The specialist authority for menopause & post reproductive health

British Menopause Society

Management of menopause for women with cardiovascular disease

The median age of menopause is 51 and the menopause transition lasts for a median of 7.4 years. Menopausal symptoms affect up to 80% of women and for some women they may be troublesome enough for them to seek advice. Vasomotor symptoms are common and night sweats often cause sleep disturbance, exacerbating all symptoms associated with the transition.

The most effective treatment for management of the menopause is menopausal hormone therapy/hormone replacement therapy (MHT/HRT) which reduces both the frequency and severity of flushes and sweats. Recent guidelines agree that systemic HRT initiated for management of vasomotor symptoms in healthy women before age 60 years or within 10 years of menopause is associated with a favourable risk–benefit profile. However, HRT is usually considered high risk in women with known CVD, or with a 10-year CVD risk ≥10% and in the presence of uncontrolled cardiac risk factors including blood pressure ≥180/110 mmHg, total cholesterol >7.8 mmol/L and triglycerides > 4.5 mmol/L. Non-hormonal therapy is indicated as first-line therapy for management of menopausal symptoms in these women, however it is often not effective, particularly for the management of vasomotor symptoms.

Estrogen has major benefits for arterial health improving vascular function and reducing atheroma formation.[1] While androgenic progestogens may reduce these benefits, non-androgenic compounds - micronized progesterone or dydrogesterone – may have a neutral effects.[1] Denying women with a history of heart disease HRT may be doing them a disservice. Recent thinking is that a history of heart disease, even including previous myocardial infarction (MI) may not be an absolute contraindication. As always, the relative risks and benefits should be discussed with the patient who may be willing to tolerate increased risk in return for an improvement in menopausal symptoms.

Initiation of HRT following myocardial infarction:

In a placebo-controlled randomised trial among >1000 postmenopausal women treated for two years following their first MI, unopposed estrogen did not increase adverse cardiac or non-cardiac outcomes over 14 years of follow-up.[2] The picture is slightly less clear for women taking combined HRT preparations. A recently updated systematic review [3] included studies of postmenopausal women with a diagnosis of established CVD reporting the effect of a range of standard regimens of HRT. Most of the 23 RCTs and 6 observational studies, came from the US or Europe. Most investigated the effect of oral estrogens (oral conjugated equine estrogens (CEE)) combined with oral medroxyprogesterone acetate (MPA) and were conducted in postmenopausal women aged >60 years. Only six of the RCTs assessed transdermal estrogen. No significant differences were observed between HRT users and controls regarding the primary outcomes of non-fatal myocardial infarction, cardiovascular death and stroke. The frequency of angina, heart failure and TIA also did not differ between HRT users and control groups. Limited studies explored the effect of HRT on cardiac risk

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factors in women with pre-existing coronary artery disease.[3] Although favourable effects on LDL and HDL levels were observed with oral estrogen, and neutral effects with transdermal estrogen, statin therapy was superior to HRT. Transdermal, but not oral estrogen was neutral with regard to blood pressure. HRT was associated with positive effects on glucose tolerance and diabetes incidence but may be associated with angiographic disease acceleration.[3] Limitations of many of the included studies relate to the small sample sizes and low numbers of individual CVD events. Therefore, the lack of an observed effect of HRT on CVD outcomes may reflect low statistical power rather than physiological safety.

Recommendations

For women with established ischaemic heart disease and persisting vasomotor symptoms despite non-hormonal therapy, decision-making regarding the use of HRT should be shared. The British Menopause Society (BMS)[4] recommends low dose estrogen, preferably non-oral, combined with a non-androgenic progestogen when necessary. Concurrent statin use could be considered[4]. Oral HRT should be avoided due to the effect on blood pressure and thromboembolism risk. The risks of further cardiovascular events may be greater in women who have both CVD and diabetes.

Continuation of HRT following myocardial infarction:

A retrospective study of women aged above 55 years admitted to hospital with acute myocardial infarction showed that current HRT users at the time of the event had a significantly lower mortality rate compared with non-users.[5] Statin therapy used in combination with HRT significantly reduced venous thrombo-embolism (VTE) by 55%.[6]

Recommendations

Current observational data does not support the discontinuation of HRT in women who sustain a myocardial infarction. However, patients who have an MI may be in a hypercoagulable state. It may therefore be prudent to change the types of hormones and/or routes of administration of HRT to low dose estrogen, preferably non-oral, combined with a non-androgenic progestogen. Statin therapy should be considered.

HRT use following Stroke:

High quality evidence relating to HRT use after stroke is lacking.[7]

Stroke is a heterogenous condition with a broad range of aetiologies infrequently described and examined in MHT literature. The majority of stroke events are ischaemic in origin (approximately 87 % v 13% haemorrhagic in the UK) and the pathophysiology of both subtypes can vary widely. For example, a traumatic carotid artery dissection can provoke an ischaemic stroke in the absence of arterial disease or known CVD risk factors and has a low risk of recurrence. In other cases, embolic stroke may be secondary to paradoxical embolism and therefore oral medications which increase venous thrombosis risk should be avoided.

The leading modifiable risk factor for stroke collectively is hypertension. Women often experience suboptimal management of detected hypertension.[8] This suboptimal management continues even after haemorrhagic stroke has occurred, with women

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also less likely to be prescribed secondary prevention than men after ischaemic stroke.[9] These factors are relevant to future CVD risk in women and may complicate the interpretation of the potential effects of HRT use after stroke.

At least 20% of ischaemic strokes are due to cardiac sources of embolism such as atrial fibrillation, valvular heart disease and left ventricular systolic dysfunction (LVSD). Therefore, advice should be cognisant of the available evidence for the use of HRT in those specific clinical circumstances.

A 2020 meta-analysis of 10 RCTs published since 2000 reported an increased risk of stroke associated with HRT in those 'with underlying disease at baseline' (nine studies; summary estimate 1.14, 95% CI 1.04–1.26) but not in those 'without underlying disease' [10]. In the placebo-controlled RCT in 664 women with recent ischemic stroke or transient ischaemic attack (TIA)[11], the relative risk of stroke associated with oral estrogen replacement was 2.9 (95% CI 0.9-9.0). However, the study enrolled women with a mean age of 71 (range, 46 to 91), therefore caution should be adopted in extrapolating these findings to a younger population who may wish to discuss risks and benefits of commencing non-oral MHT. Advancing age is the most significant non-modifiable risk factor for stroke.[12]

The causes of intracerebral haemorrhage (ICH) include arteriosclerosis, vascular malformations and cerebral venous sinus thrombosis. The risk of ICH increases with age [12] and menopause itself is an independent risk factor for ICH. [12] HRT use, both previous and current (but excluding Tibolone) appears to be associated with a reduced relative risk of ICH in women of middle age and older. [13]

Recommendations

It may be wise to avoid use of systemic HRT in some women who have had a stroke but given the wide range of stroke aetiologies, an individualised risk assessment should be undertaken ensuring modifiable risk factors are optimally addressed and the underlying cause of the preceding stroke is fully investigated and acknowledged.

When considering prescribing systemic HRT after stroke, transdermal low dose oestrogen with micronized progesterone or a non-androgenic progestogen, where appropriate, for the shortest duration in women aged <60 years within 10 years of menopause would appear to be the lowest risk strategy. [14,15]

HRT use among women with arrythmias

Sex hormones may have a significant impact on the cardiac rhythm. Up to 42% of perimenopausal women and 54% of postmenopausal women report having palpitations [16]. The authors of a systematic review of palpitations in women during the menopause concluded that HRT may reduce the prevalence or severity and can be recommended with caution. [17] Although the use of estrogen alone for 1 year (but not combined HRT) is associated with an increase in the QTc interval [18], there seems to be no clear contraindication to a trial of HRT in menopausal women with troublesome palpitations, even if they have long QT syndrome.

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For women with atrial fibrillation the risks of HRT may be higher. In a population-based retrospective cohort study from Korea, around 20,000 participants were aged 45–60 years and were free from cardiovascular disease and AF at baseline.[19] In multivariable analysis, the relative hazards for AF were significantly higher among current users ($p < 0.001$) and lower among past users ($p = 0.069$). Ongoing HRT posed an increased risk of AF. The degree of risk varied based on the type of estrogen and progestin.

HRT use among women with congenital heart disease (CHD)

There are very few data on menopause management in women with a history of CHD. CHD is a spectrum of disorders therefore a risk vs benefit discussion should be individualised to the woman's cardiac lesion. Caution should be exercised in those with a high risk of thrombotic complications or in those with previous embolic stroke[20]. These include those with mechanical heart valves, previous Fontan repair, severe LVSD or those with pulmonary arterial hypertension. If HRT is being considered, it should be in transdermal form.

Women with Turner's Syndrome often have CHD, hypertension and ECG abnormalities including QTc prolongation.[21] Estrogens play a role in lengthening QTc, while progesterone appears to be protective by limiting QTc prolongation. Exogenous hormonal therapy has been shown to affect QT interval duration and increase the risk for ventricular arrhythmias[22], particularly in predisposed patients, which emphasizes the need for careful monitoring and risk assessment in these patients.

Women with Spontaneous coronary artery dissection (SCAD)

The typical SCAD patient is a woman aged between 44 and 53 years, and it is assumed that sex hormones play an important role in SCAD pathophysiology. Data from a Swedish registry[23], which includes women diagnosed with SCAD between 1997 and 2019 and under 50 years of age, revealed that 28% of cases occurred during pregnancy or within 14 weeks postpartum. In view of the concern about a role for reproductive hormones, menopausal HRT is generally avoided. However, there is no clear evidence that using hormone-based medications increase the risk of SCAD or its recurrence. If a woman has intrusive menopausal symptoms, expert consensus is that a trial of transdermal HRT is reasonable.

Women with Valvular heart disease

The majority of women with valvular heart disease can be prescribed HRT. Caution needs to be exercised in only a few circumstances. These include those with mechanical heart valves, poor ventricular function, AF or prior stroke.

Women with Heart Failure

There are limited data on the impact of HRT on women with heart failure. Again, risk needs to be individualised. At least one study suggests that HRT might be associated with an improved outcome[24] in those with HF. Those with severe LVSD may be at increased risk of stroke.

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The use of intrauterine levonorgestrel in combination with systemic estrogen for HRT

Any 52mg levonorgestrel releasing intrauterine device (IUD) can be used for the delivery of progestogen for HRT in combination with oral or transdermal estrogen. Antibiotic prophylaxis is not routinely required for IUD insertion in women at increased risk of infective endocarditis. There is a small risk of vasovagal reaction during IUD insertion and insertions should be undertaken in hospital setting for women with:

- Pre-existing arrythmia
- Eisenmenger physiology and other forms of Pulmonary Hypertension
- Long QT syndrome
- Single ventricle (or Fontan) circulation
- Other heart conditions who would not tolerate a vasovagal reaction

Most insertions for individuals with Postural Orthostatic Tachycardia Syndrome (PoTS) should be straightforward and low risk providing consideration is given to precautions (adequate hydration, salt intake and postural awareness). If there is a history of postural syncope, then insertion in hospital setting should be considered.

Women on anticoagulants

IUD and implant insertion should be performed by specialist contraceptive providers.

Use of vaginal estrogen

In view of minimal systemic absorption at licensed doses, there should be no limitation on use of vaginal estrogen in women with cardiovascular disease

Non-hormonal therapies

The British Menopause Society publishes a helpful guide to non-hormonal based therapies for managing menopausal symptoms[25] which states.

"Several therapies have been used for symptom control although no treatment is as effective as estrogen. Prescribable non-hormonal therapies that have been tested in randomised placebo-controlled trials and shown to be effective include Paroxetine, Fluoxetine, Citalopram and Escitalopram, Venlafaxine and Desvenlafaxine, Gabapentin and Pregabalin, and clonidine. Self-help options which include Isoflavones and soya products, herbal therapies such as Black Cohosh and St John's Wort, cognitive behaviour therapy with targeted self-hypnosis, acupuncture and nerve block have also been used for vasomotor symptom control."

https://thebms.org.uk/publications/consensus-statements/non-hormonal-based-treatments-menopausal-symptoms/

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References

1. Stevenson JC. HRT for the primary prevention of coronary heart disease. In: Brinton R., Genazzani A., Simoncini T., Stevenson J. eds. Sex Steroids' Effects on Brain, Heart and Vessels. ISGE Series. Cham, Springer 2019: 257-64

2. Bontempo S, Yeganeh L, Giri R, Vincent AJ. Use of MHT in women with cardiovascular disease: a systematic review and meta-analysis, Climacteric 2024; 27:1, 93-103, DOI: 10.1080/13697137.2023.2273524.

3. Cherry N, McNamee R, Heagerty A, Kitchener H, Hannaford P. Long-term safety of unopposed estrogen used by women surviving myocardial infarction: 14-year follow-up of the ESPRIT randomised trial. BJOG 2014; 121: 700-05

4. British Menopause Society. HRT after Myocardial Infarction. https://thebms.org.uk/wp-content/uploads/2024/03/21-BMS-TfC-HRT-after-myocardial-infarction-MARCH2024-A.pdf (thebms.org.uk)

5. Schlipak MG, Angeja BG, Go AS, et al. Hormone therapy and in-hospital survival after myocardial infarction in postmenopausal women. Circulation 2001; 104: 2300-09.

6. Herrington DM, Vittinghoff E, Lin F, et al. Statin therapy, cardiovascular events, and total mortality in the Heart and Estrogen/Progestin Replacement Study (HERS). Circulation 2002; 105: 2962-6

7. Kremer C, Gdovinova Z, Bejot Y, et al. European Stroke Organisation guidelines on stroke in women: Management of menopause, pregnancy and postpartum. European Stroke Journal. 2022;7(2):I-XIX. doi:10.1177/23969873221078696

8. Connelly PJ, Currie G, Delles C. Sex Differences in the Prevalence, Outcomes and Management of Hypertension. Curr Hypertens Rep. 2022 Jun;24(6):185-192. doi: 10.1007/s11906-022-01183-8. Epub 2022 Mar 7. PMID: 35254589; PMCID: PMC9239955.

9. https://publichealthscotland.scot/media/28142/scottish-stroke-improvement-programme-annual-report-2024-final-v-10.pdf

10. Kim JE, Chang JH, Jeong MJ, et al. A systematic review and meta-analysis of effects of menopausal hormone therapy on cardiovascular diseases. Sci Rep. 2020;10(1):20631. doi: 10.1038/s41598-020-77534-9.

11. Viscoli CM, Brass LM, Kernan WN, Sarrel PM, Suissa S, Horwitz RI.A clinical trial of estrogen-replacement therapy after ischemic stroke. N Engl J Med. 2001 Oct 25;345(17):1243-9. doi: 10.1056/NEJMoa010534.PMID: 11680444

12. Ali M, van Etten ES, Akoudad S, Schaafsma JD, Visser MC, Ali M, Cordonnier C, Sandset EC, Klijn CJM, Ruigrok YM, Wermer MJH. Haemorrhagic stroke and brain vascular malformations in women: risk factors and clinical features. Lancet Neurol. 2024 Jun;23(6):625-635. doi: 10.1016/S1474-4422(24)00122-4. PMID: 38760100.

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13. Feldmann E, Broderick JP, Kernan WN, Viscoli CM, Brass LM, Brott T, Morgenstern LB, Wilterdink JL, Horwitz RI. Major risk factors for intracerebral hemorrhage in the young are modifiable. Stroke. 2005 Sep;36(9):1881-5. doi: 10.1161/01.STR.0000177480.62341.6b. Epub 2005 Aug 4. PMID: 16081867.

14. Renoux C, Dell'aniello S, Garbe E, Suissa S. Transdermal and oral hormone replacement therapy and the risk of stroke: a nested case-control study. BMJ. 2010 Jun 3;340:c2519. doi: 10.1136/bmj.c2519. PMID: 20525678.

15. Boardman HM, Hartley L, Eisinga A, Main C, Roqué i Figuls M, Bonfill Cosp X, Gabriel Sanchez R, Knight B. Hormone therapy for preventing cardiovascular disease in post-menopausal women. Cochrane Database Syst Rev. 2015 Mar 10;2015(3):CD002229. doi: 10.1002/14651858.CD002229.pub4. PMID: 25754617; PMCID: PMC10183715.

16. Carpenter JS, Sheng Y, Elomba C, et al. A systematic review of palpitations prevalence by menopausal status. Curr Obstet Gynecol Rep 2021; 10:7–13.

17. Sheng Y, Carpenter JS, Elomba CD, Alwine JS,Yue M, Chen CX, Tisdale JE. Effect of Menopausal Symptom Treatment Options on Palpitations: A Systematic Review Climacteric. 2022; 25(2): 128–140. doi:10.1080/13697137.2021.1948006.

18. Costa S, Saguner AM, Gasperetti A, Akdis D, Brunckhorst C, Duru F (2021) The Link Between Sex Hormones and Susceptibility to Cardiac Arrhythmias: From Molecular Basis to Clinical Implications. Front. Cardiovasc. Med. 8:644279. doi: 10.3389/fcvm.2021.644279

19. Lee J, Kim Y, Park H et al. Clinical Impact of Hormone Replacement Therapy on Atrial Fibrillation in Postmenopausal Women: A Nationwide Cohort Study. J Clin Med. 2021 Dec; 10(23): 5497. Published online 2021 Nov24. doi: 10.3390/jcm10235497PMCID: PMC8658255

20. Gaing KW et al. Burden of Ischemic Stroke in Patients With Congenital Heart Disease: A Nationwide, Case-Control Study. J Am Heart Assoc. 2021;10:e020939. DOI: 10.1161/JAHA.120.02093

21. Nordman ID et al. Cardiac abnormalities in girls with Turner syndrome: ECG abnormalities, myocardial strain imaging, and karyotype–phenotype associations. Am J Medical Genetics 2021;185A; 2399-2408.

22. Grouthier, V.; Moey, M.Y.Y.; Gandjbakhch, E.; Waintraub, X.; Funck-Brentano, C.; Bachelot, A.; Salem, J.-E. Sexual Dimorphisms, Anti-Hormonal Therapy and Cardiac Arrhythmias. Int. J. Mol. Sci. 2021, 22, 1464. https://doi.org/10.3390/ ijms22031464

23. Nebeski D, Basic C, Svanvik T, Schaufelberger M, Ostgard Thunstrom E, SWED-PREG. Incidence of spontaneous coronary artery dissection during pregnancy in Swedish women between 1997 and 2019, a retrospective observational cohort study based on national Swedish health-registers. Eur. Heart J. 2022; 43 (2): ehac544-1172. 10.1093/eurheartj/ehac544.1172ehac544-1172

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24. Lindenfeld J, Ghali JK , Krause-Steinrauf HJ, et al . Hormone replacement therapy is associated with improved survival in women with advanced heart failure. J Am Coll Cardiology 2003;42(7):1238-45. doi: 10.1016/s0735-1097(03)00938-0.

25. British Menopause Society. BMS consensus statement on non-hormonal-based treatments for menopausal symptoms. Available at https://thebms.org.uk/publications/consensus-statements/non-hormonal-based-treatments-menopausal-symptoms/

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