심근증 교육연구센터 소식

2020 봄, 제2호

CONTENTS

들어가며

COVID-19라는 유례없는 상황에 모두가 힘든 하루하루를 보내고 있습니다. 추운 겨울이 지나가면 새싹이 돋고 꽃이 피는 봄이 오듯, 우리의 일상에도 따뜻하고 활기찬 봄이 돌아오기를 기대해봅니다.

심근증 교육연구센터는 지난해의 활동을 바탕으로 사단법인이 되기 위한 준비를 하고 있으며, 이에 힘입어 다양한 목적사업을 진행할 계획입니다.

본 센터의 대표적인 활동인 ASH Conference 학술대회는 COVID-19 확산에 따라 참가자들의 안전과 정부 방역에 협조하기 위해 부득이하게 연기하는 것으로 결정하였습니다. 대신 임상에서 도움이 될 서적 출간과 대국민 홍보 활동에 박차를 가할 것입니다.

곧 일상이 돌아오기를 기원합니다. 감사합니다.

심근증교육연구센터

당신의 혈관은 안녕하신가요?

당신의 혈관은 안녕하신가요?

혈관은 신체의 각 기관으로 산소와 영양소를 운반하는 통로이다. 혈관이 건강해야 혈액의 흐름이 원활하고 각종 질환을 예방할 수 있다. 때문에 혈전이 생겨 혈관이 막히거나 콜레스테롤이 쌓여 혈관이 좁아지게 되면 우리 몸에 심각한 문제가 생길 수 밖에 없다.

혈관은 가족력, 오랜 시간 앉아있거나 서있는 생활 습관, 음주나 흡연, 식습관 등의 영향을 받는다. 식습관의 경우 탄수화물과 포화지방을 반복적으로 많은 양을 섭취하여 과하게 될 경우, 혈중 콜레스테롤 수치를 높이고 혈관벽을 두껍게 만들어 혈관 질환 발생 위험을 높이게 된다.

예방 키워드

혈관벽이 두꺼워 지지 않게 예방하기 위해서는?

01 금연

지속적인 흡연은 혈관에 염증을 일으키고, 염증이 반복되면 혈관벽이 두꺼워지며 혈관을 좁아지게 만든다.

02 혈압

고혈압으로 인해 혈관이 지속적으로 높은 압력을 받게 되면, 혈관에 상처가 생기고 그 부위에 콜레스테롤이 잘 쌓이게 된다.

03 콜레스테롤

탄수화물과 포화지방 등을 반복적이고 과하게 섭취하게 되면 혈관내막에 염증 반응이 일어나고 내벽에 콜레스테롤이 쌓이게 된다. 이러한 과정이 반복되면 혈관벽이 두꺼워져 혈액이 지나가는 통로인 혈관을 좁아지게 하고 혈관이 좁아지면 원활한 혈액흐름을 방해해 신체의 각 기관에 공급될 혈액의 양이 줄어들면서 혈관 질환을 일으키게 된다.
이는 대표적으로 협심증, 심근경색, 뇌경색 등의 질환을 일으킨다.

콜레스테롤,
나쁜 것인가요?

HDL콜레스테롤

우리가 흔히 좋은 콜레스테롤로 알고 있는 것으로, 혈관벽에 쌓인 나쁜 콜레스테롤을 제거하는 기능을 한다. 하지만 HDL콜레스테롤 수치가 낮거나 기능을 다하지 못하는 콜레스테롤이 대부분이면 도움이 되지 않는다.

VS

LDL콜레스테롤

우리가 흔히 나쁜 콜레스테롤로 알고 있는 것으로, 혈관벽 안쪽에 파고들어 각종 염증반응을 일으킨 후 혈관벽에 붙어 혈관벽을 두꺼워지게 한다. 혈관은 노화가 진행됨에 따라 혈관벽이 두꺼워지는데, 여기에 LDL 콜레스테롤로 인해 혈관벽이 더 두꺼워지게 된다.

총 콜레스테롤 ↓	LDL콜레스테롤 ↓	중성지방 ↓	HDL콜레스테롤 ↑
200mg/dl 미만	130mg/dl 미만	200mg/dl 미만	40mg/dl 이상
200-239mg/dl	130-159mg/dl		
240mg/dl 이상	160mg/dl 이상		40mg/dl 이하

콜레스테롤 관리에 좋은 음식

현미

현미에는 HLD콜레스테롤을 높여주며 동맥경화를 예방하는 피토스테롤과 동맥경화의 노화를 방지하는 리놀레산이 풍부하다.

콩 / 두부

콩은 불포화지방산이 풍부해 심혈관질환 발병 위험률을 낮춘다. 콩으로 만든 두부는 콜레스테롤을 낮추는 리놀산이 풍부하다.

등 푸른 생선

꽁치, 고등어와 같은 등 푸른 생선에는 불포화지방산이 풍부한데, 이는 응고된 콜레스테롤을 녹이고 혈중 콜레스테롤을 낮추는데 탁월하여 심장과 혈관 건강에 도움이 된다. 구우면 불포화지방산이 사라지기 때문에 조림으로 먹는 것이 좋다.

미역 / 다시마

미역과 다시마에는 미끌거리는 성분인 알긴산이 있는데, 콜레스테롤 흡수를 억제하고 혈중 콜레스테롤 수치를 낮춰준다.

양파

양파 껍질에 많은 퀘르세틴은 항산화 작용으로 만성 염증을 예방하고, 혈관 내부에 콜레스테롤이 쌓이지 않게 하는 역할을 한다. 또한 플라보노이드도 콜레스테롤 수치를 감소시켜 혈관벽이 두꺼워지는 것을 막는다.

토마토

토마토의 붉은 색을 만드는 라이코펜은 강력한 항산화제로 혈전 형성을 막아 혈관 질환을 예방하는데 효과적이다. 또한 토마토에는 루틴이 풍부한데, 이는 혈관을 튼튼하게 하고 혈압을 내리는 역할을 한다.

사과

사과에는 수용성 섬유인 펙틴이 들어있는데, 이는 장에서 콜레스테롤 흡수를 차단한다. 항산화 성분인 폴리페놀 역시 유해 콜레스테롤을 내보내고 좋은 콜레스테롤을 증가시켜 동맥경화를 예방하는 효과가 있다.

{ sarcoidosis }

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1. Definition and Prevalence

Sarcoidosis is a multisystemic non-caseating granulomatous disease of uncertain etiology, most frequently involving lung (>90%). Sarcoidosis is a chronic progressive disorder, although acute presentation can occur in rare cases. The prevalence of sarcoidosis is about 4.7 to 64 in 100,000, and it usually occurs in patients between 25 and 60 years of age. Clinically apparent cardiac sarcoidosis occurs in approximately 5~10% of patients with systemic sarcoidosis. The prevalence of clinically silent cardiac involvement, on the basis of autopsy studies, is estimated to be at least 25% of patients with systemic sarcoidosis. Recent studies suggest that the prevalence of cardiac sarcoidosis is increasing over time, probably due to the improvements in imaging and diagnosis

2. Diagnosis of Cardiac Sarcoidosis

2.1. Biopsy

Cardiac sarcoidosis can be diagnosed directly by demonstrating non-caseating granuloma on endomyocardial biopsy (Figure 1). However due to the focal nature of disease, the diagnostic yield of endomyocardial biopsy has been reported to be less than 25% in patients with cardiac sarcoidosis. Thus, in patients with extra-cardiac sarcoidosis, biopsy of lymph node or lung is typically targeted first, which has virtues of lower procedural risk as well as higher diagnostic yield. On the other hand, imaging-guided or electro-anatomic mapping-guided biopsy procedures are increasingly recommended based on recent studies demonstrating that these techniques have improved diagnostic yield to up to 50%.

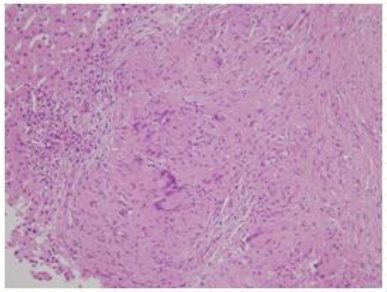


Figure 1. Histology showing non-caseating granulomas, which is the pathological hallmark of cardiac sarcoidosis.

2.2. Electrocardiogram

Patients with clinically apparent cardiac sarcoidosis often have abnormal findings on electrocardiogram (ECG). Although many ECG findings are non-specific, we should pay attention to the presence of various degrees of conduction abnormalities, including atrioventricular block, bundle branch block, and fascicular block (Figure 2). Patients with cardiac sarcoidosis may also experience ventricular arrhythmias. Contrary to clinically apparent cardiac sarcoidosis, abnormal ECG findings are presented in only a small portion of patients with clinically silent cardiac sarcoidosis (between 3.2% and 8.6%). Screening for cardiac sarcoidosis with a Holter monitoring can be useful to detect heart rhythm abnormalities which are not apparent with standard ECG.

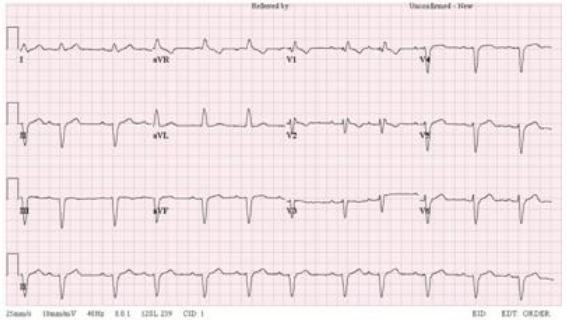


Figure 2.
ECG demonstrating trifascicular block consisting of right bundle branch, left anterior fascicular block, and first degree atrioventricular block. Trifascicular block, usually heralding complete atrioventricular block, is an important electrocardiographic finding that should raise the suspicion of cardiac sarcoidosis, on the basis of clinical impression.

2.3. Echocardiography

Similar to ECG, patients with clinically apparent cardiac sarcoidosis often have abnormal findings on echocardiography, while those with clinically silent disease usually have normal echocardiographic findings. Although echocardiographic abnormalities are frequently nonspecific, the classic feature of cardiac sarcoidosis is multiple regional wall motion abnormalities (RWMAs) which are not corresponding to the coronary artery territories. In rare cases, there may be an increase in left Ventricular(LV) wall thickness mimicking hyper-trophic cardiomyopathy or a predominantly Ventricular(RV) involvement masquerading arrhythmogenic right ventricular dysplasia/ cardiomyopathy (ARVD/C). Other abnormalities include basal inter-ventricular thinning (Figure 3), systolic and diastolic dysfunction of LV and/or RV, and aneurysmal changes in the myocardium.

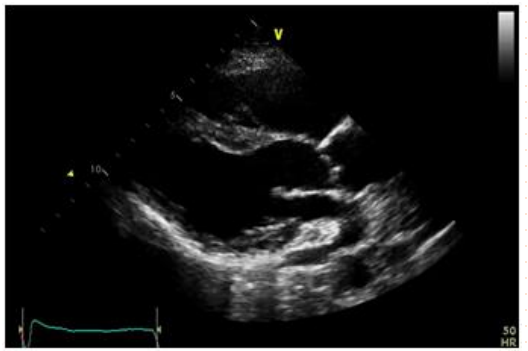


Figure 3. Echocardiography revealing a marked thinning of basal inter-ventricular septum in a patient diagnosed with cardiac sarcoidosis.

2.4. Cardiac Magnetic Resonance Imaging

The two most useful cardiac magnetic resonance imaging (CMR) techniques are cine-CMR and late-gadolinium enhancement (LGE)-CMR. Cine-CMR is a powerful method for assessing regional wall motion with high imaging quality, enabling detection of subtle abnormalities that could be missed by other imaging modalities, such as echocardiography. LGE-CMR can provide scar tissue characterization of myocardium; non-ischemic pattern of LGE is useful for the diagnosis of cardiac sarcoidosis (Figure X). Importantly, LGE can be observed in myocardial segments with no evidence of RWMAs or systolic dysfunction, suggesting the advantage of LGE-CMR in terms of sensitivity compared to echocardiography which is insensitive for detecting early stages of cardiac sarcoidosis. Hence, CMR is increasingly used for the diagnosis of clinically silent cardiac sarcoidosis, in view of its ability to detect small amount of myocardial involvement. However, although the pattern of LGE is usually patchy and multifocal, with endocardial sparing (Figure 4), no specific LGE pattern is diagnostic for cardiac sarcoidosis. For example, LGE is seen most frequently in basal septal and lateral segments, but it can be observed in the RV free wall in some cases. Furthermore, transmural LGE may occur in patients with cardiac sarcoidosis, although the involvement of epi- and mid-myocardium, the so-called endocardial sparing pattern is a common CMR finding in this population.

Other CMR techniques have gained growing attent ion as a useful tool to assess cardiac sarcoidosis over the past few years.
Specifically, T2-weighted images and T1 mapping may allow identification of active inflammation/ myocardial edema and quantification myocardial fibrosis, respectively, but poses several technical c hallenges. Concurrent imaging of the 2 phages of cardiac sarcoidosis, consisting of inflammation and fibrosis, can be obtained by positron emission tom ography (PET)/CMR fusion images.

Figure 4. LGE-CMR depicting epicardial and mid-myocardial enhancement of the inter-ventricular septum and anterior wall.

2.5. 18Fluoro-2-deoxyglucose positron emission tomography (FDG-PET)

18F-Fluorodeoxyglucose (FDG) is a glucose analogue that is useful for differentiating normal from diseased myocardium having abnormal glucose utilization, such as inflammatory, ischemic, or neoplastic conditions. Given that FDG-PET can identify the lesions infiltrated by activated macrophages having a higher glucose utilization rate, the presence of multiple patchy uptakes of FDG suggests multifocal myocarditis, particularly when alternative diagnosis, such as multiple areas of ischemia or multiple metastatic tumors, can be excluded. Three patterns of FDG-PET uptake, including diffuse, focal, and focal on diffuse uptakes, are regarded as typical for cardiac sarcoidosis. However, the major hurdles for the clinical application of PET for cardiac sarcoidosis is the difficulties in obtaining optimal FDE-PET images with adequate suppression of physiologic FDG uptake in normal myocardium. For the purpose of suppressing physiologic myocardial glucose uptake, 3 approaches are currently used: 1) prolonged fasting, shifting substrate use from glucose to free fatty acids (FFA), 2) low-carbohydrate/high-fat diets, and 3) heparin loading, producing a milieu of high level of FFA.

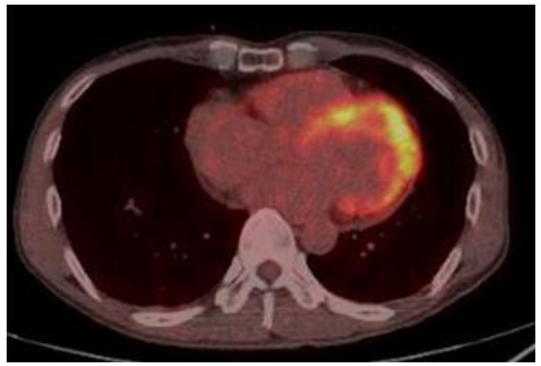


Figure 5. FDG-PET showing the focal on diffuse uptake pattern, which can support the diagnosis of cardiac sarcoidosis.

FDG-PET offers another important advantage; it enables the detection of reversible stages of cardiac sarcoidosis and thus the assessment of the response to steroids. However, the effect of steroid on false-positive FDG-PET scans should be considered in the interpretation of the results, because steroid can affect glucose metabolism by increasing the rate of hepatic formation of glucose and glycogen.

3. Treatment

3.1. Immunosuppression

Despite the paucity of data, steroid is recommended as the mainstay in the treatment of cardiac sarcoidosis. According to one systemic review of steroid in the treatment of cardiac sarcoidosis, the quality of all publications was poor to fair and there were no randomized trials. The best quality data were those on AV conduction recovery; steroid appeared to have beneficial effects on this complication in cardiac sarcoidosis. However, it is not possible to draw any conclusion regarding the benefits of steroid treatment on other outcomes of cardiac sarcoidosis, such as LV function, ventricular arrhythmia, and mortality, due to the limited quality of data.

The optimal dosage of steroid for cardiac sarcoidosis is still unclear. High-dose prednisolone treatment (1 mg/kg daily) has been advocated as an initial therapy for cardiac sarcoidosis for the sake of minimizing the treatment failure. However, one study suggests that a high initial dose of steroid might not be essential for the treatment of cardiac sarcoidosis, by showing no significant difference in the overall survival of patients treated with a high initial dose of prednisone (>40 mg daily) compared with those treated with a low initial dose (<30 mg daily). In this regard, most experts recommend an initial dose of 30 to 40 mg/day, followed by a maintenance treatment with the same dose for 2-3 months. Thereafter, response to prednisolone should be assessed, and if there is a therapeutic response, the dose should be tapered to 5 to 15 mg per day, with treatment planned for an additional 9-12 months. Follow-up of at least 3 years after discontinuing treatment is considered necessary to assess for relapse of cardiac sarcoidosis.

Second-line agents can be used in cases of refractory cardiac sarcoidosis or significant steroid side effects. There are some data on the effect of second-line agents on cardiac sarcoidosis, such as methotrexate, cyclophosphamide, azathioprine, and infliximab.

3.2. Heart Failure

There are only limited data on the effect of steroid on the recovery of LV function in patients with cardiac sarcoidosis. Several small, single-center observational studies suggests that steroid treatment can lead to the improvement in LV ejection fraction (LVEF) in patients with mild to moderate LV systolic dysfunction as well as the maintenance of LV systolic function in those with normal function at diagnosis. However, it has been reported that steroid therapy cannot improve LVEF in patients with severe LV systolic dysfunction.

In contrast, one nationwide study with long-term follow-up over 25 years found opposite results; patients with severely impaired LV systolic function (LVEF <35%) had an improvement in LVEF with steroid treatment, while those with lesser extent of LV dysfunction had no improvement. Thus, the role of steroid therapy on improving or preserving LV systolic function remains to be explored further.

Besides immunosuppressive treatment targeting inflammation, the mainstay of treatment for cardiac sarcoidosis includes all standard medical and device therapies for heart failure. Heart transplantation is also a viable treatment option for patients with end-stage cardiac sarcoidosis.

3.3. Conduction disturbance

Steroid treatment might be effective for improving conduction abnormalities. Several studies reported that steroid therapy could lead to the recovery of the conduction abnormalities in a substantial proportion of patients, suggesting the potential reversibility of conduction disturbance with steroid therapy. However, a recent Heart Rhythm Society consensus statement recommends pacemaker implantation under the same indication as that for non-sarcoid patients, largely because of the unpredictable reversibility of conduction abnormalities with steroid therapy. Thus the effect of immunosuppressive therapy on conduction disturbances is still a challenging issue.

3.4. Ventricular arrhythmia

It is not surprising that the risk of non-sustained or sustained ventricular tachycardia (VT) is high in patients with cardiac sarcoidosis, considering that granulomatous scar and/or active inflammation can play a role in VT-promoting re-entry. Although data on the benefit of immunosuppression in the treatment of VT is limited, steroid therapy is the first suggested step, particularly if evidence of active inflammation is present. Treatment with anti-arrhythmic agents is frequently started at the same time as immunosuppression is started. Catheter ablation can be a treatment option if patients are refractory to medical therapies. In spite of the advances in ablation technology, the recurrence rates still remain high, often requiring a second procedure. It has been reported that CMR and PET findings are associated with arrhythmia-free survival, which suggests that CMR and PET findings can aid in identifying more suitable candidates for catheter ablation.

3.5. Sudden cardiac death

The risk of sudden cardiac death (SCD) is another challenging issue in cardiac sarcoidosis, along with the difficulty of selecting appropriate patient for ICD insertion. It is generally accepted that patients with cardiac sarcoidosis are at risk of SCD, but few data are available to guide decision-making for ICD insertion. Specifically, there are no reliable data providing an approximation of the true incidence of SCD in patients with cardiac sarcoidosis. It has been reported that SCD occurs with a broad range of incidence (24% to 65%) in the patients whose deaths are associated with cardiac sarcoidosis. More importantly, data on SCD risk stratification are lacking. Several studies suggest a potential role of imaging modalities for identification of patients at risk for SCD, such as 1) the presence of LGE and RV involvement in CMR and 2) perfusion defect and/or abnormal FDG uptake in PET. With regard to echocardiography, a lower LVEF was found to be associated with appropriate ICD therapy in patients with cardiac sarcoidosis, suggesting that echocardiography can improve SCD risk stratification in this population. However, the problem is that patients with mildly reduced LV systolic function may also have a substantial risk of fatal arrhythmia, making it difficult to use LVEF alone to decide who should receive an ICD.

Echo Seoul & Cardiac Imaging

Echo Seoul & Cardiac Imaging 2019가 2019년 9월 27일(금) ~ 29일(일) 3일간 서울아산병원 동관에서 개최되었다.

7월 1일부터 8월 31일까지 두 달간 사전등록을 받았으며, 참가자들은 참가 일수와 교육 시간에 따라 교육 연수 평점을 취득하였다.

■ 연수 평점
·대한의사협회 13점
·내과분과전문의 14점
·내과분과전문의 평생교육 14점

Echo Seoul & Cardiac Imaging 2019

이번 학술대회에는 700여명 이상이 참석하여 심초음파 및 심장 영상에 관한 의료인들의 많은 관심과 열기를 느낄 수 있었다. 국내외 전문가들을 초청하여 최신 연구 동향과 새로운 지식을 알아보고, 각자의 경험을 공유하고 토의할 수 있는 기회의 장을 만들어 성황리에 막을 내렸다.

Echo Seul and Cardiac Imaging에서는 오래 전부터 심초음파 및 심장 영상 기법 위주의 진단법 보다는 질환 자체에 집중하여 새로운 지식을 전달하고자 노력해왔다. 새로운 심장 영상 진단법이 제시된 경우에도 이 방법들을 임상에서 능숙하게 사용하기 위한 목표보다는 새로운 진단법이 가지고 있는 제한이나 문제점을 파악하고, 이를 어떻게 각각의 질환에 적용할 수 있는지를 고민하고, 생각해 보는 데에 많은 시간을 할애하여 왔다.

의료기술과 과학이 발전함에 따라 인공지능 등과 같은 것들이 생기고 의료 환경과 기술도 변화해 가고있다. 이러한 기술이 의료에 접목될 경우 의료 지식이 무용지물이 되는 것이 아닌가 하는 우려를 표명하는 사람들이 있기도 하나, 결과를 특정질환에서 어떻게 적용할 지 고민하고 선택하는 것은 우리 의료인의 역할과 책임으로 남아 있을 것이다.

Cardiac ASH Conference

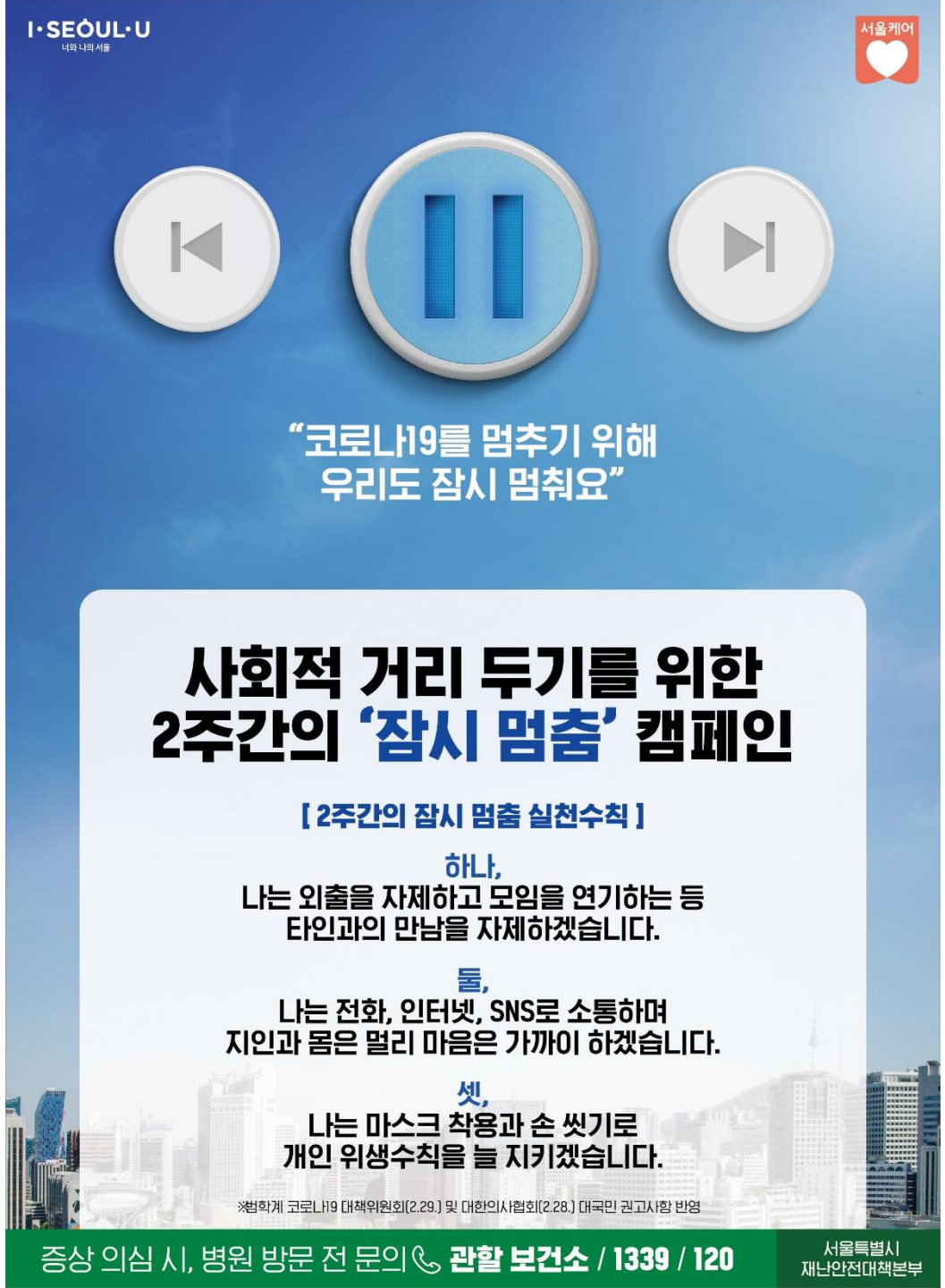
Cardiac ASH Conference 2019

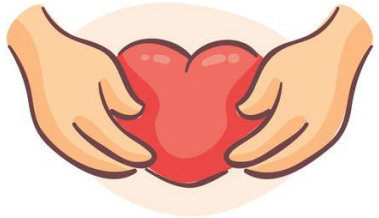
이번 Conference에서는 심근 질환에 경험이 많은 세계적인 대가들을 초청하여 심근증에 대한 양질의 교육을 제공하는 자리가 마련하였다.

Cardiac ASH Conference가 11월 2일~3일, 분당서울대학교병원에서 개최되었다. 지난 2년간의 경험을 바탕으로 올해 또한 더욱 흥미로운 주제로, 경험을 나누고 배울 수 있는 자리가 마련되었다. 이번 Conference는 105명이 참석하였으며 심근 질환에 대해 보다 집약적이고 열띤 토론을 나누는 자리였다.

조직위원장 손대원 교수는 앞으로도 ASH Conference라는 세계적으로 경쟁력 있는 학술 활동의 활성화를 위해 노력할 것이라고 포부를 밝혔다.

이번 학술대회는 참가자들의 연수교육 평점 취득이 가능하며, 대한의사협회와 내과분과전문의 각 9점이다. (평점 1일차:6점, 2일차:3점)





소식

2020년 3월

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