postoperative TIA, stroke, and mortality rates are appreciably lower than in the natural history of medical management of these patients. Subgroup analysis in a study evaluating CEA in asymptomatic patients showed that women had a lower risk of ipsilateral ischemic stroke on medical treatment and a higher operative risk than did men, whereas CEA was beneficial in symptomatic severe carotid stenosis. Another study found no difference in 30-day surgical mortality after CEA.

A study done on a sample of 6038 CEA patients (out of which 35% were women), there was no significant difference in the perioperative risk of stroke or death, however, after a 2-year follow-up, women were more likely to have a stroke yet less likely to die. Another study, which evaluated the perioperative risks of over 1200 CEA patients (out of which 39% were women) during a 21-year period, found that survival rates at 1.5 and 8 years were higher for asymptomatic and symptomatic women compared with men, thus concluding that CEA does not carry a higher level of risk for women. Yet another study, examined the data collected over a period of 8 years, evaluating the outcome of 1298 CEA patients, and found that women were more likely to be asymptomatic than men but that there was no gender-difference in the frequency of postoperative cardiac (2.5% women, 1.5% men) or neurological events (1.6% women, 2.1% men); the postoperative stroke rate was 1.5% with no significant difference between men and women, and late recurrent stenosis developed in 1.5% of women and 0.8% of men, once again showing no significant gender-difference.

References:

1. Morović S, Kesić MJ, Vuković V, Lovrenčić-Huzjan A, Trkanjec Z, Škarić-Jurić T, Budišić M, Antić S, Demarin V. Vertebral Arteries-Morphologic And Hemodynamic Differences Between Men And Women. European Journal of Neurology 2005;**12**(suppl. 2):52–53.
2. Touze E, Rothwell PM. Heritability of ischemic stroke in women compared with men: a genetic epidemiological study. Lancet Neurol 2007:**6**(2):125–33.
3. Lovrenčić Huzjan, Arijana; Kesic, Miljenka Jelena; Vukovic, Vlasta; Morović, Sandra; Zavoreo, Iris; Roje Bedeković, Marina; Demarin, Vida. Presence of increased stiffness of the common carotid artery in women with higher body mass index. Cerebrovascular Disease 2003;**16**(suppl. 2):3.
4. Jurašić MJ, Lovrenčić Huzjan A, Bedeković MR, Demarin V. How to monitor vascular aging with an ultrasound. J Neurol Sci 2007, Feb 21 (Epub ahead of print).
5. Kurth T, Everett BM, Buring JE, Kase CS, Ridker PM, Gaziano JM. Lipid levels and the risk of ischemic stroke in women. Neurology 2007;**68**(8):556–562.
6. Kurth T, Kase CS, Berger K, Gaziano JM, Cook NR, Buring JE. Smoking and risk of hemorrhagic stroke in women. Stroke 2003;**34**(12):2792–2795.
7. Demarin V, Lovrenčić-Huzjan A, Trkanjec Z, Vuković V, Vargek-Solter V, Šerić V, Lušić I, Kadojić D, Bielen I, Tuškan-Mohar L, Aleksić-Shihabi A, Dikanović M, Hat J, DeSyo D, Lupret V, Beroš V. Recommendations for stroke management 2006 update. Acta Clin Croat 2006;**45**:219–285.
8. Holroyd-Leduc JM, Kapral MK, Austin PC, Tu JV. Sex differences and similarities in the management and outcome of stroke patients. Stroke 2000;**31**(8):1833–1837.
9. Di Cario A, Lamassa M, Baldereschi M, Pracucci G, Basile AM, Wolfe CD, Giroud M, Rudd A, Ghetti A, Inzitari D. Sex differences in the slinical presentation, resource use, and 3-month outcome of acute stroke in Europe: data from a mulitcenter multinational hospital-based registry. Stroke 2003;**34**(5):1114–1119.
10. Mattos MA, Summer DS, Bohannon WT, Parra J, McLafferty RB, Karch LA, Ramsey DE, Hodgson KJ. Carotid endarterectomy in women: challenging the results from ACAS and NASCET. Ann Surg 2001;**234**(4):438–446.
11. Akbari CM, Pulling MC, Pomposelli FB Jr, Biggons GW, Campbell DR, Logerfo FW. Gender and carotid endarterectomy: does it matter? J Vasc Surg 2000;**31**(6):1103–1108.
12. Fang MC, Singer DE, Chang Y, Hylek EM, Henault LE, Jensvold NG, Go AS. Gender differences in the irsk of sichemic stroke and peripheral embolism in atrial fibrillation: an AnTicoagulation and Risk factors In Atrial Fibrillation (ATRIA) study. Circulation 2005;**112**(12):1687–1691.
13. Dagres N, Nieuwiaat R, Vardas PE, Andresen D, Levy S, Cobbe S, Kremastinos DT, Breithardt G, Cokkinos DV, Crijns HJ. Gender-related differences in presentation, treatment, and outcome of patients with atrial fibrillation in Europe: a report from the Euro Heart Survey on Atial Fibrillation. J Am Coll Cardiol 2007;**49**(5):572–577.
14. Gomberg-Maitland M, Wenger NK, Feyzi J, Lengyel M, Volgman AS, Petersen P, Frison L, Halperin JL. Anticoagulation in women with non-valvular atrial fibrillation inthe stroke prevention using an oral thrombin inhibitor (SPORTIF) trials. Eur Heart J 2006;**27**(16):1893–1894.
15. Lovrenčić-Huzjan A, Bosnar M, Huzjan R, Demarin V. Frequency of different risk factors for ischemic stroke. A one year survey on patients admitted to Neurology Department University Hospital ''Sestre milosrdnice''. Acta clin Croat 1999;**38**:159–163.
16. Mastorakos G, Sakkas EG, Xydakis AM, Creatsas G. Pitfalls of the WHIs: Women's Health Initiative. Ann N Y Acad SCI 2006;**1092**:331–340.
17. Jousilahti P, Tuomilehto J, Rastenyte D, Vartiainen E. Headache and the risk of stroke: a prospective observational cohort study among 35,056 Finnish men and women. Arch Intern Med 2003;**163**(9):1058–1062.
18. Kurth T, Gaziano JM, Cook NR, Logroscino G, Diener HC, Buring JE. Migraine and rick of cardiovascular disease in women. JAMA 2006;**296**(3):283–291.
19. Randomised trial of endarterectomy for recently symptomatic carotid stenosis: final results of the MRC European Carotid Surgery Trial (ECST). Lancet 1998;**351**:1379–1387.
20. Sarac TP, Hertzer NR, Mascha EJ, O'Hara PJ, Krajewski LP, Clair DG, Karafa MT, Ouriel K. Gender as a primary predictor of outcome after carotid endarterectomy. J Vasc Surg 2002;**35**(4):748–753.
21. Kapral MK, Wang H, Austin PC, Fang J, Kucey D, Bowyer B, Tu JV. Sex differences in carotid endarterectomy outcomes: results from the Ontario Carotid Endarterectomy Registry. Stroke 2003;**34**(5):1120–1125.

Gender differences in migraine

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Migraine is a common, episodic, temporarily disabling neurological disease. Epidemiological studies can identify groups of people at higher risk of disease, and the distribution of disability, as a prelude to devising interventions to reduce disease burden. The examination of the epidemiological studies performed in the Western Countries shows that the 1-year prevalence of migraine is 18% in women compared with 6% in men in the general population. There are, however, important differences considering the different classes of age. Migraine's prevalence in the pediatric age group was well studied. At the age of 7 years, prevalence ranges from 1.2% to 3.2%. Between 7 and 15 years of age, prevalence ranges from 4% to 11%. Some studies show that migraine prevalence is higher in boys than girls at an age included between 3 and 5 years and at 5 to 7 years of age. Prevalence is equal in boys and girls aged 7–11 years and is higher in girls after

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https://doi.org/10.1017/S0924270800032683 Published online by Cambridge University Press

11 years. The female to male ratio for migraine prevalence increases from menarche until approximately age 42, where it reaches its peak, 3.3:1. Migraine occurs during the reproductive years in 27% of women between 20 to 49 years of age. The predominance of this disorder and its social, functional, and economic consequences make migraine an important matter in particular in women's health. The hormonal milieu has a substantial effect on migraine in women. An understanding of these hormonal influences in the various stages of life in females is essential to the management and migraine prevention. Race and geographic region contribute to variation in migraine prevalence but the difference between genders is almost the same. A population-based study in the United States compares the prevalence of migraine among Caucasians, African-Americans, and Asian-Americans. After adjusting for socio-demographic covariates, prevalence of migraine was lowest in Asian-Americans (women 9.2%, men 4.8%), intermediate in African-Americans (women 16.2%, men 7.2%), and highest in Caucasians (women 20.4%, men 8.6%). These results mirror the meta-analytic finding that prevalence is lowest in Asia and Africa, with considerably higher prevalence in Europe, Central and South America, and North America. Migraine prevalence decreases with advancing age in the general population and the difference between genders decreases too. In particular, women with natural menopause often show improvement in their migraines; therefore, it decreases, perhaps owing the gradual onset of ovarian failure and the declining provocative influence of hormonal cycling, but also due to non specific beneficial effects of aging on migraine.

Special gender issues in psychiatry

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Abstract: Significant gender differences exist in the course, manifestation and treatment of mental illness. Regardless of specific diagnosis age is one of the key factors in gender differences. Such differences between the sexes exist not only concerning origin and perpetuation of specific psychiatric diseases, they are also available and notable in specific fields of pharmacological and psychotherapeutically treatment. That review should sensitize clinicians for their responsibility to provide individualized, optimally effective, gender-specific care to patients suffering from mental diseases in some special topics. It should be a short overview considering some important gender details illustrated in concern with the epidemiological background, the symptoms and general used psychiatric treatment strategies of some frequent psychiatric diagnoses.

Introduction: It is well known, that significant gender differences exist in the course, manifestation and treatment of mental illness. Regardless of specific diagnosis age is one of the key factors in gender differences. In child mental health services patients are preponderantly male (1). Around time of puberty that fact changes and after adolescence, virtually most major psychiatric disorders – except substance abuse, schizophrenia, and impulse control disorders – become substantially more prevalent in females than in males (2). That turning point in female to male ratio in psychiatric violability is caused by an active growth and/or pruning of neurons during that stage of life.

However, genes alone do not explain the sex differences in vulnerability to illness. Genetic disposition elicits individual environment and experience modulates gene expression.

Gender specific hormonal effects profoundly influence the neuronal development and after all the final steady state that is achieved individually. Male as well as female hormone concentration rises sharply during puberty. Gonadal steroid receptors are expressed in areas of the cerebral cortex that mediate cognition and affect (3).

Stressful life events have been postulated as a fact to vulnerable individuals for processing psychiatric diseases. Women, in general, act as caretakers and pay more than men "the price of caring" in all areas of life (4,5). In women, the monthly fluctuation in gonadal hormone levels account for a reduced effectively protection against the potentially harmful effects of stress axis hormones (6). After suffering traumata, women are twice as likely as men to develop a posttraumatic stress syndrome. Additionally the anatomically women's strong interhemispheric brain connections may facilitate the generalization of past stressors and the invocation of traumatic memories more easily than the less well connected hemispheres in men's brains (7).

Such differences as do exist between the sexes concerning origin and perpetuation of specific psychiatric diseases are also available and notable in specific fields of pharmacological treatment. The side effect profile in male and female as well as the efficacy of "standard" treatment medication often differs. The same dose of medication applied to women works less well than for men (8).

Thus, the optimal dose range of a therapeutic medication may not be the same for women and for men. Bodies of women contain more adipose tissue than that of men per unit of body weight, which is fundamentally linked to psychotherapeutic drug response. Antipsychotics, antidepressants and anxiolytics are all lyophilise drugs and therefore on the one hand they will be retained longer in female bodies after treatment discontinuation and on the other hand they can also be released unexpectedly from fat stores during rapid weight loss and in the following causing untoward side effects.

Blood flow to the brain is another remarkable factor in gender-specific psychopharmacological treatment. It is, to a large extent, under hormonal control and in females it shows a higher speed with speed varies during the menstrual cycle (9). Therefore in females psychotropic agents reach their brain targets faster.

Nevertheless, also the activity of liver enzymes, that catabolise drugs and turn them into other molecules before they can be eliminated, depends on gender. One also must be aware of complications induced by induction of enzymes generated by an agent that may enhance or reduce the activity of another one. Women with psychiatric problems are receiving several medications than men because they more often suffer from concomitant illnesses. By the way they may also be taking contraceptives or hormone replacement therapies. Thus, drug interactions are more frequently encountered in women and, correspondingly, so are adverse reactions (9).

By the way females and males cope with side effects in a very different way. For example drugs that induce weight gain are especially problematic in women as well as drugs that cause hypotension with a potentially accident risk in elderly women at high risk of osteoporosis.

That review should sensitize clinicians for their responsibility to provide individualized, optimally effective, gender-specific care to patients suffering from mental diseases in some special topics. It should be a short overview considering some important gender details illustrated in concern with epidemiological background, symptoms and general used psychiatric treatment strategies of some frequent psychiatric diagnoses.

Gender specific psychiatric epidemiology

Child and adolescent psychiatric disorders

The prevalence of one or more psychiatric disorders in childhood and adolescence increases with age. Roberts et al 1998 describes mean prevalence of 10.2% for preschool children, 13.2% for preadolescents and 16, 5% for adolescents.

Boys more often feature so-called externalising disorders such as conduct disorder. They show hyper arousal –motor activity, impulsivity and hypervigilance – a syndrome mediated through noradrenalin (NA) at the locus coeruleus, the hypothalamic pituitary axis and the adrenal glands.

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https://doi.org/10.1017/S0924270800032683 Published online by Cambridge University Press