Evidence for defects in both insulin action and secretion. Diabetes 1988 Jun;37(6):730–5
To evaluate the pathogenetic mechanisms responsible for development of diabetes in the genetically inherited disease maturity-onset diabetes of the young (MODY), we have investigated a pair of identical twins (19 yr old) from a MODY family. One twin had nondiabetic fasting plasma glucose values but impaired glucose tolerance (IGT), whereas the other suffered from frank diabetes (fasting plasma glucose 12.5 mM). Differences in insulin secretion pattern and/or insulin action between the twins is supposed to be responsible for development of hyperglycemia in MODY. On the other hand, identical defects in insulin secretion and action in the twins may point to the primary genetic defect in MODY. Therefore, our aim was to investigate insulin secretion and insulin action in the twins to find these differences and similarities. We found that fasting plasma insulin and C-peptide values were slightly increased in the twins, whereas the responses of insulin and C-peptide to oral glucose tolerance tests (OGTT) and meals were similar in the twins and within normal range. The insulin responses to OGTT were, however, lower than expected from the glucose values, indicating a beta-cell defect. Despite elevated plasma insulin levels, basal hepatic glucose output (HGO) was normal in the IGT twin but increased by 75% in the diabetic twin. The maximally inhibitory effect of insulin on HGO, when estimated at euglycemia, was normal in the IGT twin but reduced by 60% in the diabetic twin. Furthermore, the maximal insulin-mediated glucose uptake in peripheral tissues was reduced by 40% in the diabetic twin.(ABSTRACT TRUNCATED AT 250 WORDS)

Beller U, Quagliarello J, Lope de Haro H, Orderica S: Hematometra-hematocolpos: a late complication of successful separation of conjoined twins. Surgery 1988 Jun;103(6):704–5
A late complication of separation of conjoined twins, hematometra-hematocolpos, may appear with sexual maturation. An obstructed genital outflow tract can cause significant urologic and reproductive tract morbidity.

Ben-Sira I see **Kremer I**

Bender BG see **Decker SN**

Benirschke K see **Pretorius DH**

Berg K: Twin studies of coronary heart disease and its risk factors.
Acta Genet Med Gemellol (Roma) 1987; 36(4):439–53
Traditional twin studies have resulted in higher concordance rates for premature coronary heart disease (CHD) in MZ than in DZ twin pairs. This is in agreement with strong evidence from several

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other studies, that genetic factors are of importance in the etiology of early onset CHD. Also, in a study of 291 Norwegian twin pairs the concordance rate for hypertension wa 0.36 in MZ and 0.08 in DZ pairs. Relationship between diseases and traditional gene markers have been extensively studied and several associations have been uncovered for CHD. Our group has developed a method to examine a possible permissive or restrictive effect of single genes on the degree of variation that environmental and/or life style factors can cause in a given parameter. This method for studying gene-environment interaction is based on the fact that MZ twins are identical with respect to genes, so that any difference between the two members of an MZ pair must necessarily be caused by environmental or life style factors. The possibility that a given gene influences the degree of variability in a parameter such as cholesterol is examined by comparing the within-pair difference in cholesterol level between MZ pairs possessing, and MZ pairs lacking the gene in question, and results of such studies will be presented. New possibilities to study restriction fragment length polymorphisms (RFLPs) at apolipoprotein loci have added a new dimension to research on genetics of CHD and hyperlipidemias. Association between apolipoprotein B, cholesterol and fasting triglyceride levels on one hand and DNA variation at the apolipoprotein B locus on the other has been found.(ABSTRACT TRUNCATED AT 250 WORDS)

Bertolino AP: Hair transplantation between identical twins. J Am Acad Dermatol 1988 Aug;19(2 Pt 2):418-21

Hair transplantation between monozygotic twins was used to repair a marked congenital, nonprogressive alopecia of the scalp. The alopecia was due to a follicular aplasia that, along with several other abnormalities of the integumentary system, affected only one of the twins. This case represents a unique application of isograft transplantation.

Biederman J see **Cohen LS**

Bilaniuk LT see **Atlas SW**

Billing H, Leighton BC, Linder-Aronson S, Lundström A, McWilliam J: The development of the pharyngeal space and lymphoid tissue on the posterior nasopharyngeal wall--an assessment with regard to heritability. Eur J Orthod 1988 May;10(2):106-10

Bishop DT, Meikle AW, Slattery ML, Stringham JD, Ford MH, West DW: The effect of nutritional factors on sex hormone levels in male twins. Genet Epidemiol 1988;5(1):43-59

Dietary intake has been hypothesized as being associated with several hormonally related cancers including prostate, breast, ovarian, and endometrial cancer. Because diet may affect hormones directly, it is logical to examine the effects of dietary factors on hormone production and levels. Therefore, a set of 72 male MZ and 83 male DZ twin pairs was ascertained from the Utah birth certificates. A quantitative food frequency questionnaire was administered and blood samples were drawn for hormonal assays. Heritability estimates for hormonal levels were calculated indicating a range from no heritability for sex hormone binding globulin (SHBG), estrone, and testosterone glucuronide to 70% for androstanediol glucuronide and luteinizing hormone. To examine nutritional factors, the difference in hormone and SHBG levels between each MZ twin and his co-twin were correlated with the difference in nutrient intake. Weight and obesity were significantly correlated with plasma testosterone and follicle stimulating hormone. Fat intake showed a significant association with testosterone. Androstanediol glucuronide, a steroid that reflects tissue formation of dihydrotestosterone, was inversely correlated with caloric intake, theobromine and caffeine. Testosterone glucuronide exhibited significant correlations with calories and vitamin A. This study suggests that dietary intake affects plasma sex-steroid levels in men.

Bishop DT see **Meikle AW**

Bishop HC see **O'Neill JA Jr**

Blane CE, DiPietro MA, Johnson MZ, White SJ, Louwsma GI, Hamman JE: Sonographic detection of monoamniotic twins. JCU 1987 Jul-Aug; 15(6):394-6

The true incidence of monoamniotic twinning has been almost impossible to determine accurately because it requires closer inspection of the membranes and placenta at delivery than is usually performed. Sonography of 3440 patients presenting for genetic amniocentesis identified 39 twin gestations, one of which was monoamniotic (0.026%). Prospectively with ultrasound, four of the twin gestations had been thought to be monoamniotic. A more recent case of suspected monoamniotic twinning revealed two sacs when newer computer-based real-time equipment with variable focusing capability and improved spatial resolution was used. Sonographic diagnosis of monoamniotic twinning must be accurate since it identifies patients at higher risk for cord accidents. These patients need obstetrical care appropriate for a pregnancy at high risk. In addition, failure to identify a second sac that could harbor a chromosomally abnormal fetus has both medical and legal implications. State-of-the-art ultrasound equipment and attention to detail is required.

Blickstein I, Shoham-Schwartz Z, Lancet M: Growth discordancy in appropriate for gestational age, term twins. Obstet Gynecol 1988 Oct;72(4):582-4

We compared 14 term (37 weeks or more), discordant (15% or more birth weight difference), but not growth-retarded (2500 g or larger) twin pairs with 28 randomly selected term and appropriate for gestational age twin pairs without discordancy. The comparison of the two subgroups showed no significant difference in maternal age, parity, gestational age, incidence of maternal hypertension, or perinatal outcome. It is suggested that discordancy is not a risk factor when the twin pair has reached term and the lighter twin weighs at least 2500 g.

Bodurtha J, Adler SP, Nance WE: Seroepidemiology of cytomegalovirus and herpes simplex virus in twins and their families. Am J Epidemiol 1988 Aug; 128(2):268-76

To determine the importance of intrafamilial transmission of cytomegalovirus and herpes simplex virus (types 1 and 2), the authors investigated the presence of immunoglobulin G antibody to one or both of these viruses in the sera collected between 1976 and 1985 from 1,115 members of 301 kinships from Virginia consisting either of juvenile twins and their parents or of adult twins, their spouses, and offspring. The sample included 486 children and 629 adults, aged 1-68 years. Among the 125 couples in whom the wives were seropositive, 78 (62%) of the husbands were found to be seropositive. Among 77 couples in whom the wives were seronegative, only 32 (42%) of the husbands were seropositive (p less than 0.01). Of 105 couples in whom the wives were seropositive for herpes simplex virus, 81 (77%) husbands were seropositive compared with 20 (47%)

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of 43 husbands with herpes simplex virus-seronegative wives (p less than 0.001). In families with cytomegalovirus-seropositive mothers, 54 (25%) of 213 children were seropositive for cytomegalovirus compared with 13 (8%) of 168 children in families with seronegative mothers (p less than 0.001). Childhood cytomegalovirus infections showed no association with infection in the father. In contrast, among families in which both parents were seropositive for herpes simplex virus, 48 (31%) of 156 children were seropositive compared with only two (4%) of 48 children without herpes simplex virus-seropositive parents (p less than 0.001). Among all siblings, there were strong associations for both herpes simplex virus and cytomegalovirus infections. These data are consistent with the venereal transmission of cytomegalovirus in married couples, provide evidence for the intrafamilial spread of herpes simplex virus, and confirm the importance of the maternal-child transmission of cytomegalovirus.

Bodurtha J see **Schieken RM**

Boklage CE: Race, zygosity, and mortality among twins: interaction of myth and method.
Acta Genet Med Gemellol (Roma) 1987; 36(3):275-88
For epidemiological purposes, it is customary to assume that same-sex (SS) dizygotic (DZ) twin pairs are approximately equal in number to unlike-sex (OS)-DZs, the remainder of the SS pairs being monozygotic (MZ). It is also customary to consider OS-DZs to be epidemiologically representative of all DZs, which can only mean that difference in frequency of any trait between OS and SS twins is due to the MZ fraction of the SS twins. Since this is assumed as a premise, there is little value in its usual appearance as the result. The basic tenet of twin biology, that most twin excess anomalies are due to MZs, is a myth self-perpetuated by a methodological tautology, and is false, at least for mortality. In a consecutively ascertained and prospectively studied sample of 616 twin pairs, over 80% diagnosed for zygosity, it can be shown that the standard assumption mentioned above have given impossible answers. The most probable possible answer is that mortality does not differ greatly with zygosity overall, but that SSDZ mortality is much higher than that of OS twins, and probably even higher than that of MZs. Race differences in the probable answers further suggest that standard assumptions of the Weinberg method may have consistently provided false explanations for race differences in the OS fraction of twin pairs.

Boklage CE: The organization of the oocyte and embryogenesis in twinning and fusion malformations.
Acta Genet Med Gemellol (Roma) 1987; 36(3):421-31 (52 ref.)
Certain congenital malformations occur in excess among twins and also among first-degree relatives of twins. In the general population, these anomalies are familially associated with each other, and, like twinning, familially associated with unusual brain function asymmetry. They affect structures built by fusion of bilateral embryonic halves and remodeled under major influence of neural crest mesenchyme. This conjunction of associations suggests that twinning, symmetry development, and this group of malformations might share causal elements at least some of which are heritable. The problem here is the absence of zygosity differences in these relationships, because of which they cannot be explained within the biology of twinning as it has been understood. A potential resolution is offered by way of a mechanism common to MZ and DZ twinning, involving a relationship between oocyte organization and the determination of body symmetries.

Bonnelykke B, Søgaard J, Nielsen J: Seasonality in twin birth rates, Denmark, 1936-84.
J Epidemiol Community Health 1987 Dec; 41(4):338-43
A study was made of seasonality in twin birth rate in Denmark between 1977 and 1984. We studied all twin births (N = 45,550) in all deliveries (N = 3,679,932) during that period. Statistical analysis using a simple harmonic sinusoidal model provided no evidence for seasonality. However, sequential polynomial analysis disclosed a significant fit to a fifth order polynomial curve with peaks in twin birth rates in May-June and December, along with troughs in February and September. A falling trend in twinning rate broke off in Denmark around 1970, and from 1970 to 1984 an increasing trend was found. The results are discussed in terms of possible environmental influences on twinning.

Bonora G see **Andreoli A**

Boomsma DI see **Pronk JC**

Boraas JC, Messer LB, Till MJ: A genetic contribution to dental caries, occlusion, and morphology as demonstrated by twins reared apart. J Dent Res 1988 Sep;67(9):1150-5
The heritability of dental characteristics has been systematically studied in animals, human populations, families, and twins, but not in twins reared apart. Under the assumption that environmental factors are no different for monozygotic twins reared apart than for dizygotic twins reared apart, the present study measured the genetic variance of several dental characteristics in twins reared apart. Ninety-seven subjects (44 twin pairs, three triplet sets) of mean age 40.6 years (S.D. 11.7) were examined over a six-year period by means of clinical and radiographic examinations, study models, and dental history questionnaires. Characteristics assessed retrospectively were: dentate status, treatment status, treatment/caries status, tooth size, malalignment, occlusion, and morphology. Data were analyzed by two-way ANOVA, intraclass correlations, heritability estimates, and concordance. There was statistically significant resemblance within monozygotic but not dizygotic pairs in the number of teeth present (p less than 0.001), percentage of teeth and surfaces restored (p less than 0.001), percentage of teeth and surfaces restored or carious (p less than 0.001), tooth size (p less than 0.001), and malalignment (p less than 0.009). Intercanine and intermolar arch width showed significant resemblance within both monozygotic (p less than 0.001) and dizygotic (p less than 0.01, p less than 0.05) pairs, whereas overjet and overbite showed no significant resemblance within pairs. Morphological features (Carabelli's trait and mandibular first premolar groove configuration) were more highly concordant in monozygous than in dizygous twins. This study provides new evidence for a marked genetic component to dentate status and dental caries experience and confirms previous reports of acknowledged inherited contributions to tooth size, malalignment, occlusion, and morphology.

Borhani N see **Carmelli D**

Borkett-Jones HJ, Stewart G, Chilvers AS: Abdominal aortic aneurysms in identical twins. J R Soc Med 1988 Aug;81(8):471-2 (12 ref.)

Bouchard C, Tremblay A, Despres JP, Poehlman ET, Theriault G, Nadeau A, Lupien P, Moorjani S,

AUTHOR SECTION

Dussault J: Sensitivity to overfeeding: the Quebec experiment with identical twins.
Prog Food Nutr Sci 1988;12(1):45–72
The role of the genotype in the response to short-term overfeeding was assessed by submitted six pairs of male monozygotic twins to a 4.2 MJ (1000 kcal) per day energy intake surplus for a period of 22 consecutive days. Individual differences in fat mass and fat-free mass gains were observed in response to overfeeding but they were not randomly distributed. Indeed, the within-pair resemblance in the response was striking when compared to the heterogeneity found among the pairs in adiposity and fat-free mass gains. The intrapair resemblance in the response to overfeeding as assessed by the intraclass coefficient computed with the individual changes, reached 0.88 for total fat mass and 0.76 for fat-free mass. A similar trend for a genetically determined pattern of adaptation to overfeeding was observed for resting metabolic rate (intraclass = 0.63), thermic effect of a meal (intraclass = 0.62), and energy cost of submaximal exercise (intraclass = 0.78) when the data were analysed in terms of changes in oxygen uptake. On the other hand, no major alterations in glucose and insulin response to a glucose load or a test meal, in cardio-pulmonary adaptation to submaximal exercise and in maximal exercise tolerance were found with overfeeding. In contrast, the response of suprailiac fat cell lipolysis (intraclass of about 0.7) and heparin releasable adipose tissue lipoprotein lipase (intraclass - 0.82) varied among individuals but was highly homogeneous within genotypes. Similarly, a genotype-overfeeding interaction effect was seen for serum triglycerides (intraclass = 0.69), HDL-cholesterol (intraclass = 0.85), and the HDL-cholesterol to total cholesterol ratio (intraclass = 0.82). Multiple correlation analyses suggest that much of the variance in the response of fat mass (R = 0.65) and fat-free mass (R = 0.81) is accounted for by alterations in the energy expenditure components assessed in the study. If one takes into account the measurement errors always present in such complex studies and the fact that only a limited fraction of the energy expenditure of activity was considered by design, one can conclude that the genotype determines to a large extent the response variation to short-term overfeeding. In particular, the genotype–overfeeding interaction effect for body composition changes seems to be mediated by the various energy expenditure components, themselves characterized by significant genotype-overfeeding interaction effects.(ABSTRACT TRUNCATED AT 400 WORDS)

Bouchard C see **Després JP**
Bouchard TJ Jr see **Lykken DT**
Bouchard TJ Jr see **Tellegen A**
Brand RJ see **Cohn BA**
Brenci G see **Gedda L**
Brenci G see **Villatico Campbell S**

Bressers WM, Eriksson AW, Kostense PJ, Parisi P: Increasing trend in the monozygotic twinning rate.
Acta Genet Med Gemellol (Roma) 1987; 36(3):397–408
Recent changes in the estimated incidence of monozygotic twinning in 15 European populations are described. The overall trend was an increase in the monozygotic twinning rate (MZTR) since the 1960s, particularly in those countries in which the use of oral contraceptives (OC) was widespread. A slower increase or even a decrease in the MZTR was observed in countries with low use of OC. Some countries, eg, Sweden, demonstrated an unexpectedly sharp increase since the 1960s. In Poland and the Federal Republic of Germany the MZTR was already strongly increasing as early as in the 1950s, clearly before the introduction of the pill. The influence of several other factors on the MZTR is discussed, such as toxic and teratogenic agents, pelvic infection diseases caused by the use of intrauterine devices, the increased use of ovulation inducers and neuroleptics as well as changes in the registration of perinatal deaths.

Bross KJ see **Hecht T**
Bruce D see **Atlas SW**
Buehler BA see **Moore CA**
Buehler BA see **Olney AH**
Burns T see **Ionasescu V**

C

Callis L see **Gilli G**

Campbell AF: Multicystic dysplastic kidney and contralateral renal aplasia in a twin: diagnosis by prenatal sonography. AJR 1988 Jul;151(1):145–6

Campbell D, Thompson B, Pritchard C, Samphier M: Does the use of oral contraception depress DZ twinning rates?
Acta Genet Med Gemellol (Roma) 1987; 36(3):409–15
Data based on total births from a geographically defined population with zygosity determined from blood samples and placentation and with data on the use of oral contraceptives routinely collected in early pregnancy showed no association between oral contraceptive use prior to pregnancy in either MZ or DZ twinning. Three mutually exclusive control groups of singletons were used to take account of age, parity and secular trends.

Cardwell MS, Finke FL, Gurley LD, Zimmerman CW: Management of single intrauterine fetal death in a twin pregnancy. J Tenn Med Assoc 1988 May; 81(5):291–2

Cardwell MS: The acardiac twin. A case report.
J Reprod Med 1988 Mar;33(3):320–2
The acardiac twin is a rare consequence of monozygotic twinning and occurs in 1 per 35,000 deliveries. One percent of all monozygotic twins is affected. Prenatal diagnosis is possible with ultrasonography. Complications associated with the presence of an acardiac twin include sequelae from the twin-to-twin transfusion syndrome, polyhydramnios, dystocia, ruptured uterus and congestive heart failure in the normal twin. In utero fetal therapy is possible in some instances.

Carmelli D, Rosenman R, Chesney M, Fabsitz R, Lee M, Borhani N: Genetic heritability and shared environmental influences of type A measures in the NHLBI Twin Study. Am J Epidemiol 1988 May; 127(5):1041–52
Data from the NHLBI Twin Study were used to investigate the genetic component in a number of Type A measures given to these twins during a second cardiovascular examination. Specifically, the objective of the current study was to determine the extent to which various Type A measures are influenced by genetic effects and by measurable environmental and cultural factors. Analyses of these data for twins yielded a number of results. First, the Type A behavior pattern as assessed by the structured interview was only weakly associated with self-report inventories developed as alternatives to the structured interview. Second, among the self-report measures of Type A, only the Thurstone Temperament Schedule Active scale

showed a clear significant genetic component. Most important, a number of demographic and social characteristics known to be associated with the various Type A scales had a differential effect on twin similarities. Specifically, for the job involvement subscale of the Jenkins Activity Survey, twins of both zygosities became equally similar after adjustments for covariates, while no effect on twin similarity was noted for the Thurstone Temperament Schedule Active scale. It is concluded that a complex constellation of genetic predispositions and acquired behaviors underlies the Type A behavior construct.

Carmelli D, Rosenman RH, Swan GE: The Cook and Medley HO scale: a heritability analysis in adult male twins. Psychosom Med 1988 Mar-Apr;50(2):165-74
Thirty-seven pairs of monozygotic (MZ) and 60 pairs of dizygotic (DZ) middle-aged, male, American twins were studied to determine the heritability of the Cook and Medley Hostility (HO) scale and its two subscales, Cynicism and Paranoid Alienation. No clear evidence for a significant genetic component was indicated for the full HO scale and the Paranoid Alienation subscale. Scores on these scales were found to be associated with age, socioeconomic status, the twinning condition, and the Minnesota Multiphasic Personality Inventory (MMPI) K scale. DZ twins scored higher than MZ on HO and Cynicism, and lower on the MMPI K scale. Statistical adjustments for age and socioeconomic status removed twin mean differences and weakened MZ intrapair correlations on the HO scale but did not change overall conclusions regarding heritability. After the association with K was partialled out from these scales and retested for heritability, both HO and Paranoid Alienation showed a weaker twin pair similarity than that observed in the unadjusted scales. However, Cynicism, the scale with the greatest item overlap with the K scale, was not affected by the adjustment. Since no genetic component was evident for the K scale in this sample it was concluded that if a genetic influence in these MMPI scales is present, it is mostly in the Cynicism subscale of HO.

Carmelli D see **Swan GE**

Carroll D see **Hewitt JK**

Carroll D see **Sims J**

Cavina C see **Gaist G**

Cederlöf R see **Floderus B**

Chakravarti AK see **Chatterjee SK**

Chandler JJ, Schwartz MJ, Stahl TJ, Lee L: Papillary thyroid cancer in identical twins. J Surg Oncol 1988 Mar;37(3):175-6
The cases of a set of 19-year old monozygotic twins are presented--the first report of thyroid cancer of follicular origin occurring in identical twins. This report includes a brief review of reports of cancer of various sites in twins. Several studies and reports emphasize genetic factors influencing the concurrence of cancer. Other reports downgrade the likelihood of genetic influence in cancer.

Chang C see **Chen CJ**

Chang DY see **Hsieh FJ**

Chatterjee SK, Chakravarti AK, Deb Maulik TK, De Majumdar N, Sen MK: Staging the separation of ischiopagus twins. J Pediatr Surg 1988 Jan;23(1 Pt 2):73-5
A pair of ischiopagus tetrapus twins were successfully separated in Calcutta in 1986. The separation was staged. The gastrointestinal tracts were separated at a preliminary operation, and definitive separation carried out 3 months later. Staging permitted us to perform the final separation on healthier babies with the exclusion of the intestinal contents from the wounds and with reduced operating time.

Chen CJ, Lin TM, Chang C, Cheng YJ: Epidemiological characteristics of twinning rates in Taiwan. Acta Genet Med Gemellol (Roma) 1987; 36(3):335-42
Delivery records of public hospitals and birth certificates of household registration offices were examined to study the epidemiological characteristics of twinning rate from 1955 to 1984 in Taiwan. The MZ twinning rate was consistently higher than the DZ rate during the study period. The DZ rate declined steadily from 2.7 per 1000 in 1955 to 1.3 per 1000 in 1975, and then gradually increased to 3.6 per 1000 in 1984. The MZ rate peaked periodically in 1956, 1966 and 1976, and gradually increased from 3.3 per 1000 in 1978 to 5.9 per 1000 in 1986. Both MZ and DZ rates were higher in urban than in rural areas and they were also higher in northern Taiwan than elsewhere in the island. While both MZ and DZ rates increased with maternal age and parity, the maternal age difference and the parity difference were more striking in DZ than in MZ rates. The international comparison also showed a greater racial difference in maternal age-specific DZ than MZ twinning rates; and the older the maternal age, the greater the international discrepancy in DZ rates.

Chen CJ see **Lin LL**

Chen HY see **Hsieh FJ**

Chen HY see **Huang LW**

Cheng YJ see **Chen CJ**

Chescheir NC, Seeds JW: Polyhydramnios and oligohydramnios in twin gestations.
Obstet Gynecol 1988 Jun;71(6 Pt 1):882-4
Seven twin pregnancies with concurrent polyhydramnios and oligohydramnios resulted in a perinatal mortality rate of 71%. The occurrence of this complication before 26 weeks' gestational age resulted in deaths of all fetuses, despite a variety of attempted therapies.

Chesney M see **Carmelli D**

Chilvers AS see **Borkett-Jones HJ**

Clark CM, Klonoff H, Tyhurst JS, Ruth T, Adam M, Rogers J, Harrop R, Martin W, Pate B: Regional cerebral glucose metabolism in identical twins.
Neuropsychologia 1988;26(4):615-21
The present study reports on the degree of similarity in regional cerebral glucose metabolism in seven sets of female identical twins. All scans were done with subjects at rest. Glucose metabolism was measured with positron emission tomography (PET). Significant intraclass correlations were found for the orbital and prefrontal cortex as well as the basal ganglia (caudate/putamen). It is suggested that these correlations reflect the functional aspects of these areas, namely attention and posturing movements.

Coates PM see **Hayman LL**

Cobb RA, Fawcett DP: Monozygotic twins with three different germ cell tumours. Br J Urol 1988 Mar; 61(3):262-3

Cohen LS, Biederman J: Further evidence for an association between affective disorders and anxiety disorders: review and case reports.
J Clin Psychiatry 1988 Aug;49(8):313-6 (40 ref.)
The relationship between anxiety and affective disorders continues to be debated in the literature. The authors report a case of identical twins concordant for attention deficit disorder and somnambulism but discordant for major depression and agoraphobia with panic attacks. The authors discuss the implications of this "finding in nature."

AUTHOR SECTION

Results from neuroendocrinological, family, and twin studies are also reviewed that either lend support or question the existence of a relationship between anxiety disorders and affective disorders.

Cohn BA, Brand RJ: Re: "Environmental and behavioral determinants of fasting plasma glucose in women: a matched co-twin analysis" [letter] Am J Epidemiol 1988 Jul;128(1):242-5

Commens CA: Twenty nail dystrophy in identical twins. Pediatr Dermatol 1988 May;5(2):117-9
Twelve-year-old identical female twins have had lifelong twenty nail dystrophy. There is no evidence of other skin disorders. The condition has remained unchanged and has been unresponsive to a wide range of therapies. The benign clinical course of their nail disorder suggests twenty nail dystrophy may not be related to lichen planus or other cutaneous diseases. One of the causes of twenty nail dystrophy of childhood may be a localized tissue malformation, analogous to inflammatory linear verrucous epidermal naevus.

Corey LA, Eaves LJ, Nance WE: Variability in anthropometric traits in twins and their families. Basic Life Sci 1988;43:81-91

Cramer G see **Holzman PS**

Crawford JS see **Wortham E**

Cunliffe WJ see **Walton S**

D

Dalgleish R see **Young ID**

Davies TM, Thompson RP: Clefts of the lip and/or palate in monozygotic twins. Eur J Orthod 1988 Feb; 10(1):52-61

Deb Maulik TK see **Chatterjee SK**

Decker SN, Bender BG: Converging evidence for multiple genetic forms of reading disability. Brain Lang 1988 Mar;33(2):197-215

Decker SN see **Ho HZ**

De Dominicis C see **Gedda L**

De la Cruz-Medina M see **Pascual-Castroviejo I**

Del Porto G see **Mastroberardino G**

del Rio C see **Levy DI**

De Majumdar N see **Chatterjee SK**

Dequeker J, Nijs J, Verstraeten A, Geusens P, Gevers G: Genetic determinants of bone mineral content at the spine and radius: a twin study. Bone 1987; 8(4):207-9
The possible role of genetic and/or environmental factors in determining bone mass has been investigated in 30 pairs of twins (16 monozygotic and 14 dizygotic) divided in two age groups (below and above 25 years of age). Bone mineral content was evaluated by single- and dual photon absorptiometry at the distol third of the radius for peripheral cortical bone and in the lumbar spine for the axial bone. The "within pair" variance has been used as an index of genetic influence. A significant (p less than 0.01) genetic determinant was found for the bone mass of the radius in adults and for the spinal bone mass in the age group younger than 25 years. The heritability index h2 was 0.75 for cortical BMC and 0.88 for axial BMC. Such a genetic determinant could not conclusively be demonstrated in adult twins for the spine and in youngsters for the cortical bone, suggesting that environmental factors may play a more dominant role in growth of cortical bone during adolescence and diminution of axial bone during adult life.

Derom C, Vlietinck R, Derom R, Van den Berghe H, Thiery M: Population-based study on sex proportion in monoamniotic twins [letter] N Engl J Med 1988 Jul 14;319(2):119-20

Derom R see **Derom C**

De Santo NG see **Gilli G**

Després JP, Moorjani S, Tremblay A, Poehlman ET, Lupien PJ, Nadeau A, Bouchard C: Heredity and changes in plasma lipids and lipoproteins after short-term exercise training in men. Arteriosclerosis 1988 Jul-Aug;8(4):402-9
The aims of this controlled experiment were to investigate the effects of short-term aerobic exercise training on plasma lipid and lipoprotein concentrations and the role of heredity in determining the individual variation observed in the lipoprotein-lipid response. Six pairs of male monozygotic (MZ) twins were subjected to an exercise training program that induced a 22,000 kcal energy deficit after 22 consecutive days of training. This program significantly reduced body weight, percent body fat, and subcutaneous fat and significantly increased maximal oxygen consumption (VO2max) (p less than 0.005). The plasma insulin response to an oral glucose challenge was markedly reduced after training (p less than 0.001). Plasma triglyceride concentration decreased and the high density lipoprotein cholesterol (HDL-CHOL)/CHOL ratio increased with training (p less than 0.05). Subjects also displayed substantial individual variation in their response to exercise training, but the changes in plasma CHOL, apolipoprotein (apo) B low density lipoprotein cholesterol (LDL-CHOL), HDL-CHOL, and the HDL-CHOL/CHOL ratio tended to be similar within MZ twin pairs (0.67 less than or equal to ri less than or equal to 0.92; 0.05 greater than p less than 0.0001) thus indicating a significant effect of heredity on the sensitivity of plasma lipids and lipoproteins to exercise training.(ABSTRACT TRUNCATED AT 250 WORDS)

Despres JP see **Bouchard C**

Diament M see **Schwartz JB**

Di Fusco C see **Mastroberardino G**

Di Maio F see **Villatico Campbell S**

DiMauro S see **Rowland LP**

DiPietro MA see **Blane CE**

Donckerwolcke RA see **Gilli G**

Duckett JW see **O'Neill JA Jr**

Dudin A see **Juabeh II**

Dussault J see **Bouchard C**

Dworkin RH, Lenzenweger MF, Moldin SO, Skillings GF, Levick SE: A multidimensional approach to the genetics of schizophrenia. Am J Psychiatry 1988 Sep;145(9):1077-83
To determine which dimensions of psychopathology are associated with a greater liability to develop schizophrenia, the authors examined the case histories of 151 monozygotic probands from five twin studies. Proband twins from pairs concordant for schizophrenia had greater numbers of negative symptoms, poorer premorbid adjustment, fewer paranoid symptoms, and earlier ages at onset than probands from discordant pairs. In discriminant analyses, negative symptoms, premorbid social competence, and paranoid symptoms each contributed to the discrimination between concordant and discordant pairs. These results provide support for Strauss et al.'s suggestion that these three types of symptoms reflect three different functional processes in the development of schizophrenia.

AUTHOR SECTION

E

Eaves L see **Schieken RM**
Eaves LJ: Dominance alone is not enough. Behav Genet 1988 Jan;18(1):27–33
Eaves LJ see **Corey LA**
Eaves LJ see **Hewitt JK**
Edman G see **Hagenfeldt L**
Eicher JC see **Petit A**
Elkazen N see **Jauniaux E**
Eriksson AW see **Bressers WM**
Eriksson AW see **Fellman JO**
Eriksson AW see **Pronk JC**

F

Faber O see **Beck-Nielsen H**
Fabsitz R see **Carmelli D**
Fawcett DP see **Cobb RA**
Feingold M see **Kaminer Y**
Feldhoff C see **Gilli G**
Fellman JO, Eriksson AW: Statistical models for the twinning rate. Acta Genet Med Gemellol (Roma) 1987;36(3):297–312
Linear regression models are used to explain the variations in the twinning rates. Data sets from different countries are analysed and maternal age, parity and marital status are the main regressors. The model building technique is also used in order to study the secular decline in the twinning rate. Linear regression technique makes it possible to compare the effect of different factors but the method requires sufficiently disaggregated data.
Ferrell RE see **Zubenko GS**
Filly RA see **Townsend RR**
Finer NN see **Ryan CA**
Finke FL see **Cardwell MS**
Flanagan SD see **Holzman PS**
Floderus B, Cederlöf R, Friberg L: Smoking and mortality: a 21-year follow-up based on the Swedish Twin Registry. Int J Epidemiol 1988 Jun; 17(2):332–40
Data on smoking and mortality from the Swedish Twin Registry were analysed as a prospective cohort study and as a co-twin control study. The twin method involves control of genetic and early environmental factors and thereby a general control of the nested factors that may act as confounders, adjustments not obtainable in ordinary study designs. In the cohort analyses the following relative risks for cigarette smokers were found for men and women, respectively: death all causes 1.4 (90% CI 1.3; 1.5), 1.4 (1.3; 1.5), CHD death 1.4 (1.3; 1.7), 1.6 (1.3; 2.0), lung cancer 19.7 (9.1; 42.7), 5.1 (3.0; 8.7), and other cancers 1.2 (1.0; 1.4), 1.2 (1.0–1.4). The comparison of deaths in cigarette-smoking twins and their non-smoking co-twins gave the following risk estimates for monozygotic (MZ) men: death all causes 1.6 (35 versus 22 first deaths), CHD death 2.8 (11 versus 4). The results for dizygotic (DZ) males and for females were in agreement. Four lung-cancer deaths occurred in MZ and 17 in DZ smoker twins while the non-smoker co-twins showed two such cases (DZ women). Other cancer deaths did not occur more often in the smoker than in the non-smoker twin. The impact of smoking on mortality, CHD death and lung cancer is also valid among smoking discordant twins.
Flodérus-Myrhed B see **Tysk C**
Ford MH see **Bishop DT**
Forsyth K, Seshadri R, Matthews C, Heddle R: Wiskott-Aldrich syndrome in identical twins: abnormality of CD4 and CD8 positive lymphocytes. Aust N Z J Med 1988 Feb;18(1):73–6
The rare occurrence of Wiskott-Aldrich syndrome (WAS) in identical twin brothers without a preceding family history of the disease is described. Investigation into the nature of the lymphocyte abnormality in the surviving twin suggests that the frequency of T cell clone forming cells is markedly decreased. Further analysis of the T cell clones showed a deficiency of CD8 positive cytotoxic/suppressor cells. This alteration may be an underlying mechanism in the development of some of the clinical manifestations of WAS.
Fowler SA, Riegler H: Language training for generalization. Ups J Med Sci [Suppl] 1986; 44:208–11
This paper presents a classroom-based language intervention program for preschool children with language delays or deficits. A major goal of the program is to ensure that children acquire missing skills through daily speech therapy and that they actively generalize these skills from therapy times to other classroom activities. This paper presents data collected with two children during daily speech therapy sessions and daily play activities. Instances in which the children generalized new language acquired in therapy to play activities will be discussed as well as instances in which the children failed to generalize new language. In addition, the influence of peer and teacher language usage on children's language production will be discussed. Finally, recommendations to enhance generalization of language skills within and across school settings will be presented.
Frants RR see **Pronk JC**
Freedman R, Nagamoto H: Brain evoked potentials as predictors of risk. Recent Dev Alcohol 1988; 6:323–31
Sensory evoked potentials are capable of demonstrating brain sensory and cognitive function. These measures of brain activity can be used to demonstrate genetic influences in alcoholism. Auditory evoked potentials have been used successfully to demonstrate inherited differences in alcohol sensitivity. As in animal models, these inherited differences are limited to particular neuronal mechanisms and are not a general property of all neurons. The P300 wave, which is elicited in particular paradigms in which the subject is required to attend to specific stimuli, is smaller in subjects who are at high risk for alcoholism by virtue of having an alcoholic father. These subjects at risk for alcoholism show lower P300 amplitudes in paradigms in which they are given small doses of alcohol. P300 is also small in younger high-risk subjects who have never been exposed to alcohol. The evoked potential data are in general agreement with earlier electroencephalographic data that suggested the presence of electrophysiological abnormalities in the children of alcoholics.
Friberg L see **Floderus B**
Friedman S see **Hod M**
Fujimoto S see **Tanaka T**

G

Gaist G, Piazza G, Galassi E, Cavina C, Salvioli GP: Craniopagus twins. An unsuccessful separation and a clinical review of the entity. Childs Nerv Syst 1987; 3(6):327–33
Craniopagus twinning is an extremely uncommon birth defect with an estimated incidence of 4–6 every

10 million births. The most complex and challenging issue is the feasibility of surgical separation, which involves not only technical but also socioethical problems and requires strict multidisciplinary cooperation between pediatricians, neuroradiologists, anesthesiologists, and plastic and neurological surgeons. The authors report a case in which separation was followed by the death of both twins and stress the importance, from the surgical and prognostic viewpoints, of the degree of vascular connections between the major dural sinuses. We propose a classification into three types according to severity.

Galassi E see **Galst G**

Gall SA see **Wenstrom KD**

Gallagher PR see **Hayman LL**

Garver KL see **Lin AE**

Gedda L, Brenci G, Laurenti C, De Dominicis C, Mattioli D: Teratomorphism in the urinary tract of MZ twins: short case report.
Acta Genet Med Gemellol (Roma) 1987;36(4):565-6

Gedda L see **Villatico Campbell S**

Ger E see **Askins G**

Geusens P see **Dequeker J**

Gevers G see **Dequeker J**

Ghai V, Vidyasagar D: Morbidity and mortality factors in twins. An epidemiologic approach.
Clin Perinatol 1988 Mar;15(1):123-40 (62 ref.)
Some epidemiologic characteristics of twin pregnancies and twin infants have been reviewed. We found that twins are prone to be born prematurely and have lower birth weights than their singleton counterparts after 30 to 34 weeks of gestation. Twins are also more prone to birth asphyxia, hyaline membrane disease, respiratory disorders, and seizures. Congenital anomalies and nonrespiratory morbidity were not found to be increased in twins. Twins have a six times higher perinatal mortality rate than do singletons. This is accounted for by prematurity in the main. A part of the excess mortality in twins is accounted for by a higher mortality in larger, near-term twins. Efforts should be directed toward decreasing the incidence of prematurity in twins and understanding and managing the problems of near-term twins better.

Ghidini A see **Lockwood C**

Gilger JW see **Ho HZ**

Gilli G, Donckerwolcke RA, Feldhoff C, De Santo NG, Callis L, Van Acker KI: Growth disparity in monozygotic twins discordant for chronic renal disease. Int J Pediatr Nephrol 1987 Oct-Dec; 8(4):203-6
Growth data in seven pairs of monozygotic twins only one twin affected by renal disease are given. The data suggest that renal disease not only retards normal growth and sexual maturation but also affects growth potential. Therefore evaluation of the effect of renal disease and its treatment on growth should include estimation of the genetic potential for growth.

Goldberg HI see **Atlas SW**

Goldstein DJ see **Moore CA**

Goswami HK: Twinning and inbreeding in India: the fraternal component.
Acta Genet Med Gemellol (Roma) 1987;36(3):343-7
It is suggested that the rise in a population depends not only on the nu number of females per thousand males, their fecundability, and the survival of offspring (mean live births), but also on the genetic background or inbreeding status of the fetuses. Abortions and stillbirths add to the interference. A hypothetical formula has been devised (Formula: see text), where Mb = mean birth rate, G = growth percentage of population sample from preceding Census, F = inbreeding coefficient, Sa = Stillbirths + abortions, and Sr = Sex ratio. It is intriguing that the product, being termed Fraternal Component (FC), is found to be almost equal to the DZ twinning rate of the population sample. Should that be confirmed, one could perhaps estimate the DZ twinning rate by an altogether new approach.

Gould AB Jr see **Arnold RW**

Gould JB, Lee AF, Morelock S: The relationship between sleep and sudden infant death.
Ann N Y Acad Sci 1988;533:62-77
Infants epidemiologically at high risk for SIDS demonstrate a variety of abnormalities in sleep-state organization, maturation, and sleep-state modulation of cardio-respiratory control mechanisms. These involve both the REM and quiet-sleep states and are seen in twins who have had no evidence of clinical cardio-respiratory compromise during infancy as well as in near-miss infants who have suffered serious cardio-respiratory failure. Although these infants have higher levels of REM sleep around 40 weeks, of special concern is the decrease in the maturation of the quiet system, which becomes evident after 44 weeks, and the reported quiet-sleep abnormalities in reflex control of respiration and arousal. The source of these abnormalities is environmental rather than genetic and most likely occurs prenatally. During the critical period for SIDS, infant sleep begins to coalesce from a series of naps to more prolonged night time sleep periods that last up to 8 hours. We believe that the ability to maintain physiologic homeostasis during prolonged sleep is a challenge facing infants who are epidemiologically at risk for sudden infant death. The challenge facing sleep research is the more complete understanding of the relationship between prolonged inhibition, homeostasis, arousal, and development.

Grahame-Smith HN, Ward PS, Jones RD: Finnish type congenital nephrotic syndrome in twins: presentation with pyloric stenosis. J R Soc Med 1988 Jun; 81(6):358

Grammatico P see **Mastroberardino G**

Grande F see **Ramón y Cajal J**

Grant DB see **Oley CA**

Gray IP see **Heaton DA**

Grossman RI see **Atlas SW**

Gualtieri R see **Mastroberardino G**

Gurley LD see **Cardwell MS**

H

Hackney DB see **Atlas SW**

Hagenfeldt L, Oxenstierna G, Alfredsson G, Edman G, Iselius L, Sedvall G: A twin study of amino acid concentrations in cerebrospinal fluid.
J Psychiatr Res 1988;22(1):51-6
The concentrations of amino acids in the cerebrospinal fluid (CSF) were measured in pairs of healthy mono- and dizygotic twins. Intraclass correlations were calculated. Genetic and cultural heritabilities were estimated using a path analytical model. CSF levels of glycine, tyrosine and arginine were shown to be influenced by genetic factors. Genetic variation was also shown for serine, alpha-aminobutyrate and leucine. The results were compared with results from a genetic analysis of the amino acids in serum.

Hajek P see **Schindler E**

Hales CN see **Heaton DA**

Hamman JE see **Blane CE**

AUTHOR SECTION

Hankins CT see **Wiswell TE**
Harmon JP see **Moore CA**
Haroian K see **Lykken DT**
Harrop R see **Clark CM**
Hausmanowa-Petrusewicz I see **Rowland LP**

Hayakawa K, Shimizu T: Blood pressure discordance and lifestyle: Japanese identical twins reared apart and together. Acta Genet Med Gemellol (Roma) 1987;36(4):485-91
A total of 198 pairs of monozygotic twins reared apart and together were surveyed on their lifestyle and blood pressure through mailed questionnaires. The age of the subjects ranged from 47 to 87 years. The intrapair concordance rate on blood pressure increased from 51% (age of separation 0-5) to 78% (age of separation 26 and over) as the age of separation advanced. The concordance rate on occupation was 59% at the age of separation 0-5 and 87% at the age of separation 26 and over. The intrapair concordance on the food intake (egg, meat, fish, milk and salty seasoning) was positively correlated with the age of separation. Hayshi's quantification theory III (multivariate analysis) was used to clarify the lifestyle pattern in 39 MZ pairs discordant on blood pressure. There were three factors (meat, milk and occupation) which were closely related with each other in the "non-hypertensive" twins, while lifestyle were not patterned in the "hypertensive" twins. The concordance rate of these three items increased along with the rise of concordance rate of blood pressure as the age of separation advanced.

Hayakawa K: Smoking and drinking discordance and health condition: Japanese identical twins reared apart and together.
Acta Genet Med Gemellol (Roma) 1987; 36(4):493-501
A total of 543 like-sex pairs of twins (407 MZ, 136 DZ) were sent mailed questionnaires on cigarette smoking, alcohol drinking and health conditions. The observed concordance rate for alcohol drinking was significantly higher than expected in both MZ and DZ pairs. The observed concordance rate for cigarette smoking was significantly higher than expected in the MZ, but not the DZ pairs. The observed rate of intrapair concordance for drinking was significantly higher than expected even in MZ pairs reared apart from infancy or very early childhood. Higher life satisfaction was observed more often in the higher alcohol consumers than in the lower consumers among MZ pairs discordant for alcohol drinking, while earlier onset of presbyopia was observed more often in the lower consumers. Physical symptoms, especially pains in the upper extremities, were reported more often by higher alcohol consumers than by lower consumers in the MZ pairs discordant for drinking.

Hayman LL, Meininger JC, Stashinko EE, Gallagher PR, Coates PM: Type A behavior and physiological cardiovascular risk factors in school-age twin children. Nurs Res 1988 Sep-Oct;37(5):290-6
The relationship of Type A behavior pattern (TABP) and its components to physiological cardiovascular disease (CVD) risk factors of blood pressure, obesity, and lipids and lipoproteins was examined in 112 pairs of twin children. Blood pressure, triceps skinfold thickness, and fasting venous specimens for lipid profiles were collected during a home visit. Teachers rated children's Type A-B behaviors using the Matthews Youth Test for Health (MYTH) (Matthews & Angulo, 1980). For statistical analyses, one member of each twin pair was assigned to Group I and the co-twin to Group II. In Groups I and II, significant, p less than or equal to .01, negative correlations between the impatience-aggression component of TABP and atherogenic lipids were observed before and after covariate adjustments. Children were classified as MYTH Type A or B on the basis of a median-split. Marginally significant differences (B greater than A) were found between the mean lipid levels of Type A and Type B children. No significant A-B differences in blood pressure or measures of obesity were observed in either group. Multivariate analysis of variance results suggested that lipid profiles in Group I differed significantly, p less than or equal to .02, by Type A-B classification. The results of this study suggest that TABP and its components are not positively associated with physiological risk factors for CVD; and the impatience-aggression component of TABP is associated with lower levels of atherogenic lipids.

Heath AC see **Martin NG**

Heaton DA, Millward BA, Gray IP, Tun Y, Hales CN, Pyke DA, Leslie RD: Increased proinsulin levels as an early indicator of B-cell dysfunction in non-diabetic twins of type 1 (insulin-dependent) diabetic patients. Diabetologia 1988 Mar;31(3):182-4
Glucose tolerance and insulin secretion were studied in two groups of non-diabetic identical twins of recently-diagnosed Type 1 (insulin-dependent) diabetic patients: (1) a group of 5 twins with islet cell antibodies, and (2) a group of 6 twins without. Despite similar fasting glucose, insulin and C-peptide concentrations both groups of twins had significantly higher fasting proinsulin concentrations than the control group (p less than 0.05). The twins with complement-fixing islet cell antibodies had reduced glucose tolerance and clearance, whilst the twins without islet cell antibodies did not. Neither group of twins showed any abnormality in insulin, C-peptide or proinsulin response to oral or intravenous glucose. We conclude that increased fasting proinsulin levels precede abnormalities of insulin secretion, and are an early indication of minor B-cell damage in these twins irrespective of their risk of developing diabetes.

Hecht T, Henke M, Schempp W, Bross KJ, Löhr GW: Acute lymphoblastic leukemia in adult identical twins. Blut 1988 Jun;56(6):261-4
The development of acute lymphoblastic leukemia (c-ALL) in identical twins is reported. The first born had ALL in 1982 and bone marrow transplantation was performed in first complete remission (CR) from his healthy twin-brother the same year. The bone marrow donor developed ALL in 1985; he received an autologous bone marrow transplantation in first CR in 1986. Unfortunately, both patients relapsed in 1986. Cytogenetic studies of the first born revealed multiple chromosomal abnormalities and a marker chromosome whereas the second patient had a Philadelphia chromosome. Genetic reasons or exposure to leukemogenic agents may be responsible for the onset of these leukemias.

Heddle R see **Forsyth K**
Henke M see **Hecht T**

Hewitt JK, Eaves LJ, Neale MC, Meyer JM: Resolving causes of developmental continuity or "tracking." I. Longitudinal twin studies during growth. Behav Genet 1988 Mar;18(2):133-51

Hewitt JK, Carroll D, Sims J, Eaves LJ: A developmental hypothesis for adult blood pressure. Acta Genet Med Gemellol (Roma) 1987; 36(4):475-83
Observed increases in phenotypic variance for blood pressure during adulthood are a predictable

AUTHOR SECTION

consequence of an a priori model for developmental change and continuity previously applied to cognitive development. The implications of this model for genetic and environmental covariances depend on the mechanism which maintains developmental continuity. Using data from young adult twins and their parents, it is shown how traditionally estimated genetic and environmental parameters may be reinterpreted in the light of the developmental model. Illustrative data suggest a hypothesis that genetic effects on blood pressure are largely temporally pleiotropic, acting consistently but not cumulatively throughout adulthood, while environmental influences act haphazardly but their effects are transmitted forward with high fidelity.

Hewitt JK see **Sims J**

Ho HZ, Gilger JW, Decker SN: A twin study of Bannatyne's "genetic dyslexic" subtype.
J Child Psychol Psychiatry 1988 Jan;29(1):63–72
Bannatyne's proposed "genetic dyslexic" subtype of reading disability (RD) was evaluated using data obtained from 60 (30 monozygotic and 30 dizygotic) pairs of affected twins (in which at least one member of each pair has a reading disorder) and 60 pairs of control twins. The predicted spatial greater than conceptual greater than sequential pattern of means was found to be reliable and specific to the RD sample. While this study does not provide conclusive evidence on the genetic etiology of the proposed subtype, our results do indicate that individuals with this particular profile may constitute a specific subtype of reading disability.

Ho HZ, Decker SN: Cognitive resemblance in reading-disabled twins. Dev Med Child Neurol 1988 Feb;30(1):99–107
This study examined the cognitive abilities of 60 pairs of reading-disabled twins aged between eight and 18 years (at least one member of each twin pair had been diagnosed as having a reading disability). Principal component analysis of nine cognitive tests yielded three readily interpretable composites of cognitive abilities—reading, symbol-processing speed and sequential memory. Scores on these three cognitive composites were significantly lower for the disabled readers than for normal readers. Individual differences in these cognitive composites within the reading-disabled twin sample were found to be due to genetic differences. Furthermore, deficits in the reading composite for the reading-disabled sample appear to be heritable.

Hod M, Merlob P, Friedman S, Ovadia J: Single intrauterine fetal death in monoamniotic twins due to cord entanglement. Clin Exp Obstet Gynecol 1988;15(3):63–5
A case of monoamniotic twin intrauterine fetal death of one of the fetuses is presented. The death was most probably caused by cord entanglement and thrombosis. A discussion on incidence, etiology and pathology is included.

Hohberger GG see **Arnold RW**

Holcomb GW 3d see **O'Neill JA Jr**

Holzman PS, Kringlen E, Matthysse S, Flanagan SD, Lipton RB, Cramer G, Levin S, Lange K, Levy DL: A single dominant gene can account for eye tracking dysfunctions and schizophrenia in offspring of discordant twins. Arch Gen Psychiatry 1988 Jul; 45(7):641–7
Eye movement dysfunctions (EMDs), detectable during smooth pursuit, occur in a majority of schizophrenics and in 45% of their first-degree relatives. Previous data suggest that they represent a biologic marker for schizophrenia. To determine the mode of transmission of the schizophrenia-EMD complex, the eye movements of offspring of monozygotic and dizygotic twins were recorded. One group of twins was discordant for schizophrenia; the other group for manic depression or reactive psychosis. The data suggest that EMDs and at least some schizophrenias can be considered expressions of a single underlying trait that is transmitted by an autosomal dominant gene.

Holzman PS see **Matthysse S**

Hrubec Z see **Allen G**

Hsieh FJ, Chang DY, Chen HY, Huang LS, Lu CC, Huang DS: Antenatal diagnosis of conjoined twins. Taiwan I Hsueh Hui Tsa Chih 1988 Mar;87(3):393–7

Hsieh FJ see **Huang LW**

Huang DS see **Hsieh FJ**

Huang LS see **Hsieh FJ**

Huang LW, Hsieh FJ, Yu TK, Chen HY, Lee TY: Bart's hydrops fetalis in one of the dizygotic twins: report of a case. Taiwan I Hsueh Hui Tsa Chih 1988 Mar;87(3):398–401

Hustin J see **Jauniaux E**

I

Iacono WG see **Lykken DT**

Ichinoe K see **Tanaka T**

Ifere OA see **Sathiakumar N**

Imaizumi Y: The recent trends in multiple births and stillbirth rates in Japan.
Acta Genet Med Gemellol (Roma) 1987; 36(3):325–34
The twinning rate remained nearly constant up to 1968, then decreased in 1974 and gradually increased with the year. The triplet birth rate remained nearly constant up to 1974, then increased up to 1982, where the rate was 1.8 times higher than in 1968, and decreased thereafter. On the other hand, the quadruplet birth rate remained nearly constant up to 1968, was eightfold in 1975, then decreased until 1984 and suddenly increased to 8 per million births in 1985. The higher multiple birth rates since 1974 was attributed to the higher proportion of mothers treated with ovulation-inducing hormones in Japan. The stillbirth rates decreased to 2/5 for male twins and to 1/3 for female twins during the 25-year period from 1960, to 2/5 for triplets and to 1/5 for quadruplets during the 34-year period from 1951.

Ingber A see **Kremer I**

Ionasescu R see **Ionasescu V**

Ionasescu V, Ionasescu R, Searby C, Burns T: Becker muscular dystrophy recombinant DNA studies in identical twins. Muscle Nerve 1988 Apr;11(4):287–90
Two identical twins with Becker Muscular Dystrophy are reported. Both twins had the same red cell types for ABO, Rh, CDE, MNSs, Kelly, Lewis, Duffy, and Kidd. HLA typing detected the same antigens in both twins: A1, A26, B8, B17, DR3, DR7. Family history was negative. The twin patients showed identical haplotypes that were different from the haplotypes of the normal male members of the family. The sister of the twins showed a recombinant X chromosome. The informative haplotype with respect to the gene of BMD, present in the twins, was ascertained in their mother as well. Our findings strongly suggest that a mutation has occurred either in the mother or in the twins.

Iselius L see **Hagenfeldt L**

Ives E see **Ryan CA**

J

James WH: Twinning rate in Finland [letter]

AUTHOR SECTION

Neurology 1988 Jun;38(6):997

James WH: Further evidence in support of the hypothesis that one cause of multiple sclerosis is childhood infection. Neuroepidemiology 1988; 7(3):130–3
Consideration is given to: (1) the multiple sclerosis (MS) incidence rate in dizygotic (DZ) twins, (2) the DZ twin concordance rate in MS, (3) MS and birth order and (4) MS rates on islands. All four sorts of data are consistent with (indeed would be predicted by) the hypothesis that MS is a sequel of late (rather than early) exposure to childhood infection.

Jardine R see **Martin NG**

Järnerot G see **Tysk C**

Jauniaux E, Elkazen N, Leroy F, Wilkin P, Rodesch F, Hustin J: Clinical and morphologic aspects of the vanishing twin phenomenon. Obstet Gynecol 1988 Oct;72(4):577–81
The pathologic findings in placentas from ten multiple gestations complicated by the so-called vanishing twin phenomenon were studied to confirm the ultrasonographic evidence. Five pregnancies resulted from in vitro fertilization and embryo transfer, and five conceptions were spontaneous. The pregnancies were studied by repeat ultrasound examinations between five and 12 weeks' gestation. First-trimester bleeding was the only clinical sign of this phenomenon. Postpartum evidence of the vanishing twin phenomenon was found in five cases. Morphologically, the lesions were characterized by well-delineated plaques of perivillous fibrin deposition, associated in one case with embryonic remnants. This focal degenerative change of the placental mass, which also exists in about 25% of placentas from uncomplicated term pregnancies, may be the only clue to the disappearance of one conceptus.

Jimenez D see **Ramón y Cajal J**

Johnson MZ see **Blanc CE**

Johnson WG see **Rowland LP**

Jones RD see **Grahame-Smith HN**

Juabeh II, Thalji A, Dudin A: Meckel-Gruber syndrome in one of nonidentical twins: short case report. Acta Genet Med Gemellol (Roma) 1987; 36(4):571–2

Juntunen J see **Matikainen E**

K

Kaminer Y, Feingold M, Lyons K: Bulimia in a pair of monozygotic twins. J Nerv Ment Dis 1988 Apr; 176(4):246–8
Bulimia was diagnosed in a pair of monozygotic twins and was manifested in both sisters concurrently through their adolescent years. After a later separation only one continued to manifest the disorder with additional associated features of the bulimic syndrome. The case is presented and suggestions regarding the roles of environmental and genetic factors in the development and course of the disorder are discussed.

Kaprio J see **Marttila RJ**

Kaprio J see **Matikainen E**

Kaprio J see **Teikari JM**

Kawana H see **Miura T**

Kerremans J see **Schweizer P**

Klonoff H see **Clark CM**

Koop CE see **O'Neill JA Jr**

Koskenvuo M see **Marttila RJ**

Koskenvuo M see **Matikainen E**

Koskenvuo M see **Teikari JM**

Kostense PJ see **Bressers WM**

Kouvalainen K, Moilanen I: Intrapair similarity of immunoglobulin levels in twins.
Acta Genet Med Gemellol (Roma) 1987; 36(4):509–15
Levels of immunoglobulins IgG, IgA, IgM and IgE were determined in 8 MZ and 14 DZ twin pairs at the ages of 6–11 years, 12–17 years and 15–20 years. Intrapair similarity in immunoglobulin levels was found to be higher in the MZ than in the DZ twins, especially in the case of immunoglobulins IgA and IgM.

Kremer I, Ingber A, Ben-Sira I: Corneal metastatic calcification in Werner's syndrome.
Am J Ophthalmol 1988 Aug 15;106(2):221–6
We examined twin sisters with a clinical picture typical of Werner's syndrome. Both had undergone bilateral cataract extraction, one at 39 and one at 36 years of age, and had subsequently developed bilateral corneal metastatic calcification within a period of one to two years. In one twin, this keratopathy was associated with hypercalcemia. Each of the twins underwent penetrating keratoplasty in one eye, which was complicated by recurrence of metastatic calcification in a previously normal and clear corneal graft.

Kringlen E see **Holzman PS**

L

Lahmeyer HW: Sleep in craniopagus twins. Sleep 1988 Jun;11(3):301–6
Two craniopagus twins sharing some common cerebral circulation but no common brain structures were recorded polygraphically and continuously observed for behavioral sleep states and wakefulness. The observations lasted 9.5 h when the twins were 12 weeks postgestation and for 24 h at 16 weeks post gestation, or approximately 4 weeks postterm. Sleep onsets were synchronous 67% of the time (+/- 5 min), but arousals were synchronous only 38% of the time (+/- 5 min) at 16 weeks postgestation. The recordings reported here are the longest ever made of craniopagus twins. This report is consistent with some interdependence of the sleep of each twin on the other. Possible reasons for this are discussed.

Lancet M see **Blickstein I**

Lange K see **Holzman PS**

Laurenti C see **Gedda L**

Lee AF see **Gould JB**

Lee L see **Chandler JJ**

Lee M see **Carmelli D**

Lee TY see **Huang LW**

Leighton BC see **Billing H**

Lenzenweger MF see **Dworkin RH**

Leopold GR see **Pretorius DH**

Leroy F see **Jauniaux E**

Leslie RD see **Heaton DA**

Levick SE see **Dworkin RH**

Levin S see **Holzman PS**

Levinson DF: Twin studies and genetic models of schizophrenia [letter] Arch Gen Psychiatry 1988 Sep;45(9):876–8

Levy DI, del Rio C, Stephens DS: Meningococcemia in identical twins: changes in serum susceptibility after rifampin chemoprophylaxis. J Infect Dis 1988 May;157(5):1064–8

Levy DL see **Holzman PS**

Lewitter FI see **Tishler PV**

Lin AE, Garver KL: Monozygotic Turner syndrome twins--correlation of phenotype severity and heart

defect. Am J Med Genet 1988 Mar;29(3):529–31
We report on monozygotic twins with Turner syndrome (45,X) with discordant phenotypes. One twin had severe neck webbing and extremity edema and died of severe coarctation of the aorta. The other twin had fewer craniofacial anomalies and no congenital heart defect, suggesting a pathogenetic relationship between cardiac abnormality and phenotype severity.

Lin LL, Chen CJ: Twin study on myopia. Acta Genet Med Gemellol (Roma) 1987; 36(4):535–40
In order to reassess the relative importance of genetic and environmental factors in the development of myopia in Chinese schoolchildren, 90 pairs of MZ and 36 pairs of like-sex DZ twins were enrolled for detailed ophthalmological examination about their ocular refractions. Corneal curvatures and axial lengths were also measured. With equivalent settings of the range for concordance, corneal curvatures showed higher concordance rate (84%) than ocular refractions (65%) and axial lengths (59%) in MZ twins. F-test on the intrapair variances between MZ and DZ twins revealed a significant hereditary role in determining the ocular refraction and its optical components. The degree of genetic determination was expressed by heritability indices, which were derived from intraclass correlation coefficients. The diversity of sample ages and refractions, while making the obtained data difficult to further explore the gene-environment interaction, led to the observation of more intrapair differences with age and myopic progression in MZ twins.

Lin TM see **Chen CJ**
Lindberg E see **Tysk C**
Linder-Aronson S see **Billing H**
Lipton RB see **Holzman PS**
Lobo RA see **Paulson RJ**
Lockwood C, Ghidini A, Romero R: Amniotic band syndrome in monozygotic twins: prenatal diagnosis and pathogenesis. Obstet Gynecol 1988 Jun;71(6 Pt 2):1012–6
Amniotic band syndrome is a well-described disorder lacking a precise definition or a scientifically validated hypothesis of pathogenesis. The widely accepted "exogenous" theory suggests that early amniotic rupture leads to the formation of pathologic amniotic strands, which then induce nonanatomic fetal abnormalities. This paradigm appears to be challenged by observations that amniotic band syndrome occurs in monozygotic twin gestations. The exclusive development of amniotic band syndrome in monozygotic versus dizygotic twin gestations, the description of early amniotic rupture in one sac of a dizygotic twin gestation without subsequent fetal abnormalities, and the paradoxical observations of discordance in monoamniotic and concordance in diamniotic twin gestations, fail to support an "exogenous" etiology for amniotic band syndrome.

Löhr GW see **Hecht T**
Lope de Haro H see **Beller U**
Louis P see **Petit A**
Louwsma GI see **Blane CE**
Lu CC see **Hsieh FJ**
Luciani L see **Andreoli A**
Lundström A see **Billing H**
Lupien P see **Bouchard C**
Lupien PJ see **Després JP**
Lykken DT, Iacono WG, Haroian K, McGue M, Bouchard TJ Jr: Habituation of the skin conductance response to strong stimuli: a twin study. Psychophysiology 1988 Jan;25(1):4–15
Lykken DT see **Tellegen A**
Lyons K see **Kaminer Y**

M

Macaso T see **Paulson RJ**
McCulloch K: Neonatal problems in twins. Clin Perinatol 1988 Mar;15(1):141–58 (110 ref.)
Twins have higher rates of perinatal mortality, prematurity and its complications, low birth weight, intrauterine growth retardation, congenital anomalies, and long-term developmental morbidity. Monozygotic twins have lower birth weights and higher rates of congenital anomalies than dizygotic twins, which suggests that the etiology of these problems may be related to the monozygotic twinning process. Monochorionic twins have higher rates of perinatal mortality, intrapair birth weight discrepancies, and intrauterine growth retardation than dichorionic twins, which suggests that these complications may be related to placental vascular anastomoses. Monochorial vascular communications also can be responsible for twin transfusion syndrome, disseminated intravascular coagulation at birth and disruptive structural defects. Followup studies indicate that twins remain at a disadvantage for subsequent physical growth and intellectual achievement. The management of twins is challenging and fascinating because of the wide range of perinatal, neonatal, developmental, and parenting problems that can occur.

MacFadyen UM** see **Young ID
McGue M see **Lykken DT**
MacKay EH see **Young ID**
McManus BM see **Moore CA**
McWilliam J see **Billing H**
Martin NG, Jardine R, Andrews G, Heath AC: Anxiety disorders and neuroticism: are there genetic factors specific to panic? Acta Psychiatr Scand 1988 Jun; 77(6):698–706
Data from 2,903 adult same-sex twin pairs were analysed to investigate whether the genetic determinants of symptoms of panic are different from those underlying the neuroticism personality trait. Our results suggest that much of the genetic variation influencing the physical symptoms associated with panic is of the nonadditive type, perhaps due to dominance or epistasis. In both sexes these nonadditive genetic effects on physical symptoms influence the reporting of "feelings of panic". In males they also account for as much as half the genetic variance in neuroticism. The remainder is additive and also accounts for the balance of genetic variation in "feelings of panic". In females genetic variance in neuroticism is entirely additive but is not an important source of covariation with either panic symptom. Thus, symptoms of panic seem to be shaped in part by unique genetic influences which do not affect other anxiety symptoms. That a substantial part of the genetic variance in neuroticism in males may be due to the nonadditive effects on physical symptoms of panic may help to explain the rather low correlation between the genetic influences found to affect neuroticism in males and their counterparts in females.

Martin W see **Clark CM**
Martinez H see **Ramón y Cajal J**
Marttila RJ, Kaprio J, Koskenvuo M, Rinne UK: Parkinson's disease in a nationwide twin cohort. Neurology 1988 Aug;38(8):1217–9

AUTHOR SECTION

The Finnish Twin Cohort includes all Finnish same-sexed twins born before 1958 and alive in 1967; the number of individuals alive in 1975 was 33,247. We performed a search for cases with Parkinson's disease among this cohort by linking the Twin Cohort Register with the Finnish Hospital Discharge Register and the Finnish Sickness Insurance Register. We ascertained altogether 42 cases of Parkinson's disease occurring in 41 twin including 18 monozygotic pairs, 14 dizygotic pairs, and nine pairs of undetermined zygosity. Only one dizygotic pair was concordant for Parkinson's disease; all other pairs were discordant. In 1981, the expected number of cases among the Twin Cohort, calculated according to the age- and sex-specific prevalence rates of Parkinson's disease in Finland, was 33. At the same time, the observed number of patients alive was 35. This study, further substantiating the low concordance for Parkinson's disease in monozygotic as well as in dizygotic twins and indicating that the prevalence of Parkinson's disease in twins compares with the prevalence in the general population, suggests that Parkinson's disease is an acquired disease not caused by a hereditary process.

Mastroberardino G, Sciarra A, Gualtieri R, Di Fusco C, Grammatico P, Del Porto G: Unusual vascular malformation of the kidney in both twins of a monozygotic pair: short case report.
Acta Genet Med Gemellol (Roma) 1987; 36(4):567–70
A case of double bilateral renal vessels in both twins of a MZ pair is reported for the first time. Even in non-twins, the anomalies reported so far involved the inferior polar arteries in agreement with the embryological development. The two male twins, examined at the age of 14 years, had simultaneously developed a marked hypertension at the age of 7 years. Zygosity was determined by blood group and HLA analysis and various clinical tests were carried out to diagnose the condition. It is suggested that the anomaly is the result of a genetically induced early block in embryonic development.

Matikainen E, Juntunen J, Koskenvuo M, Antti-Poika M, Kaprio J: Cardiovascular reflexes in monozygotic twins discordant for exposure to organic solvents.
Acta Genet Med Gemellol (Roma) 1987;36(4):503–7
Eighteen pairs of monozygotic twins discordant for long-term occupational exposure to organic solvents were examined for disturbances of cardiovascular reflexes. All of the subjects were asymptomatic, and considered themselves healthy. No significant differences were observed between the exposed and the nonexposed twins. The finding suggests that occupational solvent exposure at these particular levels is unlikely to cause disturbances of the autonomic nervous function.

Matsuzaki N see **Tanaka T**

Matthews C see **Forsyth K**

Matthysse S, Holzman PS: Comment on Berenbaum, Oltmanns, and Gottesman (1985): "Formal thought disorder in schizophrenics and their twins".
J Abnorm Psychol 1988 Feb;97(1):105–9

Matthysse S see **Holzman PS**

Mattioli D see **Gedda L**

Mbamali EI see **Sathiakumar N**

Meikle AW, Stringham JD, Woodward MG, Bishop DT: Heritability of variation of plasma cortisol levels.
Metabolism 1988 Jun;37(6):514–7
Heritability of the variation of the plasma concentrations of total and unbound cortisol, cortisol binding globulin (CBG), and dehydroepiandrosterone sulfate (DHEA-S) was investigated in 20 monozygotic (MZ) and 20 dizygotic (DZ) male twin pairs. Three plasma samples collected between 8 AM and 9:30 AM were pooled for the assays. Heritability was calculated from the intraclass correlation [2(rMZ - rDZ)]. The mean age, total and unbound cortisol, CBG, and DHEA-S were not significantly different between the MZ and DZ groups of twins. The heritability index for variability of the plasma content of steroids was 45.4% (p less than .05) for total cortisol, 50.6% (P less than .05) for unbound plasma cortisol, 57.8% (P less than .05) for DHEA-S, and 32.4% (P greater than .05) for CBG. The data were analyzed by factor analysis, and heritability estimates were corrected for factors including age, smoking, drinking, exercise, and degree of obesity. These factors did not account for the variation in hormone values in twin pairs. Factor analysis of the three quantitative measurements, cortisol, percent free cortisol, and DHEA-S, provides no evidence for shared factors. The correlation coefficients between age and CBG and total and unbound plasma cortisol concentrations were insignificant. The correlation coefficient between total plasma cortisol levels and CBG was 0.57, which indicates that CBG accounts for 32% of the variation of plasma cortisol concentrations. The results suggest that genetic factors have a decided influence on the variation of the concentration of cortisol of DHEA-S in normal adult men.

Meikle AW, Stringham JD, Woodward MG, Nelson JC: Hereditary and environmental influences on the variation of thyroid hormones in normal male twins.
J Clin Endocrinol Metab 1988 Mar;66(3):588–92
Heritability of the variation of the plasma total and unbound T4 (free T4), T3, T4-binding globulin (TBG), and TSH concentrations was investigated in 15 monozygotic and 15 dizygotic male twin pairs. The variability in plasma of total (58%) and free T4 (72%) concentrations was significantly less (P less than 0.01) in the twin pairs than in unrelated men. Half of the variability of T3 (P less than 0.05), TBG (P less than 0.05), and TSH (P less than 0.05) was affected by influences shared by the twin pairs in both monozygotic and dizygotic twin pairs. The heritability index for variability of the plasma total T4 and free T4 was greater than 28% (P less than 0.05), and it was 25% or less for T3 and TBG. Variation in TBG accounted for less than 20% (P less than 0.001) of the variation in thyroid hormone concentrations. The results indicate that familial factors, which are affected by genetic and/or environmental factors, influence the variation of plasma TBG, TSH, T4, free T4, and T3 concentrations among normal men. Genetic factors influenced the variation in plasma T4 and free T4 levels.

Meikle AW see **Bishop DT**

Meininger JC see **Hayman LL**

Meltzer HY, Arora RC: Genetic control of serotonin uptake in blood platelets: a twin study.
Psychiatry Res 1988 Jun;24(3):263–9
Platelet serotonin (5HT) uptake was studied in 13 pairs of monozygotic (MZ) twins, 13 pairs of dizygotic (DZ) twins, and 14 pairs of unrelated normal volunteers. Significant intraclass correlations (ICC) in the affinity (Km) of 5HT uptake in the blood platelets of MZ and DZ twins and unrelated pairs were found. However, the ICC for maximum velocity (Vmax) was significant only in MZ and DZ twins. The ICC of the Vmax of 5HT uptake of MZ twins was significantly greater than that of DZ twins and unrelated pairs. This suggests that the Vmax of 5HT uptake in blood platelets is, in part, heritable.

AUTHOR SECTION

Thus, low platelet 5HT uptake (Vmax) in major depression and other disorders may be genetically determined.

Merlob P see **Hod M**
Merritt RJ see **Schwartz JB**
Messer LB see **Boraas JC**
Meuwissen SG see **Pronk JC**
Meyer JM see **Hewitt JK**
Meyers SM, Zachary AA: Monozygotic twins with age-related macular degeneration.
Arch Ophthalmol 1988 May;106(5):651-3
This clinical study, to the best of our knowledge, is the first report of severe age-related macular degeneration in both identical twins, documented as monozygotic by genetic testing. This suggests that genetic factors may be of primary importance in certain cases of age-related macular degeneration.
Millward BA see **Heaton DA**
Mirkin LD see **Moore CA**
Miura T, Kawana H, Nonaka K: Twinning in New England in the 17th-19th centuries.
Acta Genet Med Gemellol (Roma) 1987; 36(3):355-64
Vital records of Saybrook and Plymouth in New England from the 17th century were investigated. Among 8,562 maternities 81 twin maternities were found, the twinning rate being 0.95%. Twinning rate was low at the 1st and 2nd births as compared with the 3rd or later births, and was highest at the 7th and 8th births (1.6%). Twin maternity seemed to be a strong risk factor to terminate reproduction, particularly after 6 or more children had been delivered. The rate of mothers who had any other child ("fertile" mothers) at the 7th or later birth order was significantly lower for twin (13%) than for singleton maternities (63%). Twinning rate also varied by the size of offspring of a mother, and those mothers who had 5 or 6 children showed the highest twinning rate (1.3%). Those fertile mothers who had 7 or more children showed the lowest twinning rate (0.74%), although an exceptionally higher twinning rate was seen at their last births. Elongation of the last birth interval was observed for each group of every family size, and higher twinning rates were generally observed at their last births. Reduction in fecundity and rise in twinning rate seem to have occurred simultaneously at the last stage of the reproductive period of mothers, regardless of their family size.
Miura T see **Nakamura I**
Miura T see **Nonaka K**
Moegle A see **Paulson RJ**
Moilanen I see **Kouvalainen K**
Moldin SO see **Dworkin RH**
Moore CA, Buehler BA, McManus BM, Harmon JP, Mirkin LD, Goldstein DJ: Acephalus-acardia in twins with aneuploidy. Am J Med Genet [Suppl] 1987;3:139-43 (15 ref.)
Since 1963, 11 cases have been reported in which both the acardiac twin and the "normal" co-twin were studied cytogenetically. Aneuploidy or polyploidy was clearly identified in the acardiac twin in 7 cases and in the co-twin in 1 case. We report on 2 additional twin pairs in which aneuploidy was associated with acephalus-acardia. In both cases the "normal" co-twin had a Klinefelter (47,XXY) karyotype. Chromosome analysis in the 2 acardiac twins documented a 47,XXY constitution in one and 94,XXXXYY anomaly in the other. One of the "normal" co-twins also had the VATER association. Given these data we would recommend chromosome analysis of both members of a twin pair when one has acephalus-acardia.
Moore TR see **Pretorius DH**
Moorjani S see **Bouchard C**
Moorjani S see **Després JP**
Morelock S see **Gould JB**
Mortimer G: Zygosity and placental structure in monochorionic twins.
Acta Genet Med Gemellol (Roma) 1987; 36(3):417-20
To test the assumption that monochorionic twins are monozygotic, cord bloods from 12 sets of monochorionic twins were tested for a total of 16 red cell antigens. Discrepancies were noted among the minor blood groups in 3 of the 12 sets. The result of this pilot study strengthens the contention of others who have previously questioned the general acceptance that monochorionicity and monozygosity are synonymous.
Moskowitz WB see **Schieken RM**
Mosteller M see **Schieken RM**
Murray RM see **van den Akker OB**

N

Nadeau A see **Bouchard C**
Nadeau A see **Després JP**
Nagamoto H see **Freedman R**
Nakamura I, Amau Y, Nonaka K, Miura T: Alternate changes in birth seasonality of twins during 1971-1984 in Japan.
Acta Genet Med Gemellol (Roma) 1987; 36(3):373-80
Birth dates of 1,536 twin-pairs in 1971-1984 were collected from the members of an association of twins' mothers. The seasonal variation of twinning changed every 2-4 years. Years when twinning rate was higher in the summer-fall season (1971-72, 1976-77, 1982-84) and those when a peak of the rate was not observed (1973-75, 1978-81) appeared alternately. In years with a summer-fall peak, the elevation of twinning in the summer-fall season was detected consistently in both like- and unlike-sexed and in both MZ and DZ twin groups. The twinning seasonality in these years, however, was not evident in twin births of mothers who were born in May-July. These results suggest the possibility that seasonal factors which influence the twinning rate be not multiple-ovulation-inducing but probably abortion-inducing factors and most likely seasonally epidemic microbes.
Nakano R, Takemura H: Birth order in delivery of twins. Gynecol Obstet Invest 1988;25(4):217-22
A comparison between the first-born twin A and the second-born twin B was made in 103 pairs of twins delivered vaginally at the Department of Obstetrics and Gynecology, Wakayama Medical College, and at Kosaka Women's Hospital. The twins were compared for birth weight, 1- and 5-min Apgar scores, and umbilical blood gas and pH. Although the mean values showed no significant difference in birth weight between twin A and twin B, the 1- and 5-min Apgar scores were higher for twin A, and the incidence of low 1- and 5-min Apgar scores was greater for twin B. The B twins with a birth weight less than 2,500 g or delivered in the nonvertex presentation were especially at disadvantage. Blood gas analysis revealed a significant difference favoring twin A in umbilical PO2 and PCO2. The results of the present study suggest that there are differences at birth favoring the A twins despite similar perinatal mortality for both and that the B twins are at disadvantage.
Nance W see **Schieken RM**

AUTHOR SECTION

Nance WE see **Bodurtha J**
Nance WE see **Corey LA**
Neale MC: Handedness in a sample of volunteer twins. Behav Genet 1988 Jan;18(1):69–79
Neale MC see **Hewitt JK**
Neale MC see **van den Akker OB**
Nelson JC see **Meikle AW**
Nibroj-Dobosz I see **Rowland LP**
Nielsen J see **Bonnelykke B**
Nielsen OH see **Beck-Nielsen H**
Nijs J see **Dequeker J**
Nonaka K, Miura T: Incidence of twinning in London from 1581 to 1760.
Acta Genet Med Gemellol (Roma) 1987; 36(3):365–72
Baptism records of parishes in London and its vicinities from 1581 to 1760 (168,238 maternities) were investigated to estimate the twinning rate and its secular and seasonal variations. Total, estimated dizygotic (DZ), and estimated monozygotic (MZ) twinning rates were 1.1%, 0.8% and 0.3%, respectively. MZ twinning rate varied during the 18 decades, with a significantly low rate (0.11%) in the early 17th century (1621–1640). Significant seasonal variations of the twinning rate according to the month of baptism was observed in both DZ and MZ twins. DZ twins were born more frequently in spring and fall in general. Parish records obtained from four parishes near Manchester in England showed an inversed seasonal variation with peaks in winter and summer. An interpretation of this difference was discussed in a context of environmental factors. In the low MZ period, 1621–1640, MZ or like-sexed twins were apparently less frequent in summer (April to October). This result could be explained by a decrease of MZ twins and/or a greater loss of like-sexed DZ twins.
Nonaka K see **Miura T**
Nonaka K see **Nakamura I**
Norwood WI see **O'Neill JA Jr**
Nylander I, Rydelius PA: Post-concussion syndrome. Brain damage, constitutional characteristics and environmental reactions. Acta Paediatr Scand 1988 May;77(3):475–7
A 9-year-old boy was referred for child-psychiatric examination because of failure in school, restlessness, impulsiveness and concentration difficulties. The symptomatology was ascribed to a previous severe head injury and defined as a post-concussion syndrome. During the examination it was found that he had an identical twin brother without a history of brain-damage. A comparison of the patient and his twin brother with the same examination methods at the age of 9 and 18 gave similar results. These indicate that factors other than brain damage also could explain a clinical picture with school failure, restlessness, impulsiveness and concentration difficulties in a schoolboy. The question arises whether a clinical picture of this kind are the symptoms of stress among vulnerable boys in reaction to excessive demands from their psychosocial environment.

O

Oley CA, Baraitser M, Grant DB: A reappraisal of the CHARGE association. J Med Genet 1988 Mar; 25(3):147–56
We describe 14 boys and six girls, including monozygotic twins, with the CHARGE association. All of the children had at least four of the seven major features included in the mnemonic CHARGE and all had ear anomalies or deafness or both and either coloboma or choanal atresia or both. All the boys had evidence of hypogonadism. A characteristic facial appearance (unusually shaped ears, unilateral facial palsy, square face, malar flattening, pinched nostrils) was observed in many of our cases. The aetiology remains unknown. All our cases are sporadic.
Olney AH, Buehler BA, Waziri M: Wiedemann-Beckwith syndrome in apparently discordant monozygotic twins. Am J Med Genet 1988 Mar;29(3):491–9
We report 3 pairs of monozygotic (MZ) twins, one twin showing typical Wiedemann-Beckwith syndrome (WBS) with minimal or no expression of the condition in the co-twin. These cases are documented, and three previously reported MZ twin pairs are reviewed. Phenotypic concordance for this syndrome in MZ twin pairs has not been reported. Many cases of familial occurrence have been published and different modes of inheritance have been postulated. Based on the twin-twin variability seen in our patients, it seems the most likely mechanism of inheritance is an autosomal dominant mutation with environmental modification of expressivity, or reduced phenotrance.
O'Neill JA Jr, Holcomb GW 3d, Schnaufer L, Templeton JM Jr, Bishop HC, Ross AJ 3d, Duckett JW, Norwood WI, Ziegler MM, Koop CE: Surgical experience with thirteen conjoined twins.
Ann Surg 1988 Sep;208(3):299–312
Conjoined twins occur in approximately one in 50,000 or so births, and most do not survive. The authors report herein their experience with 13 conjoined twins over the last 30 years, involving those of the following forms: thoracopagus (4 cases), omphalopagus (1 case), ischiopagus (4 cases), pygopagus (1 case), craniopagus (1 case), and incomplete or parasitic varieties (2 cases). The various diagnostic and imaging studies used are described in detail for each form of twinning. Separation is best delayed until such infants are relatively mature (i.e., 6–12 months of age). Operative survival was 50% in those operated on in the neonatal period, but 90% in those over 4 months of age. Ten separations were attempted in 13 sets of twins, with 16 operative survivors. Significantly, up to 10 years after surgery, there were six late deaths due to serious associated congenital anomalies, predominantly cardiac. Improved recent survival is probably the result of the availability of more accurate imaging studies and better anesthetic and operative techniques, with great emphasis on performing immediate reconstruction whenever possible. Use of skin expanders and prosthetic mesh has facilitated wound closure. In the future, ex vivo cardiac reconstruction and autotransplantation may permit separation of twins with complicated conjoined hearts.
Orderica S see **Beller U**
Orlebeke JF see **Pronk JC**
Ovadia J see **Hod M**
Overbeke M see **Pronk JC**
Oxenstierna G see **Hagenfeldt L**

P

Pallai M see **Rowland LP**
Pals G see **Pronk JC**
Parisi P see **Bressers WM**
Partington MW: Rett syndrome in monozygotic twins. 'Am J Med Genet 1988 Mar;29(3):633–7

AUTHOR SECTION

The evolution of the Rett syndrome in 29-year-old twin girls is presented. Evidence for monozygosity is given together with a brief account of the problems these girls posed to their family in early childhood.

Pascual-Castroviejo I, Verdú A, Román M, De la Cruz-Medina M, Villarejo F: Optic glioma with progressive occlusion of the aqueduct of Sylvius in monozygotic twins with neurofibromatosis.
Brain Dev 1988;10(1):24–9
Monozygotic twins sisters with optic glioma "in mirror image" (one with involvement of the left optic nerve and the other with the right optic nerve) and hydrocephalus secondary to progressive stenosis of the aqueduct have been found in a series of 128 cases below 14 years of age with neurofibromatosis. The optic glioma was diagnosed in each of the twins at 2 years of age. In one twin the tumor involved only the optic nerve but in the other the glioma affected the optic nerve and spread to the homolateral zone of the optic chiasm. First symptoms of hydrocephalus appeared at 8 years and 11 years of age respectively but ventriculo-peritoneal shunting procedures were performed to relieve intracranial hypertension at 11 years and 15 years of age respectively. At 2 years of age both twins had pneumoencephalography which demonstrated normal air passage through the aqueduct and cerebral ventricles of normal size and morphology. Posterior studies with CT-scan demonstrated progressive obstruction of the aqueduct with very slow progression of the hydrocephalus in each twin, although it was not observed simultaneously. The increased intracranial pressure was tolerated for many years in each twin without obvious symptoms which could be attributed to the slow progression of the aqueduct obstruction.

Pate B see Clark CM

Paulson RJ, Lobo RA, Stein A, Toker R, Moegle A, Macaso T: Gestation of triplets after intrauterine implantation of two embryos [letter]
N Engl J Med 1988 May 19;318(20):1339–40

Pedersen O see Beck-Nielsen H

Perletti L see Andreoli A

Petit A, Eicher JC, Louis P: Congenital diverticulum of the right atrium situated on the floor of the coronary sinus. Br Heart J 1988 Jun;59(6):721–3
A diverticulum of the right atrium was found on the floor of the coronary sinus in a neonate. The diverticulum was distinguished from a pericardial cyst by contrast echocardiography, and its relations with coronary sinus and coronary venous return were identified by coronary angiography. Because the diverticulum compressed the left ventricular inferior wall and prevented its growth, it was excised. Thebesian veins were discovered at operation and prevented complete correction of the defect.

Philippe P: Cyclic variations of twin births at Isle-aux-Coudres: a case/control approach.
Acta Genet Med Gemellol (Roma) 1987;36(3):381–8
Twins and singletons were matched for several confounding factors. The monthly distribution of twin births and that of singleton births were compared with a uniform allocation of births over the year. Opposite seasonal variations emerged that were confirmed by a case/control comparison. Twins occurred more often in winter and early spring while singletons proved to be relatively few; singleton peaked in the fall season when the risk of a twin birth was low. These trends held across maternal age at birth and the time period of birth. Results suggest that the conception of a twin pair is highest in spring and early summer and lowest in winter. The role of sunlight in the twinning liability is discussed along with the role of sexual intercourse. That twin-prone mothers are usually more fecund in spring and early summer is a distinct possibility.

Piazza G see Gaist G

Pocoví M see Ramón y Cajal J

Poehlman ET see Bouchard C

Poehlman ET see Després JP

Pretorius DH, Leopold GR, Moore TR, Benirschke K, Sivo JJ: Acardiac twin. Report of Doppler sonography. J Ultrasound Med 1988 Jul;7(7):413–6

Pritchard C see Campbell D

Pronk JC, Boomsma DI, Pals G, Frants RR, Overbeke M, Meuwissen SG, Orlebeke JF, Eriksson AW: Twin studies on urinary pepsinogen A phenotypes and serum pepsinogen A levels.
Acta Genet Med Gemellol (Roma) 1987; 36(4):517–21
Urinary pepsinogen A (PGA or PG I) phenotypes and serum PGA levels were studied in MZ and DZ twins and their parents. In 45 out of 48 MZ twin pairs PGA patterns were completely identical, while 3 MZ twin pairs showed minor differences in the relative intensity of the Pg5 isozymogen. This suggests that the intensity of this isozymogen may be influenced by nongenetic factors. There was little difference in the interclass correlations of serum PGA levels between MZ and DZ twins, indicating a large contribution of common environmental factors to serum PGA levels. This is in contrast with previous studies.

Pyke DA see Heaton DA

Q

Quagliarello J see Beller U

R

Ramón y Cajal J, Pocoví M, Romero MA, Jimenez D, Martinez H, Grande F: Plasma lipids and high density lipoprotein cholesterol in maternal and umbilical vessels in twin pregnancies. Artery 1988; 15(2):109–17
Total cholesterol (TC), triglycerides (TG), phospholipids (PL), Unesterified cholesterol (UC) and high-density lipoprotein cholesterol (HDL) were measured in 30 plasmas from twin pregnant women and their newborns, and 60 maternal single infant pairs. Blood samples were obtained simultaneously from maternal vein, umbilical artery and umbilical vein at the moment of partum. TG from twin pregnant mothers was much higher and HDL-C lower than that from single pregnant maternal plasma TC, TG and PL in umbilical cord vessels showed no differences between twin and single newborns. There was a weak, but statistically significant, positive correlation between maternal and fetal levels of PL in both groups. A high difference between TC, TG and PL in umbilical venous and umbilical arterial plasma was found These data suggest that some fetal lipid moieties derived from maternal plasma. But data about fetal body composition indicate that contribution of maternal lipids to the fetus is of small quantitative importance.

Ramos A see Schwartz JB

Rich S see Tellegen A

Ricketts R see Zubowicz VN

Riegler H see Fowler SA

AUTHOR SECTION

Rinne UK see **Marttila RJ**
Rockoff MA: History of conjoined twins [letter] Anesthesiology 1988 May;68(5):823–4
Rodesch F see **Jauniaux E**
Rogers J see **Clark CM**
Román M see **Pascual-Castroviejo I**
Romero MA see **Ramón y Cajal J**
Romero R see **Lockwood C**
Rosenman R see **Carmelli D**
Rosenman RH see **Carmelli D**
Rosenman RH see **Swan GE**
Rosenthal P see **Schwartz JB**
Rosner B see **Tishler PV**
Ross AJ 3d see **O'Neill JA Jr**
Rowland LP, Hausmanowa-Petrusewicz I, Bardurska B, Warburton D, Nibroj-Dobosz I, DiMauro S, Pallai M, Johnson WG: Kearns-Sayre syndrome in twins: lethal dominant mutation or acquired disease? Neurology 1988 Sep;38(9):1399–402
We studied twin brothers who met all diagnostic criteria for the Kearns-Sayre syndrome (KSS). The twins reinforce the view that KSS is a specific syndrome. They raise the possibility that the condition is inherited as a lethal dominant trait, a mode of inheritance that explains the observed paucity of familial cases. However, these cases do not exclude the possibility of an acquired cause, such as persistent viral infection of the brain.
Ruth T see **Clark CM**
Ryan CA, Finer NN, Ives E: Discordance of signs in monozygotic twins concordant for the Goldenhar anomaly. Am J Med Genet 1988 Apr;29(4):755–61
Concordance for Goldenhar anomaly has been described in monozygotic (MZ) twins on 2 occasions but never in dizygotic (DZ) twins. In both cases the twins were similarly, although not identically, affected. We report on a pair of probably monozygotic twins (8% probability of DZ) who presented with extremely diverse manifestations of this anomaly complex. One of them required a tracheostomy because of obstructive apnea due to severe micrognathia and subsequently died. This twin had a midline lower lip cleft which has not previously been described in the Goldenhar anomaly.
Rydelius PA see **Nylander I**

S

Sakuragi N see **Tanaka T**
Salawu SA see **Sathiakumar N**
Salvioli GP see **Gaist G**
Samphier M see **Campbell D**
Samuels P: Ultrasound in the management of the twin gestation. Clin Obstet Gynecol 1988 Mar; 31(1):110–22 (47 ref.)
In summary, ultrasound plays an important role in a twin gestation from the time of diagnosis of the pregnancy until the time the second fetus is delivered. Although it has never been quantitated, ultrasound has made a large impact on the safe management of the twin gestation. As techniques are refined and technology is improved, ultrasound will become even more sensitive in detecting chorionicity and congenital anomalies. Doppler assessment of uterine and umbilical blood flows may also become an important tool in assessing fetal well-being in the multiple gestation.
Sathiakumar N, Ifere OA, Salawu SA, Mbamali EI: Heteropagus: a case report. Ann Trop Paediatr 1988 Mar;8(1):38–41
A rare case of heteropagus is reported. An apparently normal female neonate presented with a mass in the lumbosacral area which bore an additional limb, a pair of breasts with nipples and aerola, and an anus with a blind pouch. The mass with the appendages was successfully removed by surgery and the baby is progressing normally.
Schempp W see **Hecht T**
Schieken RM, Moskowitz WB, Bodurtha J, Mosteller M, Eaves L, Nance W: Aortic stiffness: a new Doppler echocardiographic measure predictive of systolic blood pressure in children.
J Am Coll Cardiol 1988 Jun;11(6):1297–300
Aortic stiffness, the maximal frequency shift in the descending aorta divided by the Doppler acceleration time, was studied in 384 eleven year old twin children. The extent to which this measurement provided a prediction of systolic blood pressure that was independent of body size, heart rate, cardiac contractility and left ventricular mass was investigated. Aortic stiffness, after adjustment for height and weight, correlated significantly with systolic blood pressure ($r = 0.22$, p less than 0.01), but not with diastolic blood pressure. The short- ($r = 0.82$) and longer- ($r = 0.68$) term reproducibility of aortic stiffness was high. This measure appears to be a more powerful predictor of systolic blood pressure than is left ventricular mass. Aortic stiffness is a highly reproducible Doppler variable that may explain in part the contribution of the aortic wall elastic properties to the level of systolic blood pressure in preadolescent children at rest.
Schindler E, Hajek P: Craniopagus twins: neuroradiological findings (CT, angiography, MRI). Neuroradiology 1988;30(1):11–6
A pair of craniopagus twins was examined with CT, angiography and MRI, to preoperatively assess their cerebral anatomy and blood flow. Angiography revealed a common venous sinus and a venous cross-flow from one brain to the other. This common sinus was also identified in magnetic resonance images. The significance of accurately evaluating the veins and sinuses in craniopagus twins is stressed.
Schmitz O see **Beck-Nielsen H**
Schnaufer L see **O'Neill JA Jr**
Schut L see **Atlas SW**
Schwartz JB, Merritt RJ, Rosenthal P, Diament M, Sinatra FR, Ramos A: Ceruletide to treat neonatal cholestasis [letter] Lancet 1988 May 28; 1(8596):1219–20
Schwartz MJ see **Chandler JJ**
Schweizer P, Kerremans J: Discordant findings in extrahepatic bile duct atresia in 6 sets of twins. Z Kinderchir 1988 Apr;43(2):72–5 (17 ref.)
Discordant findings in biliary atresia in 6 sets of twins are discussed regarding the current concepts in aetiology of biliary atresia. Although a genetic, inflammatory, immunological or toxic origin cannot be excluded, peri- or even postnatal ischaemia seems more likely.
Sciacca A see **Villatico Campbell S**
Sciarra A see **Mastroberardino G**
Scioli A see **Villatico Campbell S**
Searby C see **Ionasescu V**
Sedvall G see **Hagenfeldt L**
Seeds JW see **Cheschcir NC**
Segal NL see **Tellegen A**
Sen MK see **Chatterjee SK**
Seshadri R see **Forsyth K**
Sharma K: Genetic variance estimates and familial resemblance for body size traits.
Acta Genet Med Gemellol (Roma) 1987;

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36(4):549–55 (30 ref.)
To study genetic contribution to complex body size traits, the intrafamilial correlation and regression analyses along with twin study method have been used. The data are based on a sample of 45 MZ and 101 DZ twin pairs, their 125 singleton siblings, 104 fathers and 103 mothers in 146 Punjabi families living in Chandigarh, India. Twin study gives no evidence of inequality of means and variances between zygosities. Within-pair genetic variance ratios, correlations, regressions of offspring on midparent and single parent are all significant at 0.1%, thus indicating strong genetic component. Heritability estimates are higher for longitudinal body traits than the breadth dimensions. The resemblance of the children with the parents of either sex is not equal. Higher maternal influence is indicated for a number of body traits. The results on familial correlations do not support the hypothesis of sex-linked inheritance for any of the traits considered in this investigation. These results have been compared with those from other such studies.

Sharma K: Incidence of double occipital hair whorls in twins and singletons.
Acta Genet Med Gemellol (Roma) 1987;36(4):557–9
A sample of 122 twin pairs and 166 singletons from the urban Punjabi population of Chandigarh was studied. The observed frequency of double occipital hair whorls was higher in twins than in singletons (P less than 0.01). The possible association between twinning and double occipital hair whorls is discussed.

Sharma K: Familial resemblance for craniofacial traits in a Punjabi population. Z Morphol Anthropol 1987; 77(2):157–65

Sheets JW: Excessive twinning in a rural American genealogy: the demographic pedigree.
Acta Genet Med Gemellol (Roma) 1987; 36(3):349–53
Excessive twinning in an extended family of rural Missouri concentrates in the isolated generations of 1874–1930s. Moderate inbreeding, larger sibships to older mothers, and access to local doctors may have combined to enhance this familial twinning. These biosocial factors are similar to an isolated case of excessive twinning in Scotland.

Shimizu T see **Hayakawa K**

Shoham-Schwartz Z see **Blickstein I**

Sill PR, Zanggo TE: Obstructed labour with uterine rupture due to a rare fetal malformation.
P N G Med J 1988 Mar;31(1):61–3

Silvotti ME see **Villatico Campbell S**

Simpson GF see **Townsend RR**

Sims J, Carroll D, Hewitt JK, Turner JR: A family study of developmental effects upon blood pressure variation. Acta Genet Med Gemellol (Roma) 1987; 36(4):467–73
In an earlier study of blood pressure variation in middle aged parents and their young adult twin offspring, the greater blood pressure variation observed in the parent sample was accounted for in terms of an increasing influence of individual environmental experiences with increasing age and a commensurate reduction in the impact of heredity. In the present study, the sample size was enlarged to provide a more powerful test of these effects. Maximum likelihood model-fitting techniques were applied to blood pressure covariation in balanced pedigrees, consisting of 85 families (40 MZ and 45 DZ twin pairs). As before, our analysis indicated that a developmental effect was a salient factor in the older age group.

Sims J see **Hewitt JK**

Sinatra FR see **Schwartz JB**

Sivo JJ see **Pretorius DH**

Skillings GF see **Dworkin RH**

Slattery ML see **Bishop DT**

Søgaard J see **Bonnelykke B**

Speizer FE see **Tishler PV**

Stahl TJ see **Chandler JJ**

Stashinko EE see **Hayman LL**

Stein A see **Paulson RJ**

Stein GS see **van den Akker OB**

Stephens DS see **Levy DI**

Stewart G see **Borkett-Jones HJ**

Stringham JD see **Bishop DT**

Stringham JD see **Meikle AW**

Swan GE, Carmelli D, Rosenman RH: Psychological characteristics in twins discordant for smoking behavior: a matched-twin-pair analysis.
Addict Behav 1988;13(1):51–60
The matched-twin-pair methodology was used to investigate the pattern of interactions between twinning and personality in 127 monozygotic and 140 dizygotic adult male twin pairs. Eighteen standard and three research scales from the California Psychological Inventory were used to identify differences in personality between twins discordant for smoking and in nonsmoking and ever-smoking twins treated as individuals. Although no evidence was obtained for a significant heritability component in the smoking habit, numerous interactions between the twinning condition (e.g., monozygotic or dizygotic) and personality were identified. As expected, monozygotic twins discordant for smoking show fewer personality differences than do individuals discordant for smoking. Discordant dizygotic twins show more disparity than unrelated individuals. The only personality scale showing a consistent discriminating effect regardless of the twinning condition was that measuring socialization. Results are discussed in terms of the environmental conditions that may contribute differentially to the smoking behavior in related and unrelated individuals.

Swan GE see **Carmelli D**

T

Takemura H see **Nakano R**

Tanaka T, Fujimoto S, Matsuzaki N, Sakuragi N, Ichinoe K: Twin gestation induced with hMG-hCG in a patient with a bicornuate uterus: report of a successful delivery. Int J Fertil 1988 Jan-Feb; 33(1):33–5

Teikari JM: Closed-angle glaucoma in 20 pairs of twins. Can J Ophthalmol 1988 Feb;23(1):14–6
Two pairs of twins with chronic closed-angle glaucoma identified from the Finnish Twin Cohort Study were clinically studied by the author, and 18 other pairs of twins with the disease were ascertained from the Hospital Discharge Registry of Finland. One of the clinically studied pairs was a pair of monozygotic female twins concordant for chronic closed-angle glaucoma and the other was a pair of dizygotic female twins discordant for the disease. Of the pairs of twins ascertained from the registry one was a monozygotic male pair concordant for closed-angle glaucoma. The remaining 17 pairs (12 same-sex dizygotic and 5 monozygotic pairs) were discordant for the disease. The findings support multifactorial inheritance of chronic closed-angle glaucoma.

Teikari JM, Kaprio J, Koskenvuo M, Vannas A:

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Ophthalmic disease in twins: a nationwide record linkage study of hospital discharges and free medications for 16,067 twin pairs.
Acta Genet Med Gemellol (Roma) 1987; 36(4):523–34
Record linkage of the Finnish Twin Cohort Study with the Hospital Discharge Registry and with the Registry of Rights to Free Medication kept by the Social Insurance Institution gave following numbers of twin pairs with an ophthalmic disease (one or both members of the pair had the disease) in each disease category: 98 with glaucoma simplex (5 concordant pairs), 38 with capsular glaucoma (no concordant pairs), 58 with iritis (no concordant pairs) and 149 with strabismus (2 concordant pairs). The number of concordant pairs in each disease category was small, except for glaucoma simplex in which concordant pairs could be broken down by zygosity. The ratio of observed to expected (based on association by chance) was 6.96 for MZ and 1.74 for DZ pairs. This result suggests that genetic factors play some role in the variability of prevalence of simple glaucoma. Main etiologic factors are still to be found in the environment. Data on occurrence of other diseases of ophthalmologic importance is presented.

Tellegen A, Lykken DT, Bouchard TJ Jr, Wilcox KJ, Segal NL, Rich S: Personality similarity in twins reared apart and together. J Pers Soc Psychol 1988 Jun;54(6):1031–9
We administered the Multidimensional Personality Questionnaire (MPQ) to 217 monozygotic and 114 dizygotic reared-together adult twin pairs and 44 monozygotic and 27 dizygotic reared-apart adult twin pairs. A four-parameter biometric model (incorporating genetic, additive versus nonadditive, shared family-environment, and unshared environment components) and five reduced models were fitted through maximum-likelihood techniques to data obtained with the 11 primary MPQ scales and its 3 higher order scales. Solely environmental models did not fit any of the scales. Although the other reduced models, including the simple additive model, did fit many of the scales, only the full model provided a satisfactory fit for all scales. Heritabilities estimated by the full model ranged from .39 to .58. Consistent with previous reports, but contrary to widely held beliefs, the overall contribution of a common family-environment component was small and negligible for all but 2 of the 14 personality measures. Evidence of significant nonadditive genetic effects, possibly emergenic (epistatic) in nature, was obtained for 3 of the measures.

Templeton JM Jr see **O'Neill JA Jr**

Thalji A see **Juabeh II**

Theriault G see **Bouchard C**

Thiery M see **Derom C**

Thompson B see **Campbell D**

Thompson RP see **Davies TM**

Till MJ see **Boraas JC**

Tishler PV, Lewitter FI, Rosner B, Speizer FE: Genetic and environmental control of blood pressure in twins and their family members.
Acta Genet Med Gemellol (Roma) 1987; 36(4):455–66 (28 ref.)
An interdisciplinary study, in adult twins and their family members, of the genetic and environmental determinants of complex physiologic functions is in progress. This report summarizes our initial studies of the control of the level of systolic (K1) and diastolic (K5) blood pressure in 202 monogygotic (MZ) and 121 dizygotic (DZ) twins, their spouses and their children. Correlation coefficients for blood pressure were adjusted for the covariates age, sex, body mass index (wt/ht2) and screener, all of which significantly augment most correlations. These adjusted correlation coefficients in MZ twins are 0.5 for both K1 and K5 blood pressure. For DZ twins, the adjusted correlation coefficients are 0.21 (K1) and 0.24 (K5). MZ twin-offspring adjusted correlation coefficients are higher than MZ twin-niece/nephew adjusted correlation coefficients (0.12 and 0.06, respectively, for K1; 0.20 and 0.13, respectively, for K5), despite the genetic identity of these relationships. That environmental factors may explain these differences is suggested by other differences in adjusted correlation coefficients that are greater than those predicted by the degree of genetic similarity. In addition, we have assessed the relationship between two biochemical-physiological processes, the urinary excretion of kallikrein and transport of sodium in the erythrocyte (the sodium countertransport and the sodium-potassium-chloride cotransport systems), and blood pressure control, since both have been implicated in the control of blood pressure level. Although we found evidence for substantial genetic control of both phenomena, we were unable to establish any correlation between either function and the level of blood pressure in our normotensive subjects. These data point to the operation of three broad categories of control of level of blood pressure: constitutional factors (age, sex, body mass), genetic factors and environmental factors. The identities of the genetic and environmental factors are unknown at this time.

Toker R see **Paulson RJ**

Townsend RR, Simpson GF, Filly RA: Membrane thickness in ultrasound prediction of chorionicity of twin gestations. J Ultrasound Med 1988 Jun; 7(6):327–32
A retrospective review of sonograms performed on 75 twin gestations was performed to evaluate the ability of sonography to distinguish monochorionic from dichorionic gestations based on the thickness of the membrane separating the fetuses. Clinical or pathologic evidence of chorionicity and amnionicity was available in all cases. A thick membrane had a predictive value of 83% for dichorionicity and was seen in 89% of the first sonograms obtained on dichorionic gestations. Of third trimester dichorionic pregnancies, a thick membrane was seen in only 52%. A thin membrane on the initial study had a predictive value for monochorionic diamniotic pregnancy of 83%, but was seen in only 54% of cases. There was 100% intraobserver and 91% interobserver concordance in interpretation of membrane thickness. Technical factors important in interpretation of membrane thickness are discussed. The appearance of the membrane can be useful in sonographic evaluation of chorionicity and amnionicity in twin gestations, but should be used in conjunction with all other information available.

Tremblay A see **Bouchard C**

Tremblay A see **Després JP**

Tun Y see **Heaton DA**

Turner JR see **Sims J**

Tyhurst JS see **Clark CM**

Tysk C, Lindberg E, Järnerot G, Flodérus-Myrhed B: Ulcerative colitis and Crohn's disease in an unselected population of monozygotic and dizygotic twins. A study of heritability and the influence of smoking. Gut 1988 Jul;29(7):990–6
By running the Swedish twin registry containing about 25,000 pairs of twins of the same sex together with the central national diagnosis register of

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hospital inpatients, 80 twin pairs suffering from inflammatory bowel disease were found. In the ulcerative colitis group one of 16 monozygotic pairs was concordant for the disease, but all the other 20 pairs (dizygotic or unknown zygosity) were discordant. In the Crohn's disease group eight of 18 monozygotic pairs and one of 26 dizygotic pairs were concordant. The proband concordance rate among monozygotic twins was 6.3% for ulcerative colitis and 58.3% for Crohn's disease. The calculated heritability of liability based on monozygotic pairs was 0.53 and 1.0 respectively. Thus heredity as an aetiological factor is stronger in Crohn's disease than in ulcerative colitis. Monozygotic twins with Crohn's disease were more likely to be smokers than monozygotic twins with ulcerative colitis. Smoking did not explain the discordance of twin pairs with either ulcerative colitis, or Crohn's disease. The combination of identical heredity and similar smoking habit is not sufficient to cause disease.

V

Van Acker KI see **Gilli G**

van den Akker OB, Stein GS, Neale MC, Murray RM: Genetic and environmental variation in menstrual cycle: histories of two British twin samples. Acta Genet Med Gemellol (Roma) 1987;36(4):541-8
Information about menstrual cycle variables was obtained by questionnaire using 462 female twin pairs. The twins were either members of the Institute of Psychiatry Volunteer Twin Register, or of the Birmingham Population-based Register. The two samples were analysed separately using univariate and multivariate methods so that an independent replication was obtained. Maximum likelihood estimation was used to fit simple models of genetic and environmental variation to these data. The results suggest that age of menarche, menstrual cycle regularity and premenstrual symptom reporting may be heritable, whereas menstrual cycle length is not. The result should be interpreted with caution as not all variables were replicated in the smaller sample, and the method of retrospective menstrual cycle data collection has been questioned.

Van den Berghe H see **Derom C**

Vannas A see ***Teikari JM***

Verdú A see **Pascual-Castroviejo I**

Verstraeten A see ***Dequeker J***

Vidyasagar D see **Ghai V**

Villarejo F see **Pascual-Castroviejo I**

Villatico Campbell S, Di Maio F, Scioli A, Sciacca A, Brenci G, Gedda L: Atrial activity and cardiovascular response to stress in triplets: short case report. Acta Genet Med Gemellol (Roma) 1987; 36(4):561-2

Villatico Campbell S, Di Maio F, Silvotti ME, Sciacca A, Brenci G, Gedda L: High-resolution electrocardiography in twins affected by situs viscerum specularis: short case report. Acta Genet Med Gemellol (Roma) 1987;36(4):563-4

Vlietinck R see **Derom C**

W

Walton S, Wyatt EH, Cunliffe WJ: Genetic control of sebum excretion and acne--a twin study. Br J Dermatol 1988 Mar;118(3):393-6
Sebum excretion and acne grades were measured in 20 pairs each of identical and non-identical like-sex twins. The identical twins had virtually identical rates of sebum excretion (P greater than 0.05), but they had a significantly different degree of acne severity (P less than 0.01). The non-identical twins had significantly different sebum excretion rates (P less than 0.01) and acne grades (P less than 0.01). These findings suggest that sebum excretion is under genetic control and the development of clinical lesions is modified by environmental factors.

Warburton D see **Rowland LP**

Ward PS see **Grahame-Smith HN**

Waziri M see **Olney AH**

Wenstrom KD, Gall SA: Incidence, morbidity and mortality, and diagnosis of twin gestations. Clin Perinatol 1988 Mar;15(1):1-11 (38 ref.)
Twin gestations have higher morbidity and mortality than singleton pregnancies. This is related to the teratogenic event of twinning itself, as well as to physiologic changes associated with twinning. Early diagnosis, careful monitoring, and knowledge of potential problems may help the alert obstetrician to improve outcome.

West DW see **Bishop DT**

White SJ see **Blane CE**

Wilcox KJ see **Tellegen A**

Wilkin P see **Jauniaux E**

Wiswell TE, Hankins CT: Twins and triplets with necrotizing enterocolitis. Am J Dis Child 1988 Sep; 142(9):1004-6
We reviewed 2856 multiple-gestation pregnancies from 1980 to 1985 to identify whether birth order or other features (eg, asphyxia) were significant risk factors for the development of necrotizing enterocolitis (NEC). There were 42 infants identified as having NEC from 30 pairs of twins and three sets of triplets. The firstborn was diagnosed with NEC in 19 (45%) of the cases, with the disorder occurring in the secondborn in 23 cases (55%). While infants A and B were simultaneously affected in nine cases, among the three sets of triplets, no thirdborn infants developed NEC. Although the secondborn infants had significantly lower one-minute Apgar scores and a more frequent need for resuscitation, they were no more prone to develop NEC than were firstborn infants. Multiple gestation, birth order, feeding practices, and a number of other features we evaluated were not associated with the development of NEC. Our findings support the contention that prematurity is the only consistent risk factor in the development of NEC.

Woodward MG see **Meikle AW**

Wortham E, Crawford JS: Brown's syndrome in twins. Am J Ophthalmol 1988 May 15;105(5):562-3

Wyatt EH see **Walton S**

Y

Young ID, Dalgleish R, MacKay EH, MacFadyen UM: Discordant expression of the G syndrome in monozygotic twins. Am J Med Genet 1988 Apr; 29(4):863-9
We present clinical manifestations of monozygotic male twins with different degrees of expression of the G syndrome. Monozygosity was confirmed using DNA mini-satellite "fingerprint" analysis. The findings in these twins suggest that expression of the G syndrome can be strongly influenced by the prenatal developmental environment.

Yu TK see **Huang LW**

Z

Zachary AA see **Meyers SM**

AUTHOR SECTION

Zanggo TE see **Sill PR**
Ziegler MM see **O'Neill JA Jr**
Zimmerman CW see **Cardwell MS**
Zimmerman RA see **Atlas SW**
Zubenko GS, Ferrell RE: Monozygotic twins concordant for probable Alzheimer disease and increased platelet membrane fluidity.
Am J Med Genet 1988 Feb;29(2):431–6
This report describes monozygotic twins who were concordant for probable Alzheimer disease, as defined by currently-accepted clinical criteria. Monozygosity was established by blood typing. Their ages of symptomatic onset were 57 and 66 yr, and the times from onset to institutionalization were 8 and 2 yr, respectively. These results suggest that age at onset and rate of progression are clinical features that can be affected by random processes or exposure to environmental factors. The platelet membrane fluidity of both twins was abnormally increased, and the respective values were identical within experimental limits. This result is consistent with published data suggesting that increased platelet membrane fluidity is associated with a clinically distinct subtype of Alzheimer disease and that this platelet membrane characteristic may be genetically determined.
Zubowicz VN, Ricketts R: Use of skin expansion in separation of conjoined twins. Ann Plast Surg 1988 Mar;20(3):272–6
Successful separation of conjoined twins attached at the thorax and upper abdomen was greatly facilitated by preliminary skin expansion. Recognized problems encountered in traditional methods of wound closure at the separation (including wound breakdown, infection, ventilatory compromise, and obstruction to venous return resulting from tight abdominal skin closure) were avoided through the use of this technique. Technical aspects of expander placement and inflation in conjoined infants are discussed. Skin expansion may represent a major advance in wound management of conjoined twins after surgical separation. This is the second report on the use of skin expansion in conjoined twins and the first involving thoracopagus (twins conjoined at the chest and abdomen).