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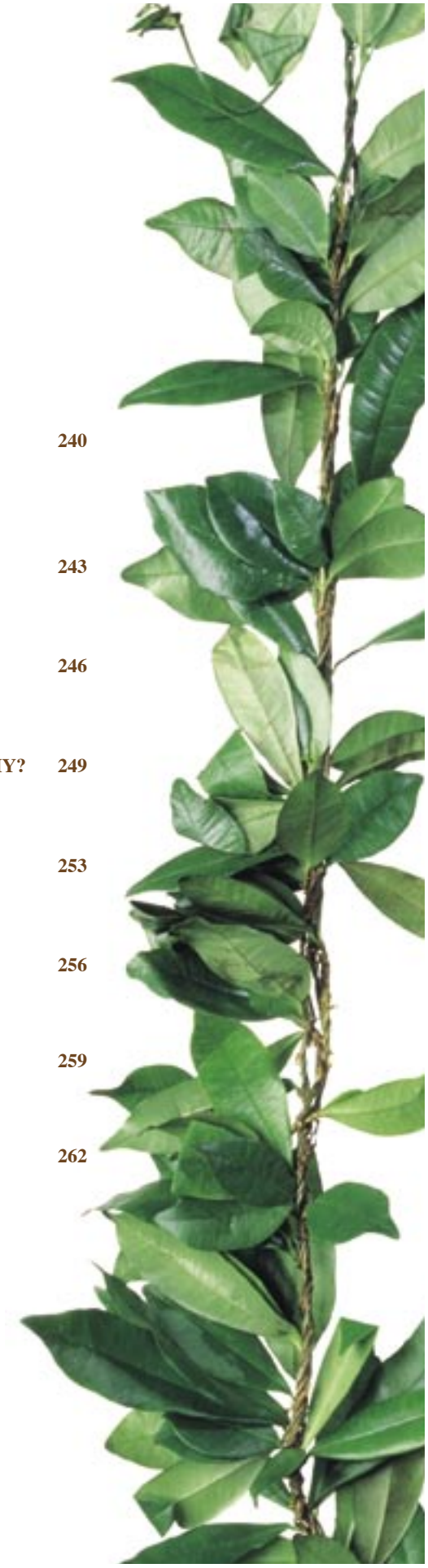

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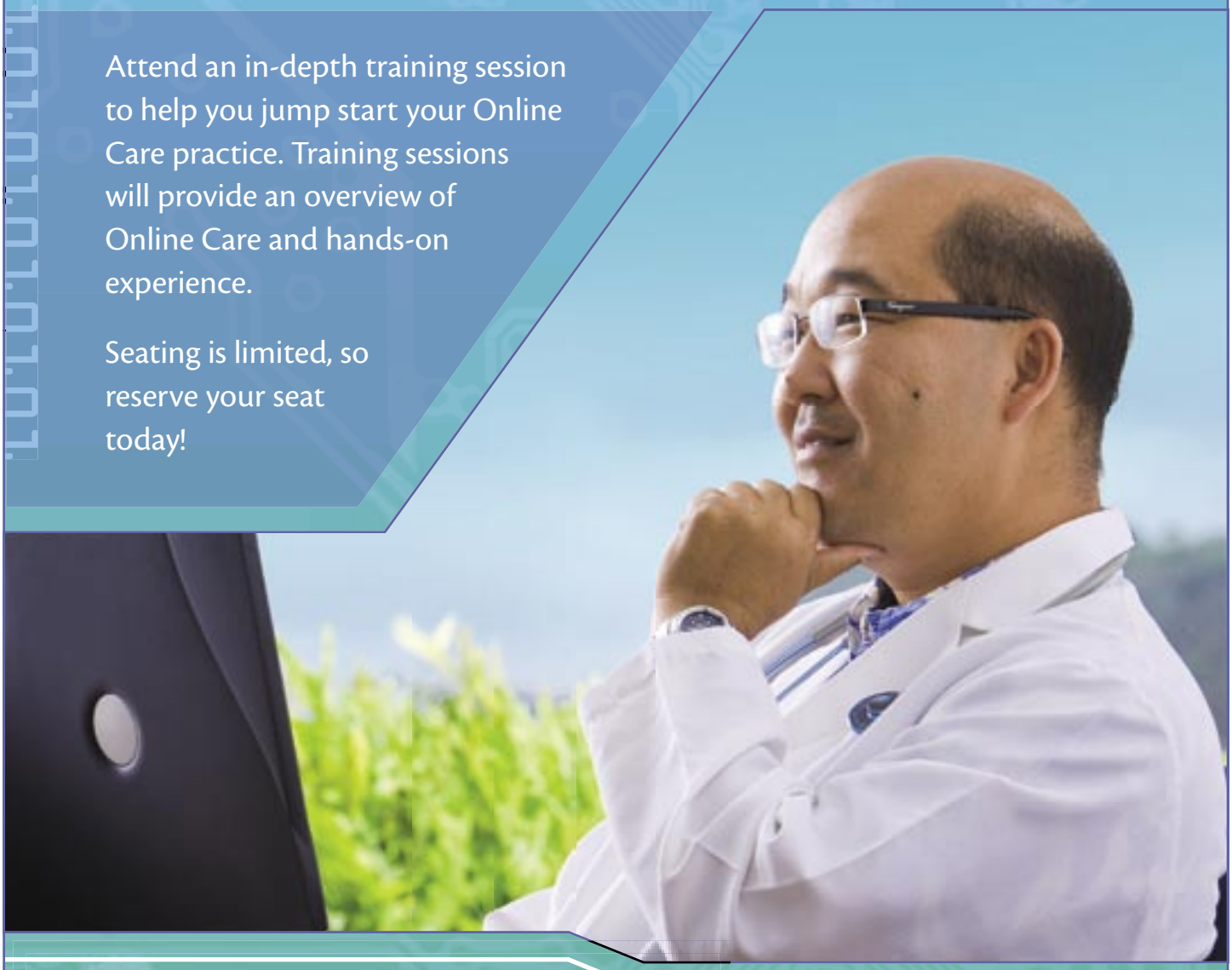

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Domestic Violence Screening in Pregnancy

Mikiko Yazawa Bunn MD, MPH; Nicole A. Higa MD; Willie J. Parker MD, MPH; and Bliss Kaneshiro MD, MPH

Abstract

Purpose: *Domestic violence is an important health concern that has been shown to have adverse effects on maternal and neonatal outcomes. The objectives of this study were to compare the prevalence of prenatal screening for domestic violence in a hospital-based resident clinic setting with screening practices in private obstetric offices in Honolulu, Hawai'i and to explore physician attitudes towards domestic violence screening during pregnancy.*

Methods: *A retrospective chart review was conducted at Queen's Medical Center in Honolulu, Hawai'i in women who delivered between 2003 and 2004. A 6 item written survey was also given to all attending and resident physicians with obstetric privileges. Descriptive statistics including frequency measures were generated and chi square tests were used to compare categorical variables.*

Results: *A total of 270 charts were reviewed. There was a statistically significant difference ($p < 0.01$) between the number of antepartum patients from the resident clinic (2.4 percent) and antepartum patients from private obstetric practices (39.3 percent) that were screened for domestic violence. While the majority of respondents (77.6%) to the domestic violence survey were aware that the American College of Obstetricians and Gynecologists recommends domestic violence screening in pregnancy, most respondents (69.0 percent) indicated that they "never or rarely" screened their patients for domestic violence.*

Conclusion: *Despite professional recommendations and an awareness of these recommendations, between 2003 and 2004, routine prenatal screening for domestic violence was markedly lacking for patients in this study population.*

Introduction

Domestic violence, which includes intimate partner violence as well as violence between family members, is a nationwide health concern. Between 1998 and 2002, over three million violent crimes were committed against family members, half of which were committed against spouses.[1] Although there is no universal profile for the victim of intimate partner violence, young women ages 12 to 30 are believed to be at the highest risk.[2] Other risk factors that have been associated with a higher prevalence of intimate partner violence include single marital status, low socioeconomic status, substance abuse and witnessing or experiencing violence during childhood.[3,4] Pregnancy is a stressful time for many individuals and is itself a risk factor for domestic violence. It is estimated that between 6.9 percent and 11.1 percent of pregnant women will experience physical violence during their pregnancy.[5,6]

Violence in pregnancy is especially concerning because of its adverse effects on both maternal and fetal outcomes. Women who are victims of violence during their pregnancy have higher rates of preterm delivery, delivery of a low birth weight infant, and delivery of an infant requiring admission to the neonatal intensive care unit.[6-8] They also have higher rates of vaginal bleeding and trauma during pregnancy as well as medical co-morbidities such as hypertension and pyelonephritis.[6-8] Even women who experienced intimate partner violence one year prior to their pregnancy are at an increased risk for these complications.[8] These adverse outcomes highlight the importance of proper screening practices for domestic violence and intimate partner violence. The American College of Obstetricians and Gynecologists recommends that psychosocial screening of women should occur at least once each trimester and should include an assessment of intimate partner violence including sexual victimization.[9] Despite these recommendations, the majority of female patients are not screened by their health care provider for domestic violence and among physicians who provide prenatal care, only 11% to 39% routinely screen for intimate partner violence during the first prenatal visit.[10,11]

The objectives of this study were to (1) compare the prevalence of prenatal screening for domestic violence in a hospital-based resident clinic setting and compare this to screening practices in private obstetric offices in Honolulu, Hawai'i and (2) explore physician attitudes towards domestic violence screening during pregnancy.

Methods

As part of a quality improvement measure initiated by Willie Parker MD, MPH, a retrospective chart review was conducted at Queen's Medical Center, a non-profit, Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) health care facility in Honolulu, Hawai'i. Within Queen's Medical Center, Queen Emma Clinics (QEC), a hospital based resident clinic staffed by the University of Hawai'i, provides ambulatory care services to a diverse patient population. Traditionally, patients who receive care at QEC have difficulty accessing health care in other settings due to poverty, lack of insurance, homelessness, and immigration status that precludes state sponsored health care coverage.

We reviewed the prenatal charts of all patients who received prenatal care at QEC and delivered at Queen's Medical Center during a twelve-month window from October 2003 to October 2004. We also reviewed a sampling of prenatal charts from private practice obstetricians whose patients delivered at Queens Medical Center during the same time period. To sample the patients who received care in a private practice setting, we consecutively sampled charts from each private practice physician who had obstetric privileges at Queens Medical Center and targeted 10 percent of all charts during the study period. Patients were considered to be screened if their American College of Obstetricians and Gynecologists prenatal checklist indicated that screening for domestic violence was completed at any time during the patient's prenatal course. In addition, an anonymous written survey was given to all physicians with obstetric privileges at Queens Medical Center and all University of Hawai'i obstetrics and gynecology residents regarding domestic violence screening practices using a 6-item questionnaire.

Statistical analysis was performed using SPSS for Windows (version 16, SPSS, Chicago, Illinois). Descriptive statistics, including frequency measures, were generated and chi square tests were used to compare categorical variables. The sample size was based on expected differences in the primary outcome, domestic

violence screening. The authors hypothesized this would be higher among patients receiving care at QEC versus those receiving care at a private practice office. A sample size of 59 in each group was portulated to achieve 80% power to detect a 25 percent difference between the groups with a significance level of $p = 0.05$. This study was approved by the Queens Medical Center Institutional Review Board.

Results

Eighty-five QEC charts and 185 private practice charts met inclusion criteria. All of the charts were complete and were available for review. There were 2.4 percent (2/85) of QEC antepartum patients who were screened for domestic violence during pregnancy, compared to 39.3 percent (56/185) of patients who received prenatal care through a private practice physician. This difference was statistically significant ($p < 0.01$). However, 80.3 percent (45/56) of private practice patients who were screened had a "global negative" screen which was recorded in the prenatal chart by a single negative sign in response to a comprehensive list of medical problems, including "trauma and violence." There was a single case of domestic violence that was identified in the study population among the 2 patients screened in QEC.

All 33 physicians with obstetric privileges and 25 obstetrics and gynecology residents completed the domestic violence survey. Approximately 78 percent (45/58) of all respondents were aware that the American College of Obstetricians and Gynecologists recommends domestic violence screening in pregnancy. Of the attending physicians, 76 percent (25/33) were aware of the recommendation compared to 80.0 percent of resident physicians (20/25) and this difference was not statistically significant. However, 65.5 percent (38/58) of all respondents indicated that they "never or rarely" screened their patients for domestic violence. There were 86.2 percent (50/58) of respondents who reported barriers to screening. The three most frequently cited barriers were lack of time (40/58), lack of privacy including the partner being present in the examination room (32/58), and inadequate training (26/58).

Discussion

Despite professional recommendations and awareness of these recommendations between 2003 and 2004, routine prenatal screening for domestic violence was markedly lacking for patients in this study population. QEC, in particular, had a low percentage of patients who were screened despite clinic census data indicating that this antepartum population has several risk factors for domestic violence including young age and single marital status. Although the majority of charts in which the patient had been screened indicated that the patient was not a victim of domestic violence, these results were not specific to a particular trimester and reflected a single screening done at any point throughout the pregnancy. The use of a "global negative" mark for a comprehensive list of medical problems including domestic violence utilized in most prenatal records raises the question of the quality of domestic violence screening in the study population.

It should be noted that it is possible that providers performed domestic violence screening during antepartum care did not record it in the prenatal record. Indeed, they may have been more likely not to record it if the screening was negative for domestic violence. This is one of the limitations of a retrospective chart review such as this one. The American College of Obstetricians and Gynecologists has advocated domestic violence screening of all women during each trimester, as some women may not disclose that they are victims when asked for the first time. Repeated domestic violence screening has been shown to increase detection rates.[12] Increased domestic violence screening and routine repeat screening of patients in our study population could potentially increase the number of women identified as being victims of abuse or violence which would also increase opportunities for intervention.

Although the majority of residents and private practice obstetricians were aware of the screening recommendations, most admitted to never or rarely screening their patients. This discrepancy suggests that the barriers hindering physicians from screening are significant. Barriers perceived by physicians in this study were consistent with other studies examining perceived barriers to domestic violence screening. In addition to the barriers cited in this study including lack of time and lack of privacy, other barriers such as fear of offending patients, a sense of powerlessness to help victims, and cultural differences between patients and physicians have also been identified as major barriers.[10,13,14] A reported "lack of training," another barrier frequently cited by physicians in this study, is also consistent with findings from other studies.

The phrase "lack of training" broadly encompasses a lack of training in initiating discussions about domestic violence or lack of information about community resources for victims of domestic violence. Both are highly pertinent topics and are important pieces of information for health care providers to have to improve their comfort in bringing up the topic of domestic violence.[13,14] In one study, physicians who received training within the last 3 years were less likely to report a lack of information of community agencies as a major barrier.[10] This suggests that frequent and ongoing physician training is ideal to facilitate domestic violence screening among antepartum patients.

Various tools and questionnaires have been utilized for domestic violence screening including the Partner Violence Screen and the Woman Abuse Screening Tool. Both tools were designed to be quick and simple to implement in a busy office practice. While the Woman Abuse Screening Tool contains 7 questions, the Partner Violence Screen is even shorter and includes only 3 questions: "Have you been hit, kicked, punched or otherwise hurt by someone in the past year," "do you feel safe in your current relationship" and "is there a partner from a previous relationship who is making you feel unsafe now?" Asking these 3 screening questions has a sensitivity of 71% and a specificity of 84% in the detection of domestic violence.[15]

Although the aim of obstetrician gynecologists in Hawai'i is to provide comprehensive care to female patients during pregnancy, screening for intimate partner or domestic violence is often overlooked. Most women who are victimized can be identified through a brief screening using a few simple questions. Although it is extremely important to be diligent about proper domestic violence and intimate partner violence screening in a health care setting such as QEC, because domestic violence can affect women from all socioeconomic backgrounds, it is important to implement screening universally. It is notable that the lack of domestic violence screening in pregnant women highlighted by the results of this study led to improved domestic violence training initiated by one of the co-authors of this

study including a lecture series and a grand rounds program. Greater detection of patients who are victims of violence can provide opportunities for intervention, greatly improve both maternal and fetal outcomes, and decrease overall health care costs.

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"Reversible" Late Bioprosthetic Aortic Valve Stenosis with Spontaneous Recovery

Katsufumi Nishida MD and Osamu Fukuyama MD, FACC

Abstract

Background: Advantages of bioprosthetic valve replacement in patients with normal sinus rhythm are avoidance of the need for long-term anticoagulation and reduced hemorrhagic accidents. On the other hand, low durability of the valve and a higher re-operation rate are known disadvantages. Bioprosthetic valve thrombosis and related embolism are considered to be rare complications.

Case Report: This 80-year-old man underwent aortic valve replacement with a 23 mm porcine prosthesis and concomitant single vessel right coronary artery bypass graft with an autogenous vein. Two years after the initial surgery, the patient developed progressive dyspnea. Continuous wave doppler echocardiography showed a greatly elevated mean pressure gradient of 48 mmHg and an aortic valve area of 0.45 cm^2 compatible with severe aortic stenosis. Two months later, prior to the elective repeat aortic valve replacement surgery, a transthoracic echocardiography showed a significantly reduced mean pressure gradient of 19 mmHg and the effective valve area was 1.3 cm^2, and the surgery was cancelled.

Conclusion: The authors report a case of "reversible" late porcine aortic valve stenosis with spontaneous resolution, likely due to thrombus formation on the valve leaflets. Spontaneous thrombosis of the Medtronic mosaic porcine aortic bioprosthetic valve may occur in the absence of any identifiable causes.

Introduction

Porcine bioprosthetic cardiac valves have been used for over 30 years. An advantage of bioprosthetic valve replacement in patients with normal sinus rhythm is avoidance of the need for long-term anticoagulation thereby reducing the risk of hemorrhagic complications. On the other hand, low durability of the valve and higher re-operation rate are known disadvantages. According to a meta-analysis of 9 selected reports on stented porcine bioprostheses conducted by Puvimanasinghe et al., the annual rate of valve thrombosis was 0.03%.[1] This suggests bioprosthetic valve thrombosis is a rare complication. Despite its rarity, sequelae may be catastrophic.[2] There have been several case reports concerning both early and late thrombotic stenosis of aortic bioprosthetic valves.[3-7] Over the past 30 years, technological advancements in bioprosthetic valves have been made to improve their longevity and hemodynamic function. The Mosaic bioprosthesis (Medtronic Inc, Minneapolis, Minn.) is a porcine heart valve with a low-profile stent fixed with glutaraldehyde combining zero-pressure and root-pressure techniques and treated with α-amino-oleic acid to reduce tissue calcification.[8,9] The authors present a case of an 80-year-old man with a 23 mm Medtronic Mosaic porcine aortic valve prosthesis who developed progressive dyspnea on exertion likely secondary to prosthetic valve thrombosis with spontaneous resolution.

Case Presentation

This 80-year-old man with past medical history of hypertension, aortic stenosis, and coronary artery disease underwent aortic valve replacement with a 23 mm Medtronic Mosaic porcine prosthesis and concomitant single vessel right coronary artery bypass graft with an autogenous vein on May of 2004. Prior to the surgery, a 90% right coronary artery lesion with normal ejection fraction and a calculated aortic valve area of 0.8 cm^2 were confirmed by cardiac catheterization. The surgery was uneventful. Postoperatively, the patient did well and was anticoagulated with coumadin for 3 months. He was discharged on his fifth postoperative day in normal sinus rhythm. A post-operative echocardiogram in July of 2004 showed a mean transaortic pressure gradient of approximately 18 mmHg and the aortic valve area was 1.3 cm^2, a normal functioning porcine valve, and good ventricular performance. He did well in early follow-up. In April 2006, 24 months after the initial surgery, the patient started to complain of progressive dyspnea on exertion. Physical examination revealed a grade III out of VI systolic murmur at the aortic area. A transesophageal echocardiogram showed thickening of the aortic valve leaflets with a possible pannus formation. A transthoracic continuous wave doppler echocardiography showed a greatly elevated mean pressure gradient of 48 mmHg and an aortic valve area of 0.45 cm^2 compatible with severe aortic stenosis (figure 1). Catheterization revealed a 1+ aortic regurgitation. The aortic valve had limited patency and valve excursion was markedly reduced as seen by negative contrast. Two months later, the patient was scheduled for repeat aortic valve replacement. However, prior to the surgery, a repeat transesophageal echocardiogram revealed a normal transaortic mean pressure gradient of 11 to 13 mmHg and the aortic valve area was 1.2 to 1.3 cm^2. These findings suggested resolution of aortic stenosis. A tranthoracic echocardiogram done on the same day revealed a significantly diminished mean pressure gradient of 19 mmHg, and an effective valve area of 1.3 cm^2 (figure 2). The surgery was cancelled. The patient felt less dyspneic and was otherwise asymptomatic. A cardiac auscultation exam revealed disappearance of systolic murmur at the aortic area. He was placed on coumadin to reduce the risk of future thrombus formation and infectious endocarditis prophylaxis.

Discussion

The Medtronic Mosaic valve was designed to improve bioprosthetic valve longevity and hemodynamic function. The advancements in its design include: zero-pressure tissue fixation, alpha amino oleic acid as an antimineralization process, and a low-profile, semiflexible stent.[8,9] Jamieson et al. reported that a study of 415 patients that underwent aortic valve replacement with the Medtronic Mosaic valve found the overall thromboembolism rate to be 2.9% per patient-year. Two occurrences of valve thrombosis were identified.[10] Eichinger et al. reported that the freedom from event rates in the aortic position at 5 years was 96.6% ± 1.1% for primary thromboembolism. Less than 30 days post-operative, valve thrombosis was zero and late valve thrombosis was observed in four patients resulting in an incidence of 0.3 % per patient-year.[11] Thomson et al. similarly reported freedom from valve-related major thromboembolic events was 96.1 ± 1.8%. Early (less than 30 days after the operation) valve thrombosis was again zero and late valve thrombosis was observed in one patient amounting to an incidence of 0.1 % per patient-year.[12]

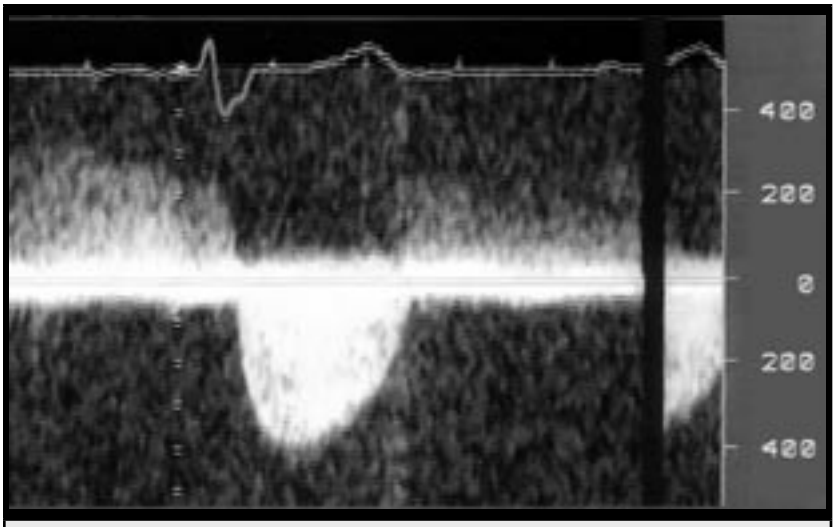

Figure 1.— A transthoracic echocardiogram depicting peak aortic valve velocity 420 cm/sec, mean gradient 48 mmHg, and aortic valve area is 0.45 cm2 compatible with severe aortic stenosis (April, 2006)

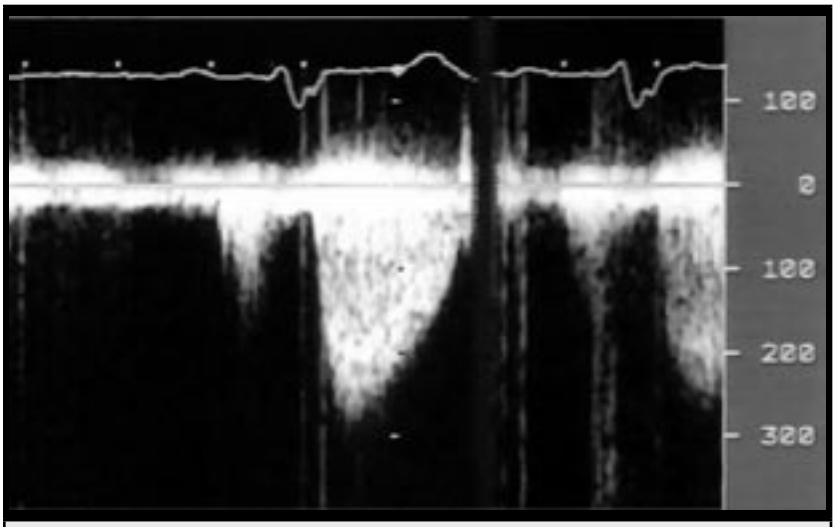

Figure 2.— A transthoracic echocardiogram depicting peak aortic valve velocity 280 cm/sec, mean gradient 19 Hg, and aortic valve area is 1.3 cm2 that suggest resolution of aortic stenosis (June, 2006)

All three authors concluded that the Medtronic Mosaic bioprosthesis is safe and effective in the aortic position.

In the present case, the cause of the elevated transaortic gradient and functional aortic stenosis is not clear although there is no doubt that it was real as it had been confirmed by three different studies, a transthoracic echocardiogram, a transesophageal echocardiogram, and a cardiac catheterization. Despite the absence of pathologic documentation in our case, the early onset of the disease in a non-anticoagulated patient with the previously mentioned clinical, echocardiographic, and cardiac catheterization findings, suggest an acute thrombo-obstructive etiology. There was a concern that limited aortic valve leaflet excursion was caused by some obscure etiologies, such as poor left ventricular contractility causing the reduced excursion or artifactual angiographical or echocardiographical events. However, even transient left ventricular dysfunction was not documented throughout the clinical course. Aside from having a bioprosthesis, there were no additional obvious risk factors for thrombosis such as an underlying coagulation abnormality, left ventricular dysfunction, or low cardiac output – all of which are known to cause bioprosthetic thrombosis.[13] A chronic degenerative process of the leaflet tissue was not considered because of the normal features seen on the previous echocardiographic study and a spontaneous improvement to a normal functioning valve. Other possibilities include pannus and infection. Pannus growth on bioprostheses presents predominantly on the flow surface and is usually associated with structural abnormalities and valve regurgitation.[14] However, pannus was not considered due to unlikeness of spontaneous resolution. Infectious etiologies are also unlikely due to the clinical presentations. Spontaneous resolution of the stenosis may have occurred due to dislodgement or dissolution of the thrombus. Even though spontaneous disappearance of prosthetic valve thrombus without embolization would be unusual, to the best of our knowledge, spontaneous resolution of valve thrombosis has never been reported in the literature. Thrombolytic therapy is not the first-line therapy for high-risk patients with prosthetic valve thrombosis.[15] Heparin therapy has been recommended in patients with prosthetic valve thrombosis and there have been several cases of favorable outcomes after heparin therapy.[3]

Conclusion

The authors report a case of "reversible" late porcine aortic valve stenosis with spontaneous resolution likely due to thrombosis formation on the valve leaflets. It is evident that spontaneous thrombosis of the Medtronic mosaic porcine aortic bioprosthetic valve may occur in the absence of any identifiable cause. This diagnosis should be suspected in patients in whom recent and abrupt symptoms develop or present with sudden profound cardiac decompensation. For these patients, heparin therapy has been recommended and cases have reported favorable outcomes after heparin treatment.[3] These patients may benefit from long-term anticoagulation.

The authors declare that they have no financial source of support and competing interests.

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Problem Based Learning and Academic Performance in Residency

Jennifer Thomas; Tod Aeby MD; Ginny Kamikawa; and Bliss Kaneshiro MD, MPH

Abstract

Background: *In the Problem Based Learning (PBL) curriculum, knowledge is acquired by solving medical cases. Because of this quality, it has been hypothesized that residents trained in a PBL curriculum during medical school will be better equipped to succeed during residency. The purpose of this study was to compare the academic performance of obstetrics and gynecology residents who were trained using a PBL curriculum during medical school with those who were trained in a traditional curriculum.*

Methods: *A retrospective analysis was performed on residents at the University of Hawai'i Obstetrics and Gynecology Residency Program between 1997 and 2007. Scores on standardized tests were compared between residents who attended a PBL medical school (PBL group) and residents who attended a traditional medical school (non-PBL group) using a t-test analysis. United States Medical Licensing Examination (USMLE) Step 1, USMLE Step 2, and the Council on Resident Education in Obstetrics and Gynecology (CREOG) examination scores for all four years of residency were compared between the two groups.*

Results: *Thirty-five students had complete data. There were no significant differences between the mean scores in PBL group versus the non-PBL group for the Step 1 (205.7 vs. 202.0, p = 0.491), CREOG PGY 1 (197.8 vs. 195.7, p = 0.711), CREOG PGY 2 (202.7 vs. 198.1, p = 0.394), CREOG PGY 3 (197.3 vs. 201.1, p = 0.545), and CREOG PGY 4 (202.4 vs. 198.8, p = 0.531). However, there was a significant difference between the mean scores of the two study groups for the USMLE Step 2 (215.1 vs. 202.1, p = 0.046).*

Conclusions: *Although PBL students performed significantly better on the USMLE Step 2, the academic performance of obstetrics and gynecology residents who attended a PBL medical school and those who attended a traditional medical school was similar.*

Introduction

Problem Based Learning (PBL) was first introduced to medical education by McMaster University in Canada in 1969.[1] In 1979, the University of New Mexico was the first medical school in the United States to offer a PBL curriculum.[2] Since then, 85 of the 124 medical schools in North America have integrated some form of the PBL curriculum with only a handful of schools delivering the majority of medical education through PBL.[1]

PBL is a student driven process in which preclinical medical education is delivered through the exploration of "real life" biomedical problems.[3] Students work in small groups consisting of six to seven members with one or two faculty members facilitating the discussions.[1] Each group is presented with a biological problem and the students identify concepts within the problem which require further exploration. Individually, students then research and teach the group medical concepts. The PBL curriculum has been described as engaging, allowing students to actively learn as opposed to being presented with educational materials via a lecture format.[3,4] In this way, proponents of PBL suggest that the process fosters lifelong learning.[4]

Because of these qualities, proponents of PBL have hypothesized that medical students trained in a PBL curriculum will be better equipped to succeed in residency. There have been several studies that have used subjective measures and the residents self perception to compare competencies of students trained in PBL curriculum and those trained in a traditional curriculum. Cohen-Schotanus et al. found that PBL graduates scored higher on self-rated competencies than those trained in a traditional curriculum.[5] Norman et al. used peer ratings to compare the percentage of graduates who demonstrated "cause for concern" and those who were rated excellent.[4] In this study, the difference between PBL and traditional graduates was not statistically significant.

Academic performance is objectively measured using standardized tests such as the United States Medical Licensing Examination (USMLE). Step 1 of the USMLE is intended to test basic science knowledge and Step 2 is used to assess a student's clinical acumen.[6] USMLE scores are reported on a three digit scale. Most scores fall between 140 and 260 with a standard deviation of about 20.[7]

Obstetrics and Gynecology residents are also objectively evaluated during their training using the Council on Resident Education in Obstetrics and Gynecology (CREOG) examination. To date, there are no published studies comparing the USMLE and CREOG scores of obstetrics and gynecology residents trained in a PBL curriculum versus a traditional medical curriculum. Thus, the objective of this study was to compare the academic performance of obstetrics and gynecology residents trained in a PBL curriculum during medical school to those trained in a traditional curriculum.

Methods

This was a retrospective study of obstetrics and gynecology residents trained at the University of Hawai'i between 1997 and 2004. Residents were divided into two groups, residents who attended a medical school that utilized a PBL curriculum (PBL group) and residents who attended a medical school that utilizes a traditional didactic curriculum (non-PBL group). Whether a medical school utilized a traditional curriculum versus a PBL curriculum was determined by reviewing medical school curriculum guide books, web sites, and if necessary, speaking with medical school personnel over the phone. Residents who graduated from foreign medical schools or osteopathic schools were excluded from the analysis as they may not take the USMLE during medical school.

Academic performance was measured by the USMLE Step 1 and Step 2, and the CREOG examination scores for each of the four years of residency. The mean test scores for each group were compared using an independent t-test.

The sample size was based on the expected differences in CREOG scores for the resident's first year of residency. Satisfactory CREOG scores are typically set at 200. We hypothesized that students trained in a PBL curriculum would have a mean first year CREOG score higher than those trained in a non-PBL curriculum. With first year CREOG scores of the PBL group hypothesized to be 210 and scores of the non-PBL group hypothesized to be 200, assuming a normal distribution and a standard deviation of 20 points, to achieve 80% power with a significance of 0.05, we needed 16 residents in each group. This study was approved by the Queens Medical Center Institutional Review Board and was granted exempt status by the University of Hawai'i Committee on Human Studies.

Results

Complete data was available for 35 residents; 16 had attended a medical school which utilized a PBL curriculum and 19 were trained in a medical school that utilized a traditional curriculum. Both groups had mean USMLE Step 1 and Step 2 scores greater than 200 with individual scores ranging from 171 to 241. The PBL and the traditional groups also had mean CREOG scores of approximately 200. The results are presented in Table 1.

There were no significant differences in the mean score between the two study groups for the USMLE Step 1 (205.7 vs. 202.0, p = 0.491), CREOG PGY 1 (197.8 vs. 195.7, p = 0.711), CREOG PGY 2 (202.7 vs. 198.1, p=0.394), CREOG PGY 3 (197.3 vs. 201.1, p=0.545), and CREOG PGY 4 (202.4 vs. 198.8, p=0.531). However, there was a significant difference between the mean scores of the PBL group versus the traditional group for the USMLE Step 2 (215.1 vs. 202.1, p=0.046). There were four individuals in the PBL group with test scores that were identified as outliers. These four individuals had scores either above 240 or less than 175. The analysis was repeated excluding these four individuals and the results did not change.

Discussion

With the exception of USMLE Step 2 scores, the standardized test scores of obstetrics and gynecology residents who attended a PBL medical school and those who attended a traditional medical school did not differ significantly. Similar mean test scores for the USMLE Step 1 suggest that the knowledge acquired in PBL and traditional medical schools during the first and second year is homogenous despite differences in teaching techniques. These findings concur with a study published by Distlehorst et al. which reported that the mean scores and pass rates for the USMLE Step 1 and Step 2 were not significantly different between medical students at a single institution who chose a PBL versus a traditional track.[2]

However, residents trained in a PBL curriculum during medical school did score significantly higher than residents who trained in a traditional curriculum on the USMLE Step 2. As the USMLE Step 2 is more heavily weighted towards clinical knowledge, this finding suggests that medical students trained in a PBL curriculum are more adept at integrating and applying clinical knowledge. This finding is also consistent with the published literature. A review published by Normal et al. concluded that PBL curricula may enhance the integration of basic science into clinical problems.[8]

Despite the hypothesis by many medical educators that the self directed learning that is stressed in a PBL curriculum is more congruent with the type of continuing medical education that takes place following medical school,[9] there were no significant differences in CREOG scores between obstetrics and gynecology residents trained in a PBL curriculum versus a traditional medical curriculum during all four years of residency. This indicates that any differences in knowledge that were present prior to graduation from medical school equalized by the time obstetrics and gynecology residents took their first in-service examination. These findings are similar to those reported by Normal et al. which found no difference in competence as determined by a systematic peer review program in Canadian medical school graduates who were trained in a PBL versus a traditional medical school curriculum. It should be noted that at the University of Hawai'i, resident education takes the form of traditional lecture series rather than a PBL curriculum.

Proponents of PBL have touted other benefits to this type of curriculum. Proponents describe the self-directed learning style that is acquired during a PBL curriculum as conducive to a culture of continuous learning that will aid a physician throughout his or her career.[8] Another study found that PBL graduates were able to utilize a higher level of medical references and resources[10] and had improved retention of knowledge over time.[8] While some have speculated that a PBL curriculum is less expensive to an academic institution, the majority of the medical literature reports that it is more expensive because of a reliance on a large number of tutors needed to facilitate discussions.[9,11,12]

Prior studies that have examined self reported measures of competency of PBL and non-PBL graduates have reported that PBL graduates report feeling better prepared to succeed in residency. A study by Prince et al. found that PBL graduates reported a higher connection between medical school and work and felt more prepared to apply their medical training for clinical practice than non-PBL graduations.[13] Other studies, including two studies done in the Netherlands, found that graduates of medical schools that utilized a PBL curriculum in the Netherlands scored higher on self-rated competencies than non-PBL graduates.[5,14] As self rated competencies may be more reflective of confidence than of academic ability or knowledge, this type of assessment may not be a full reflection of the longitudinal effects of a PBL curriculum on academic performance. Our study is important because it compared the competencies of PBL and non-PBL graduates using an objective measure of academic performance. Furthermore, the objective measures we chose, the USMLE and the CREOG examination are two of the most common measures used to evaluate a medical student or obstetrics and gynecology resident's medical knowledge and performance.

This study was limited by the fact that data was collected from a single institution. While we had adequate sample size to demonstrate differences between our study groups, it cannot be concluded that these findings are true for residents in every residency program.

Table 1.— Comparison of academic performance (USMLE Step 1 and 2, CREOG 1-4) for residents trained through PBL and traditional curriculum

Test	PBL (n=16), Mean Score (SD), Range	Traditional (n=19), Mean Score (SD), Range	p value
USMLE 1	205.7 (17.6), 238.0-179.0	202.0 (14.2), 230.0-179.0	.491
USMLE 2	215.1 (22.00), 241.0-171.0	202.1 (12.7), 236.0-177.0	.046
CREOG 1	197.8 (17.3), 233.0-171.0	195.7 (16.4), 227.0-168.0	.711
CREOG 2	202.7 (15.5), 228.0-172.0	198.1 (15.7), 228.0-172.0	.394
CREOG 3	197.3 (20.2), 235.0-156.0	201.1 (17.1), 226.0-166.0	.545
CREOG 4	202.4 (19.7), 240.0-163.0	198.8 (14.3), 222.0-170.0	.531

Future studies could include multiple institutions and residents from different disciplines.

Furthermore, while standardized tests provide an objective measure of academic performance, they are not a complete assessment of the competence of a physician. Residents may score well on standardized tests but may not be able to translate this knowledge to clinical care. Moreover, there are many measures of physician's ability that are difficult to quantify uniformly that are equally important such as compassion, communication skills, and surgical acumen.

While we did find differences in academic performance based on USMLE Step 2 scores, overall, it cannot be concluded that acquiring a medical education in a PBL setting better equips a physician to succeed during their residency training. Although PBL has been the topic of numerous commentaries on medical education, there is little in the published literature that directly compares a traditional medical education with a problem based curriculum. Still, throughout the country, there has clearly been a shift towards the integration of PBL into medical schools. While this shift is congruent with the application of modern educational theories, there is little objective evidence that a PBL curriculum is better. Those who may question the efficacy of the PBL technique in producing knowledgeable medical students should be reassured by our findings. As both educational approaches appear to be equally efficacious, prospective medical students can benefit from understanding their own learning style and choosing a medical school that will best fit their needs.

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A Case with Transient Anterolateral Wall Ballooning Syndrome; New Variant Form of Takotsubo Cardiomyopathy?

Wipat Phanthawimol MD; Hiroki Ito MD; and Osamu Fukuyama MD, FACP, FACC

Abstract

Proposed to be a new variant form of the left ventricular apical ballooning syndrome or the so-called "Takotsubo cardiomyopathy" the presented case has several clinical characteristics resembling previous reported cases of this particular syndrome except for its unique anterolateral wall akinesis and sparing basal and apical wall motion with preserved left ventricular ejection fraction.

Introduction

Transient left ventricular apical ballooning syndrome characterized by transient akinesis of the left ventricular apex with basal wall hyperkinesis during systole was first described as Takotsubo-type cardiomyopathy[1] in 1990. It was named for its distinctive appearance on the left ventriculogram during systole similar to the Japanese fishing instrument used for trapping octopuses, called Tako-tsubo. Typically, initial manifestation of this syndrome mimicks the presentation of acute myocardial infarction. In 1991, Dote et al.[2] reported 5 Japanese patients presented with chest pain and electrocardiographic changes resembling acute myocardial infarction. Left ventriculogram revealed transient apical akinesis but significant coronary artery stenoses were not seen on coronary angiogram. Since then, there were several retrospective studies and case reviews of Takotsubo cardiomyopathy from Japan and the United States to further define its clinical features.[1,3-6] Presented below is a case of a woman with discrete transient anterolateral wall akinesis in the absence of significant coronary artery occlusion and preserved left ventricular ejection fraction proposed to be the other variant form of Takotsubo cardiomyopahty.

Case Presentation

An 80-year-old Japanese woman with past medical history of osteoarthritis and hyperlipidemia presented to the emergency department with sudden onset of moderate pressure-like chest pain at mid anterior chest wall immediately after coughing up mucoid non-bloody sputum and a choking sensation. Physical examination on admission was unremarkable. Initial electrocardiogram (Figures 1 and 2) demonstrated new significant ST-segment elevation with subsequent T wave inversion in lead I, aVL, V1, V2, and V3. Corrected QT interval was 435 milliseconds on admission and 496 milliseconds at 1 day after admission in comparison to her baseline of 410 milliseconds. The initial CK, CK-MB and troponin-I were 93, 7.1 and 1.3 ng/ml and they were peaked at 127, 12.4 and 1.3ng/ml

Figure 1.— Coronary angiogram showed short left main coronary artery without stenosis. The left anterior descending artery gave off three branches, the second of which had an irregularity with 30% degree of stenosis (arrow). The third diagonal branch was small in caliber and it also tapered.

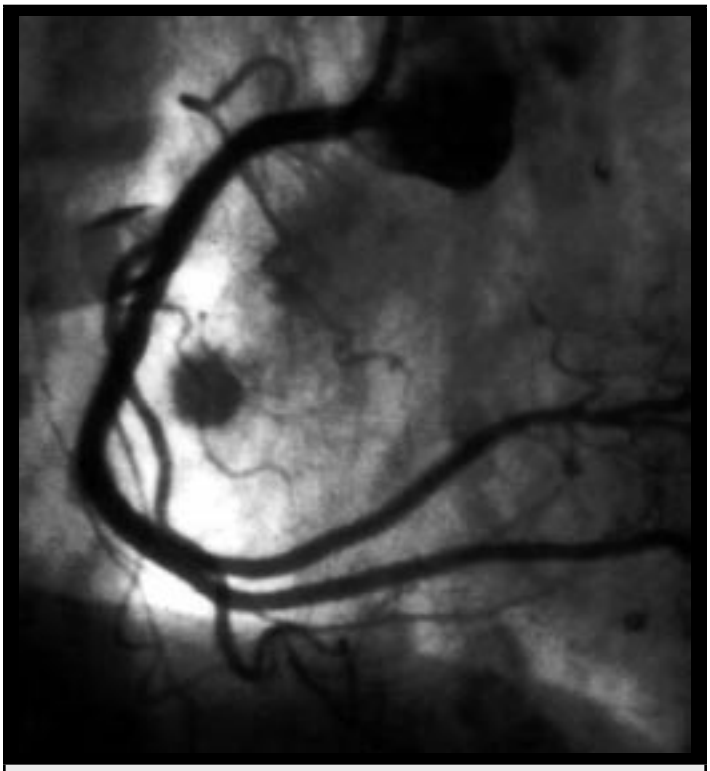

Figure 2.— Coronary angiogram showed right coronary artery with irregularity. Significant stenosis was not documented.

Figure 3.— Left ventriculogram in the end-systolic phase demonstrated anterolateral wall ballooning (arrow).

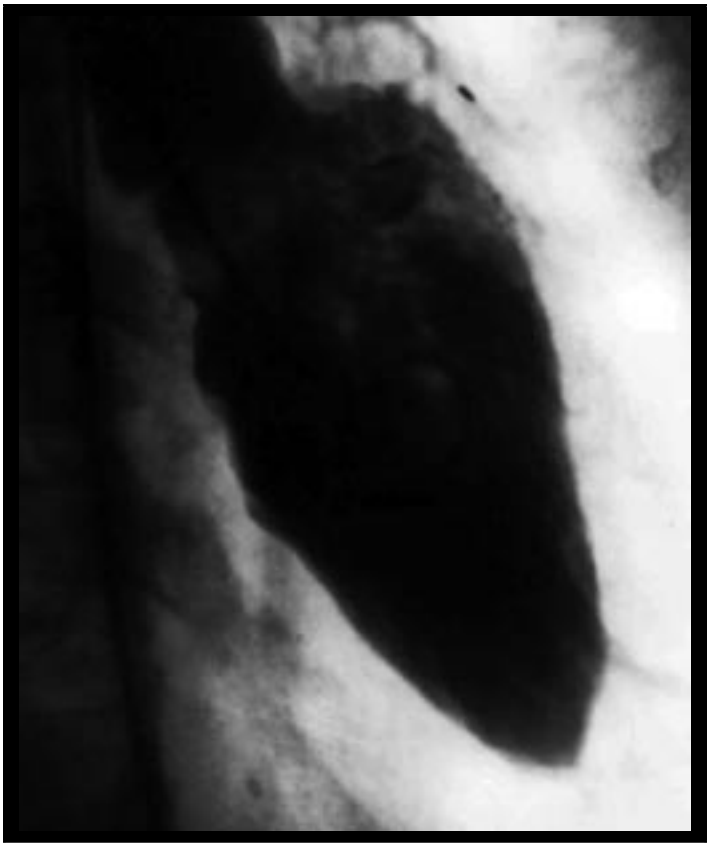

Figure 4.— Left ventriculogram demonstrated anterolateral wall in the end-diastolic phase.

respectively. Transthoracic echocardiogram performed 1 month prior to admission revealed normal estimated left ventricular ejection fraction of 67% without any segmental wall motion abnormality. Coronary angiogram was done 3 days after the onset of chest pain. There were no significant occlusion of the coronary arteries (Figures 3 and 4). The second diagonal branch had an irregularity with 30% degree of stenosis. Left ventriculogram demonstrated anterolateral wall akinesis and prominent ballooning at the end-systolic phase (Figures 5 and 6). Estimated overall left ventricular ejection fraction was 65%. Six weeks after discharge from the hospital, repeated transthoracic echocardiogram showed complete normalization of anterolateral wall motion and the estimated left ventricular ejection fraction was 68%. Prolonged corrected QT interval was also completely resolved.

Discussion

There is currently no universal diagnostic criteria for transient left ventricular apical ballooning syndrome. However, considering 3 registration criteria used to recruit a Japanese population in this retrospective study[1]: 1) suspected acute myocardial infarction based on chest symptoms or electrocardiographic changes; 2) transient left ventricular ballooning confirmed by left ventriculogram; and 3) luminal narrowing of less than 50% in all three coronary arteries or the proposed Mayo criteria[7]: 1) transient akinesis or dyskinesis of the left ventricular apical and mid-ventricular segments with regional wall-motion abnormalities; 2) absence of obstructive coronary disease; 3) new electrocardiographic abnormalities; and 4) absence of recent significant head trauma, intracranial bleeding or other causes contributing to the apical and mid-ventricular wall dyskinesis, this case met all criteria except that only the anterolateral portion of the left ventricle was exclusively affected while the apex and basal wall motion were not involved.

Data from review of 7 case series in Japan and other western countries[7] showed the vast majority of cases are woman (range, 82 to 100%), the mean age was 62 to 75 years (overall range, 10 to 88 years). Preceding physiologic stress was found in 77 (43%) of 180 patients (range, 17% to 77%), 157 (87%), 180 patients had ST-segment elevation on initial electrocardiogram. Subsequent non-specific evolutionary T-wave inversion was shown in almost all patients with corrected QT interval ranged from 450 to 501 millisecond at the time of presentation, 87 (70%), 124 patients in 4 case series had elevation of cardiac enzyme or biomarker level and none of them had greater than 50% epicardial coronary stenosis on the coronary angiogram. Clinical profile of our case are undoubtedly consistent with the above reported data.

Besides the difference in the anatomical location, systolic function is transiently impaired in the typical case of Takotsubo cardiomyopathy. Mean initial left ventricular ejection fraction were 41%, 49%, 40% and 40% in 4 case series of Takotsubo cardiomyopathy reported by Tsuchihashi et al.,[1] Kurisu et al.,[3] Bybee et al.,[5] and Akashi et al.[8] Seth et al.[6] also reviewed 12 cases of transient left ventricular apical wall motion abnormality and all of them had estimated initial left ventricular ejection fraction not greater than 45%. Even in reported cases of transient midventricular ballooning syndrome in

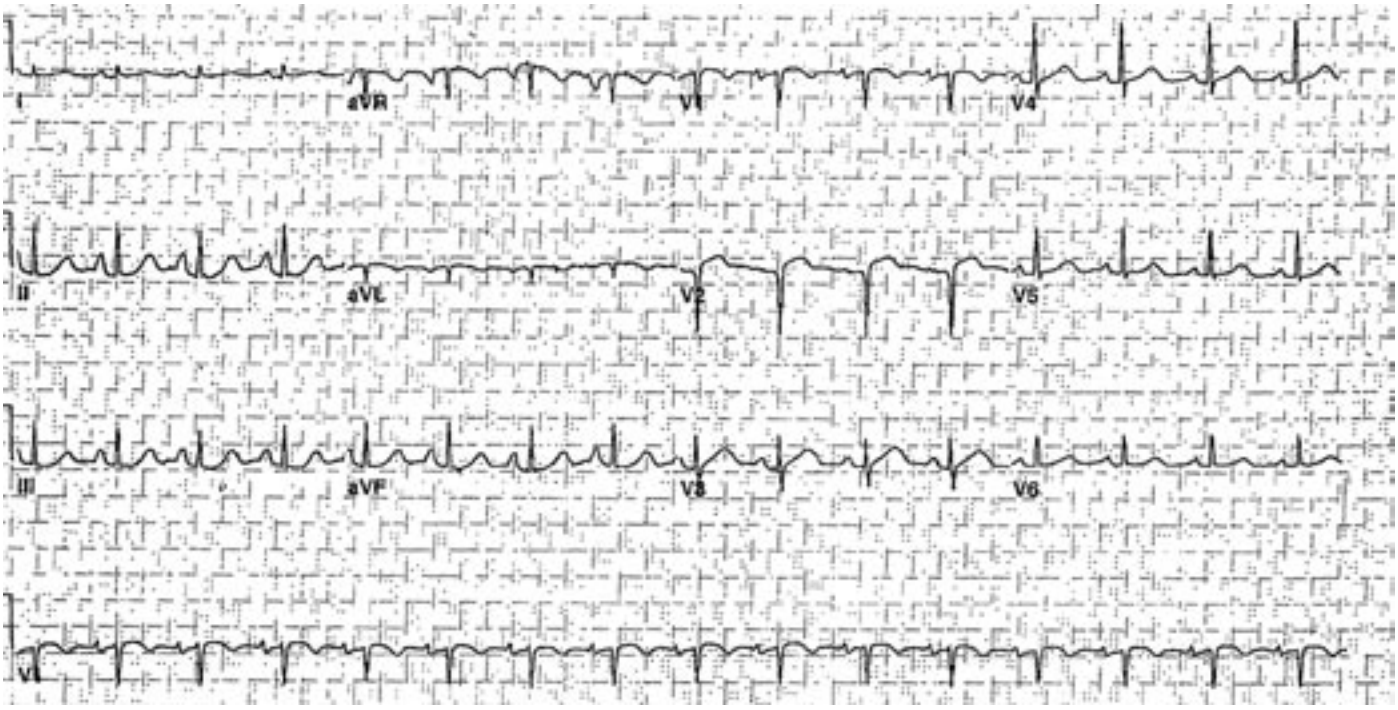

Figure 5.— ECG on admission, showing normal sinus rhythm with ST elevation in V1, V2 and V3.

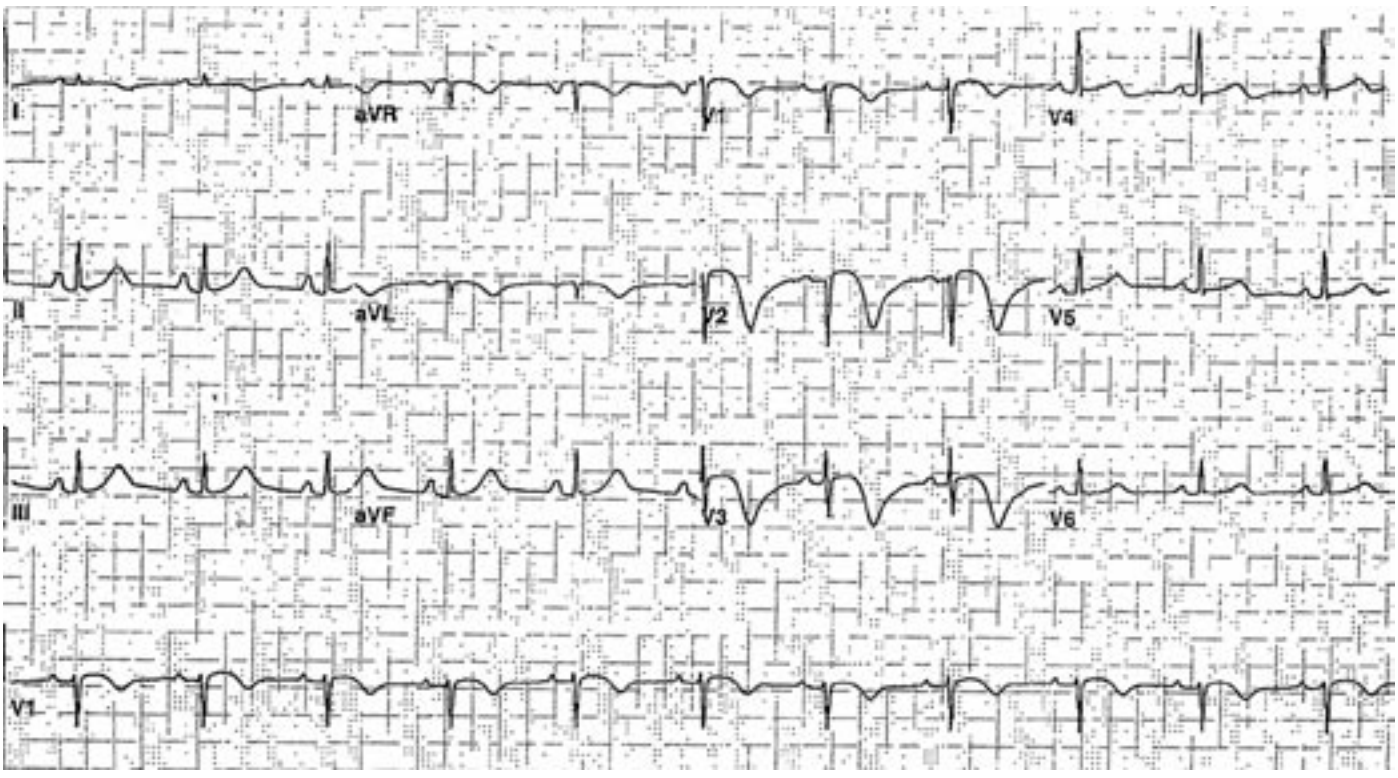

Figure 6.— ECG on admission, showing normal sinus rhythm with ST elevation in V1, V2 and V3.

Japan and the Unitied States,[9-11] most had transient left ventricular systolic function impairment while the initial left ventricular ejection in the rest were not specified. On the contrary, systolic function in this case was initially well preserved and not significantly changed when the segmental wall motion was completely resolved.

To date, although the pathophysiolgic mechanisms of this characteristic syndrome are not yet well defined,[12] there have been several proposed hypotheses such as multivessel epicardial spasm,[3] catecholamine-induced cardiomyopathy[13] or microvascular dysfunction induced by mental stress.[14,15] In our case, it could be stunned myocardium but the absence of significant epicardial coronary stenosis on the coronary angiogram might preclude this speculation. The unique discrete anterolateral wall akinesis is less likely attributed to multivessel coronary spasm. Based on the fact that the second diagonal branch of the left anterior descending artery was found to have 30% degree of stenosis supplies anterolateral wall of the left ventricle, it could be better explained by single epicardial vasospasm as shown in a coronary vasospasm provocation test demonstrating induced single epicardial vasospasm in 4 (29%) of 14 patients with Takotsubo cardiomyopathy.[3]

In conclusion, since 1990 the entire clinical spectrum of this distinctive syndrome has not been fully revealed. A new reported clinical entity might be the clue to explain the pathophysiologic mechanisms or the exact etiologies. Our team proposed that this case could be a new variant form of Takotsubo cardiomyopathy.

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Upcoming in the HMJ: "Hawai'i Island Health Workforce Assessment 2008" also, "Hospital Psychiatric Interventions and Its Positive Effect on Disposition of Non-Acute, Long-Term-Care Waitlisted Patients: A Case Series"

Simulation Crisis Team Training Effect on Rural Hospital Safety Climate (SimCritter)

Benjamin W. Berg MD; Arthur Sampaga RN; Victoria Garshnek PhD; Kristine M. Hara RRT; and Paul A. Phrampus MD

Introduction

Simulation-based training is evolving new paradigms for medical education, critical skills development, teamwork, and patient safety in hospitals. High-fidelity human patient simulator (Manikin)-based training is increasingly utilized in hospital crisis team training (CTT), and other patient safety-related areas. Rural hospital safety environments differ from urban hospitals. The primary objective of this study was to measure the impact of introducing medical simulation manikin training programs on safety culture in a rural hospital. The study utilizes results of a widely utilized annual hospital Safety Climate Survey for primary outcome measures. The hospital Safety Climate Survey is a standardized 19 question, 5 point Likert scale survey instrument permitting longitudinal assessment of organizational safety posture, and potential to maximize patient safety focused interventions. The instrument has been validated[1] and is endorsed by the Institute for Healthcare Improvement.[2] Safety culture measurement is described as an index for validation of safety intervention effectiveness.[3-5] The Safety Climate Survey scores represent individual, and aggregate organizational potential to identify and analyze medical errors, and to implement effective solutions. The Safety Climate Survey has been anonymously administered on an annual basis at Hilo Medical Center, since 2002.

Simulation-based training has been reported to be superior to problem-based learning for the acquisition of critical skills.[6] Manikin-based simulation has improved team performance compared to didactic training alone.[7] Improvement has been observed across a variety of measurable domains, including communication and task performance.[8,9] Human patient simulators allow comprehensive training in stereotypical task oriented team training, typically through resuscitation scenarios, with sophisticated physiologic simulation. Individual and team performance characteristics for clinically familiar problem areas demonstrate 30-40% improvement in critical task performance with 2-3 simulation based team training scenarios.[10,11] Education intervention represents a practical solution for many patient safety improvement efforts, this methodology has however not been definitively studied as a methodology to improve the safety culture. Intensive hospital staff education campaigns have improved some patient safety outcomes, such as nosocomial infection rates.[12] We hypothesized that the introduction of advanced simulation based training for hospital staff, including CTT, would be associated with an improvement in year on year safety climate in a rural hospital, Hilo Medical Center (HMC).

Methods

The research conducted under this program was approved by the Hawai'i Pacific Health Institutional Review Board. Between August 2007 and August 2008 a multifunctional modern simulation training facility was constructed, and hospital based simulation training programs were initiated at Hilo Medical Center (Hawai'i Health Systems Corporation), Hilo, Hawai'i. Simulation based training interventions included a standardized Crisis Team Training (CTT) program, as described by DeVita.[13] CTT is a CME approved interdisciplinary program consisting of on-line pre-course didactic material and face to face scenario based training program conducted in a one day hands-on workshop setting. Cardiac Arrest Response Team (CART) members voluntarily completed CTT in March 2008. Additional simulation based training programs were conducted to meet hospital training requirements. The hospital distributed an anonymous Safety Climate Survey in September 2008 to all hospital employees and providers, one year after initiating work on the introduction of simulation based hospital training programs. Safety Climate Survey results were compared to historical hospital Safety Climate Survey results. Differences in Safety Climate Survey scores between cohort results from 2007 and 2008 were analyzed using SPSS (Chicago, IL). Methods included T-tests, ANOVA for multiple group comparisons, and Pearson Chi-Square. Statistical tests were considered significant at the $p < 0.05$ level.

Results

Introduction of a modern audiovisual enabled medical simulation center at Hilo Medical Center utilizing the Laerdal SimMan® high fidelity human patient simulator (Laerdal Medical, Wapingers Falls, NY) as the primary training aide facilitated delivery of multiple new simulation based programs. Crisis Team Training was conducted for 45 members of the Hospital Cardiac Arrest Response Team in March 2008. Additional simulation based training conducted for hospital staff between August 2007 and August 2008 included the following programs.

- Rapid Response Team
- EKG for Cardiovascular Unit
- Nursing Assessment and Cardiac Meds (CV)
- PALS
- ACLS
- Emergency Room Trauma Assessment
- Procedural Sedation
- Trauma Nursing Core Curriculum
- HazMat and Mass Casualty Triage

The Safety Climate Survey was distributed to eight hundred hospital employees in September, 2008. The overall response rate was 46%, yielding 365 returned surveys (Table 1). Participant demographics and subgroup results are shown in Table 2. The safety climate was considered positive (Table 3), defined as a safety climate score of >75, by 52% of respondents in 2008, versus 43% in 2007 ($p = 0.016$). The hospital Safety Climate Mean likewise significantly increased between 2007 (mean = 3.7) and 2008 (Mean = 3.87, $p = 0.006$). Subgroup analysis reveals that Staff Nurse Safety Climate Scores were lower that the aggregate 2007 and 2008 scores of other staff members. This difference approached significance ($p = 0.051$). No

Table 1.— Safety Climate Survey Response Rates				
Year of Survey:	**2005**	**2006**	**2007**	**2008**
Number Surveys Distributed:	900	805	900	800
Number Responses Received:	132	316	309	365
Number Surveys Entered:	132	316	308	365
% Response:	15%	39%	34%	46%

Table 2.— 2008 Safety Climate Survey Demographics					
Job Description	**Safety Climate Mean**	**Safety Climate Score Mean**	**Sample Size**	**% Total Respondents**	**% With Positive Safety Score**
Attending / Staff Physician	3.93	73.33	5	1.37%	0.00%
Respiratory Therapist	4.02	75.40	9	2.47%	0.00%
PT / OT / Speech	3.97	74.21	12	3.29%	16.67%
Staff Nurse	3.81	70.21	164	44.93%	17.07%
Other	3.73	69.03	116	31.78%	20.69%
Support Associate	4.01	75.25	13	3.56%	23.08%
Nurse Manager / Charge Nurse	4.13	78.17	18	4.93%	33.33%
Administrator	3.86	71.43	3	0.82%	33.33%
Technician	4.17	79.37	9	2.47%	44.44%
Dietician	5.00	100.00	1	0.27%	100.00%

Table 3.— Safety Climate Survey Results				
	2005	**2006**	**2007**	**2008**
Safety Climate Score Mean (± SD):	67 (23)	71 (19)	67 (20) *	71 (20) *
Safety Climate Mean (± SD):	3.69 (.94)	3.84 (.77)	3.70 (.81) †	3.87 (.80) †
Respondents Viewing Safety Climate as Positive (Score >75):	50%	53%	43% #	52% #

* p = 0.006, † p = 0.006, # p = 0.016

differences were detected between 2007 and 2008 within or between these groups. These subgroups represent the groups with adequate numbers of participants for analysis. The primary study was not powered to detect subgroup effects in other identified subgroups.

Discussion

This education intervention study proposed to measure the impact on safety climate survey of a manikin-based, safety-focused provider education curriculum. Education interventions represent a practical solution for many patient safety improvement efforts; however, this methodology has not been definitively studied as a means to improve the safety culture or safety climate. Through our data analysis, we sought to understand if directed safety-focused manikin-based training may contribute to an improved hospital safety climate in specific trained units or job descriptions, and if changes across an entire organization can be detected as result of "contamination." This effort also sought to identify the impact in specific professional groups (e.g., nurses, physicians, and respiratory therapists). The unique aspects of the proposed project included the application of high-fidelity simulation-based training to providers in high-risk clinical environments in a rural community hospital setting. Provision of technology enhanced advanced training in this setting has the potential to improve patient safety through the demonstrated provider performance parameters associated with this training in other settings.[14]

The results document an increase in overall safety climate parameters, at both an organizational level and at an individual provider level with increased proportion of respondents reflecting a positive safety climate.

The results of the safety climate survey include a relatively low response rate, and a variable response rate amongst disciplines. For instance, physician participation was minimal. The low response rate for the safety climate survey is consistent with the historical response rates. The response rate for the study survey is consistent with response rates in other settings. Safety climate surveys conducted in multiple military facilities yielded a similar response rate of 40%.[15] Reasons for low response rates may include variable response rates in specific groups of personnel, although this could not be determined from the data collected in the serial surveys reviewed for this report. Specific factors which may influence survey response rates include absence of incentives, fear of non-anonymity, and the risk of "drop-off" inherent to self administered surveys as survey length increases. Inherent in low response rates is the potential for skewed responses limiting the reliability

of the Safety Climate Survey results and the ability to generalize conclusions.

The findings can be compared with those from a recently published report that failed to correlate changes in anesthesia department Safety Climate following the introduction of simulation based Crisis Resource Management training.[16] In this study the safety climate was evaluated before and after introduction of simulation based anesthesia crisis resource management training, similar to our study, with a larger and more limited specialty cohort of physicians only. The post training safety climate survey response rate was 38%. Wide variation was found in safety climate scores, and with no differences between trained and untrained cohorts. This study did not compare trained and untrained cohorts, rather the entire hospital employee base was surveyed. In our study the year on year (2007 to 2008) improved safety climate variables may have been coincidental, since earlier year to year variability was similar. The results should be interpreted with caution and when considered with other published data, we conclude that Safety Climate Surveys are likely a poor instrument for assessing the effects of simulation based training in an organization. This is especially true when the data regarding trained and untrained cohorts in other studies is considered. If individual trained cohorts show no change in safety climate response, it is unlikely that an entire organization will demonstrate changes due to the introduction of new training paradigms.

This education intervention research demonstrated the feasibility of introducing high fidelity manikin based simulation training in a rural hospital. Furthermore, the introduction of this capability and specific crisis team training was associated with a year on year improvement in the hospital safety climate, as measured by a validated survey instrument. We are unable to define a cause and effect relationship between the introduction of simulation based training and education, but are hopeful that this program contributed to provider attitudes and perceptions which are increasingly open to organizational and personal practice changes that support improved patient safety, and that similar changes are propagated throughout an organization.

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Upcoming in the HMJ: "Varicella Zoster Virus Infection In Patients Taking the TNF-Alpha Inhibitor, Etanercept: Coincidence or Causal?" and, "Visitor Injury in Hawai'i"

The Physician's Role in Health and Social Justice

Seiji Yamada MD, MPH; Associate Professor of Complementary and Alternative Medicine, John A. Burns School of Medicine, University of Hawai'i*

Keynote address: The White Coat Ceremony for the Class of 2013

It is uncontroversial that it is incumbent upon us, the medical profession, to bring the fruits of modern medicine to the disadvantaged. I would like to suggest that our responsibility as a profession is also to combat the inequality that causes their illnesses. From the perspective of health and human rights, that much of humanity receives inadequate nutrition, that much of humanity does not have adequate housing, that much of humanity receives little or no medical care at all – are violations of human rights. I suggest that we must strive as physicians to pursue social justice, that we must become competent in working toward social justice.

My family physician colleagues will probably chide me for beginning my remarks with a quote from an internal medicine text, but the consecutive editions of Harrison's Principles of Internal Medicine that I have owned since I was a medical student have helped shape my understanding of medicine. The passage I would like to read to you began the book for a number of editions, but it has since inexplicably disappeared. The 1998 14th Edition, starts as follows:

> The editors of the first edition of this book articulated what is expected of the physician in words that, although they reflect the gender bias of that era, still ring true as a universal principle:
>
> "No greater opportunity, responsibility, or obligation can fall to the lot of a human being than to become a physician. In the care of the suffering he needs technical skill, scientific knowledge, and human understanding. He who uses these with courage, with humility, and with wisdom will provide a unique service for his fellow man, and will build an enduring edifice of character within himself. The physician should ask of his destiny no more than this; he should be content with no less."
>
> *"Tact, sympathy and understanding are expected of the physician, for the patient is no mere collection of symptoms, signs, disordered functions, damaged organs, and disturbed emotions. He is human, fearful, and hopeful, seeking relief, help and reassurance. To the physician, as to the anthropologist, nothing human is strange or repulsive. The misanthrope may become a smart diagnostician of organic disease, but he can scarcely hope to succeed as a physician. The true physician has a Shakespearean breadth of interest in the wise and the foolish, the proud and the humble, the stoic hero and the whining rogue. He cares for people."*[1]

It has been twenty-six years since I sat where you sit now, at the beginning of medical school - at the University of Illinois, where we had to sit through two years of basic science lectures before ever meeting a real patient. As JABSOM students, you will have the opportunity much earlier in your medical school career to meet real patients. Moreover, JABSOM's problem-based learning (PBL) will challenge you to think like a doctor from your first day of medical school.

JABSOM's PBL curriculum will not simply encourage learning in the clinical or biologic domains. You will also be encouraged to learn in the behavioral and populational domains as well. As the editors of Harrison's inform us, we care for people. Accordingly, social sciences such as anthropology should be considered as basic to medicine as the biologic sciences are.

The editors of Harrison's urge us to have a "Shakespearean breadth of interest." They are telling us that stories are important. Patients come to us with narrative accounts of their illnesses. Learning to listen to patients' stories is a fundamental task of clinical medicine. But we are not simply charged with listening. We must also become involved in patients' stories. We help them write the next chapter in their illness trajectories. In addition, we learn medicine through the cases we encounter. Medical students and residents thus listen intently to hospital cafeteria conversations about interesting cases. JABSOM PBL cases unfold page by page as stories. By working through these cases, you are thereby equipped to care for real patients.

Note also that the editors of Harrison's urge us not only to take interest in the proud, but also in the humble. I submit to you that the humble are more interesting. The disadvantaged are sicker, and therefore more in need of our attention. There are more than enough of the humble to keep us busy. More than 2 billion people in the world live on less than $2 a day; 1.5 billion people do not have access to clean drinking water; 800 million go to bed hungry each night.[2] These destitute poor receive little or no medical care at all. And while they are more numerous in the poor countries of the world, the humble are also in our midst.

I continue to view being allowed to enter the lives of patients as a great privilege. However, as my patients step out of the exam room, I am often beset by a nagging sense of doubt that I have missed something. Of course, there's the subtle sign that I might have overlooked, or the differential diagnosis that I might have formulated too narrowly – but the problem is larger than that. I would like to illustrate what I mean by telling you about a patient of mine.

> Lita Limakare (not her real name, though she gave me permission to use it) is 65 years old. She was a 10 year- old, living on Rongelap Island in the Marshall Islands, when the Bravo thermonuclear device was detonated on March 1, 1954. She saw the fireball, felt the shock waves, was immersed in fallout, and developed radiation sickness before being evacuated. For some time, the people of Rongelap were told that they could live back on their island, so they did, and absorbed more radiation from the environment. Years later she developed thyroid cancer, had a thyroidectomy, and had radioactive iodine ablation of any remaining thyroid tissue. We are now working to control her diabetes.

I want to mention that I was born in Hiroshima, so I feel a special affinity for the people of the Marshall Islands. Lita's story illustrates a number of points. For one, many health disparities have their roots in the denial of ostensibly universal human rights. In 1954, government officials considered it appropriate to use Marshallese people as uninformed, unwilling test subjects and expose them to fallout. The scientific community gained knowledge about radiobiology from test subjects such as Lita. For another, the cavalier manner in which Lita's island was turned from a life-giving home into one in which unseen danger permeates the environment is a cautionary tale for our planet as a whole.

In our corner of the globe, the Marshall Islands serve as something of a canary in a coalmine. The continued use of the Kwajalein-Ebeye complex for the development of weapons systems imposes precarious conditions for the Marshallese living on Ebeye – leading to metabolic problems such as diabetes and infectious diseases such as tuberculosis. The low-lying atolls of the Marshall Islands are particularly vulnerable to ocean level rise and extreme weather events. Increasingly marginal water and food supplies exert pressure to migrate. In that global climate change is anthropogenic, and all of us participate in contributing to it with our carbon footprints; we all contribute to this particular mechanism of the social production of disease.

By the social production of disease, we mean the mechanisms by which large-scale social and political economic forces lead to health disparities. In the 1950s, little was allowed to stand in the way of the development of our nuclear arsenal. The Marshall Islands were a mere footnote in the annals of the development of an American empire based on militarism.[3]

As a physician, I care about what happens to my patients. As a patriot, I care deeply about what happens to my country, the United States of America. Sometimes my patients do not want to know about their diagnoses, but I must tell them. Many do not agree with me that our country is an empire.[4] But this is the diagnosis I make based upon the signs and symptoms I see. Just on this island, there are the scars left on Mākua Valley, depleted uranium in the soil of Central Oahu, chemical weapons discarded in the ocean. Over 5000 American servicemen and women have died in Iraq and Afghanistan. Our veterans struggle with traumatic brain injuries and PTSD. At last count, the best estimate of excess deaths among Iraqi people from the war is 655,000.[5] As the poet W.S. Merwin put it recently, "the whole world is burning… we're part of the burning. We're part of the doing it. We're part of the suffering it. We're part of the watching it helplessly and ignorantly. And we know it's happening. And it is just us. It is our lives. We're burning."[6]

To the class of 2013, I know that you students, our future, recognize that the old ways got us into the crisis in which we find ourselves. I know that you are looking for new ways of thinking about and being in the world. We, of the generations ahead of you, can teach you the nuts and bolts of clinical care. It will be up to you, however, to create the medicine of tomorrow. I know you want it to be practical, and useful. But when the editors of Harrison's referenced Shakespeare, I think they were implying that our work as physicians should be a thing of beauty. Medicine for everyone everywhere – strong bodies, healthy minds - health as a human right. What a beautiful thing that would be.

** Recipient of the 2009 Leonar Tow Humanism in Medicine Award, presented by the Arnold P. Gold Foundation.*

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Stopping Cancer Cells in Their Tracks...

Scott K. Kuwada MD, AGAF, FACP; Professor of Medicine, John A. Burns School of Medicine, University of Hawai'i, Cancer Reseach Center Member

Introduction

Metastasis is the process by which cancer cells spread from primary tumors to secondary tissues and is the leading cause of cancer deaths. The process involves dynamic alterations in cell behavior not normally exhibited by the normal cells from which the tumor cells originated. Metastasis begins when cancer cells in tumors invade through adjacent normal tissue. To do this, the cancer cells must be motile which allows them to intravasate into blood and lymphatic vessels by squeezing between the cells that make up the vasculature. The cancer cells must then travel in blood or lymph to secondary tissues where they must extravaste out of vascular structures and into the cells comprising secondary tissues and organs. The final step is the colonization of secondary tissues, which involves proliferation and tumor growth.

Each step in metastasis requires dynamic changes in cell adhesion. The process of metastasis is similar to the events by which leukocytes gains access to tissues where inflammation is triggered. Interestingly, cancer cells utilize cellular signal transduction pathways that are vital to the process of inflammation.

Discover of Novel Inflammatory Signaling During Cancer Cell Adhesion

We recently discovered that the transcription factor NF-kB (nuclear factor kappa B) is transiently and strongly activated when cancer cells in suspension adhere to a solid surface.[1] NF-kB is comprised of a family of heterodimeric proteins that are well known to mediate the expression of genes central to inflammatory responses. In the 1990's, it became apparent that these same factors were overexpressed and/or activated in many types of cancer cells. It was discovered that NF-kB mediates the expression of several genes that promote cancer cell survival. We found that the induction of NF-kB is important to the establishment of cell adhesion in addition to cancer cell survival. Whereas the vast majority of suspended colon or pancreatic adenocarcinoma cells could re-adhere to a solid surface, the presence of the NF-kB inhibitors BAY 11-7082 or BAY 11-7085 in the media bathing adhering cancer cells resulted in massive apoptosis of over 90% of cells within 5 hours.

Based on these *in vitro* findings, an *in vivo* application was sought to test the ability of NF-kB inhibitors to kill adhering cancer cells.

Peritoneal carcinomatosis

Peritoneal carcinomatosis is a fatal form of metastasis that occurs when intraabdominal cancers invade into the peritoneal cavity and attach to the peritoneum, a resilient tissue lining the abdominal cavity and its internal organs. Peritoneal carcinomatosis can also occur following surgical resections of intraabdominal cancers, during which cancer cells are shed into the peritoneal cavity. In patients with gastric cancers, the peritoneum and liver are the major sites of recurrence following extended lymphadenectomy.[2-4] Following resection of ovarian cancers, the most frequent site of recurrence is the peritoneal cavity.[5]

Locoregional recurrence within the abdominal cavity is the first site of recurrence following resection of gastric cancers in approximately 50% of patients.[6] The evidence that intraabdominal locoregional recurrence impacts patient survival comes from multiple studies showing that the recurrent gastric cancers remain confined to the abdominal cavity even at the time of death in many cases.[7-9]

Most women who undergo resection of ovarian cancer experience recurrence in the peritoneal cavity with systemic dissemination much less commonly. A recent large randomized trial comparing intravenous and intraperitoneal paclitaxel (total of 6 cycles every 3 weeks) in women with stage III ovarian cancer showed an increase in long-term survival of 15.9 months for women who received intraperitoneal chemotherapy.[5] This improvement in survival occurred despite the fact that only 42% of patients completed all 6 cycles of chemotherapy. These results led the NCI to declare intraperitoneal therapy as the recommended management strategy for optimally debulked ovarian cancer.

We developed a simple peritoneal carcinomatosis model in immunodeficient mice, in which human cancer cells were injected directly into the peritoneal cavity. The mice were pretreated with BAY 11-7085 or vehicle four hours before the intraperitoneal injection of human colon and pancreatic adenocarcinoma cells into their abdominal cavities. They then received further treatment with BAY 11-7085 or vehicle three times a week for 3 more weeks. While the control group showed multiple large tumor implants growing in their peritoneal tissues, the group treated with BAY 11-7085 showed far fewer peritoneal tumor implants. In fact, some mice treated with BAY 11-7085 showed no peritoneal tumors.

Even a single dose of BAY 11-7085 administered simultaneously with intraperitoneal injection of pancreatic cancer cells resulted in far fewer peritoneal tumor implants compared with control mice 1 month later. These results demonstrated that BAY 11-7085 could kill cancer cells during adhesion to the peritoneum.

Mechanism of Action

We found that BAY 11-7082 and BAY 11-7085 kill adhering cancer cells by inhibiting NF-kB which leads to inhibition of the expression of multiple genes that mediate cell survival. In addition, these compounds inhibit the expression of multiple cell survival genes. The final blow struck by these compounds on adhering cancer cells is the induction of caspases which mediate cell death through programmed cell death or apoptosis.

Potential Clinical Applications

If compounds such as BAY 11-7082 and BAY 11-7085 could be administered to patients with intraabdominal malignancies that have the propensity to seed the peritoneum (e.g.- gastric, pancreatic, and appendiceal cancers; mesothelioma and pseudomyxoma peritonei) at the time of surgical resection, they could inhibit or prevent peritoneal carcinomatosis.

It is well known that patients with advanced cancers often have high levels of circulating cancer cells. During surgical resections of advanced malignancies, there is often a transient increase in circulating cancer cells as well. High levels of circulating cancer cells portend poorer survival due to the metastatic potential of the circulating cells. Drugs that could induce the death of cancer cells as they adhere to secondary tissues could potentially represent a novel strategy for the treatment of cancer patients. If such compounds could be applied as adjuncts to current chemotherapy, they could prevent circulating cancer cells from adhering to secondary tissues and allow more time for standard chemotherapy agents to cause regression of existing metastases which could translate into improvements in overall survival.

Much more study is required before these or similar acting compounds could be tested in human subjects. These studies are currently underway in my laboratory at the John A. Burns School of Medicine.

For more information on the Cancer Research Center of Hawai'i, visit www.crch.org

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1/18-1/22	AN	California Society of Anesthesiologists	Hyatt Regency Maui, Ka'anapali Beach, Maui	2010 CSA Winter Hawaiian Seminar	Web: www.csahq.org
February 2010					
2/7-2/12	Multi	Mayo Clinic	Wailea Beach Marriott, Maui	Mayo Clinic Interactive Surgery Symposium	Tel: (480) 301-4580
2/10-2/13	Multi	The Society of Laparoendoscopic Surgeons	Hilton Hawaiian Village, Honolulu	Asian Amierican MultiSpecialty Summit IV: Laparoscopy & Minimally Invasive Surgery	Tel: (305) 665-9959 Email: Conferences@SLS.org
2/11-2/12	Multi	Department of Surgery, John A. Burns School of Medicine, American College of Surgeons - Hawai'i Chapter	Hyatt Regency Waikiki, Honolulu	Cross-Cultural Health Care Conference: Collaborative and Multidisciplinary Interventions	Tel: (808) 586-2925 Web: www.cchc-conference.com
2/13-2/16	OTO	University of California San Francisco School of Medicine	Hilton Hawaiian Village, Honolulu	Pacific Rim Otolaryngology Head and Neck Surgery Update Conference	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
2/14-2/19	DR	University of California San Francisco School of Medicine	The Fairmont Orchid, Kohala Coast, Hawai'i	Body & Musculoskeletal Imaging in Paradise	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
2/14-2/19	IM, ID	University of California San Francisco School of Medicine	The Fairmont Orchid, Kohala Coast, Hawai'i	Infectious Diseases in Clinical Practice: Update on Inpatient and Outpatient Infectious Diseases	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
March 2010					
3/26-3/30	AN	International Anesthesia Research Society	Hawai'i Convention Center, Honolulu	84th Congress	Tel: (216) 642-1124 Web: www.iars.org
April 2010					
2/14-2/19	IM	University of California San Francisco School of Medicine	Wailea Beach Marriott, Maui	Primary Care Medicine: Update 2010	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
November 2010					
11/1-11/5	AN	California Society of Anesthesiologists	Mauna Lani Resort & Spa, Kailua-Kona, Hawai'i	2010 CSA Fall Hawaiian Seminar	Web: www.csahq.org

THE WEATHERVANE

RUSSELL T. STODD MD, CONTRIBUTING EDITOR

❖ WE HAVE SEEN THE PRESENT AND IT DOES NOT WORK.

In New Jersey, an unknown recipient apparently agreed to pay $160,000 for a kidney transplant. The "donor" came to the United States from Israel as a friend of the recipient, but in fact was to receive $10,000 as a reward for the "donation." A Brooklyn man was arrested as the broker for the transaction. Such contractual arrangements violate the National Organ Transplant Act which prohibits the buying or selling of human organs and tissue. While this appears to be a rare event in the USA the trafficking in organs is a major business in some developing nations according to the World Health Organization (WHO). Nancy Scheper-Hughes of the Organ Watch research program at the University of California states that as much as 10% of organ transplants world-wide involve illicitly obtained kidneys. The problem is magnified by a Congress that will not address the issue of providing an incentive for organ donation, such as a tax credit or a charitable foundation gift. Meantime 80,000 patients on dialysis are hoping for a kidney and 4,540 died last year while waiting.

❖ YOUR MUSTANG CAN OUTRUN MY CROWN VIC, YES, BUT NOT MY MOTOROLA.

A man was walking home from a hospital in Whitman, Massachusetts, after having undergone a colonoscopy. He had been sedated with 50 mg of Demerol and 2 mg of Versed. While walking he was struck by a motor vehicle. A police officer was on his way to investigate the incident when he was involved in an automobile crash which caused him a serious injury. The officer brought a suit against the hospital and two of its registered nurses, alleging that they breached the standard of care when the patient was released without an escort. The state Supreme Court ruled against the officer stating "The hospital owed no duty to the officer to control or detain the patient." The Court further noted that the hospital should not be held liable because the officer's injury was not caused by any action on the hospital's part. No word about the patient's lawsuit.

❖ HALF OF MODERN DRUGS COULD WELL BE THROWN OUT THE WINDOW EXCEPT THAT THE BIRDS MIGHT EAT THEM.

Pfizer Inc. was hit with a record penalty of $2.3 billion in fines for repeated violations of federal drug rules. The world's largest drug maker has been promoting its drugs with 'consultants' meetings at resort locations, including travel, golf, massages and other expenses. The allegations revolve around the marketing of 13 different drugs, especially their big sellers such as Viagra, Zoloft and Lipitor. Moreover, the claim is that Pfizer promoted four prescription drugs as treatment for medical conditions not approved by the Food and Drug Administration. "Off label" use of drugs is not uncommon, but marketing for such use is illegal. The investigation also resulted in the guilty pleas of two former Pfizer sales managers. Interesting to note that this is the fourth time in the last decade that Pfizer has been penalized which would seem to indicate they are making such huge profits that these penalties are merely the cost of doing business. The head of the Justice Department, Attorney General Eric Holder, did not participate because he previously represented Pfizer Inc. on these same issues in the past (Please hand me my white hat). Five Pfizer employees and one Pennsylvania physician were the whistle-blowers and were awarded with $102 million as their share of the penalty. Be a snitch and get rich!

❖ TO PRESERVE YOUR SELF-RESPECT IT IS SOMETIMES NECESSARY TO GROVEL.

An 18-month-old infant fell at home and struck her head. While she was sedated for an MRI at Baptist's Children Hospital in Miami, the breathing tube slipped out and she suffered a severe anoxic brain injury. The hospital promptly settled with the family for an undisclosed sum, but then the administration studied the sad chain of events and put new measures in place to prevent any recurrence. They asked the parents to help educate the medical staff of the critical importance of patient safety. Now more hospitals are taking action to acknowledge grievous mistakes instead of the traditional response of retreating behind a wall of silence. In 2005 the University of Illinois Medical Center in Chicago established a specialized service to communicate with patients and families when harm occurs, and has seen a drop of 40% in lawsuits compared with the previous four years. The administration is not certain the program is responsible, but they are sure that it has not caused an increase in pay-outs.

(Editorial comment is strictly that of the writer.)

❖ WE ARE A TRILLION DOLLARS IN DEBT. WHO DO WE OWE THIS TO? SOMEONE NAMED GUIDO?

In April 2009, barely into his first month in office, President Obama challenged his department heads to come up with $100 million in budget cuts. In a brief three months without furloughs and without a four-day work week, the combined departments cut $102 million! Simple measures like printing on both sides of a page, removing unused phone lines, deleting inactive internet accounts, e-mailing documents instead of printing them out. The Department of Labor actually will disband the Employment Standards Administration and with it goes an assistant secretary of labor, two deputy assistants and an administrative office. The Air Force will save $52 million by switching from specially formulated jet fuel to commercial aviation fuel, and the Army will save $18 million by increasing the number of soldiers traveling in chartered flights for rest-and-relaxation. This isn't even budget dust to the huge deficit, but it painfully demonstrates how accustomed the government is to the thoughtless use of taxpayers money.

❖ WHO NEEDS POT? I GET THE SAME FEELING JUST STANDING UP QUICKLY.

In February the Justice Department announced that it would adhere to President Obama's campaign promise to not target medical pot dealers who comply with state laws. The result has been a major expansion of entrepreneurial efforts of licensed growers. Med-pot doctors are advertising with statements like "any illness for which marijuana brings relief." Users who previously bought weed from street dealers can now go to a med-pot physician,. complain of back or joint pain and come away with a prescription for cannabis of much better quality than Mexican imports. David Allen, M.D. a 57-year-old former heart surgeon now has a general practice offering pot therapy for "anxiety, depression, insomnia and anorexia" among other conditions, and is making more money than he did as a heart surgeon. He admitted that he uses pot himself for anxiety and stress. The whole therapeutic picture is a farce and everyone knows that. The genie has escaped the bottle (if it was ever in one) and there will be no putting it back.

❖ EVERY HUMAN BEING IS THE AUTHOR OF HIS OWN DISEASE. (BUDDHA)

The Center for Disease Control and Prevention (CDC) released data regarding medical expenses directly related to obesity. In 2008 $147 billion was the cost of treating obesity related illness. Ten years before in 1998 the figure was one-half that amount at $74 billion, and during that interval the prevalence of obesity increased by 37%. In 2006 obese patients medical expenses were 42% more than people of normal weight, which factors out to a figure of $1,429 per person. Much of that expense was in pharmaceuticals. CDC is not a regulatory agency but is getting into the fray by producing a list of recommendations such as getting more exercise, reducing meal portions, discontinuing consumption of sweetened beverages and promoting physical education classes. They might also suggest hour for hour matching of exercise with television and computer time.

❖ WERE THEY TOASTED OR JUST BROWN AND SERVE?

The mammoth wildfire roaring through Los Angeles County has caused the evacuation of many homes and buildings, but some people have to be convinced. A couple living in Big Tujunga Canyon refused to leave their home and believed that they could find refuge in their hot tub if the fire got too close. The flames of 80 to 100 feet proved to be overwhelming, including their hot tub. A helicopter picked them up and brought them to a hospital burn unit for treatment. Current condition was not stated.

ADDENDA

❖ In Brazil, an environmental group called SOS Mata Atlantica is running a commercial "pee during shower" telling people that skipping one flush per day will save 1,100 gallons of water per year.

❖ At Keele University in Great Britain, psychology professor Richard Stevens found that using really ugly, vulgar, profane cursing gave subjects greater tolerance to painful stimuli.

❖ Solar energy is not something that is going to come in overnight. (G. Ford)

❖ I can't get even. I just get odder.

ALOHA AND KEEP THE FAITH — **rts**■

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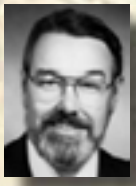
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