Pathologic Conditions Epidemic To Rural America As Portrayed By Anatomic Evidence

Jonathan M. Baugh ORT, B.S. Biology; Nic Branscomb A.S., P.M., B.S. Hlth. Promotion & Edu.; Tracy D. Carter B.A. Behavioral Science B.S. Biology; Wayne Davis B.S. Biology; Nathaniel Evans B.S Nutrition; Advisor: James Palmieri PhD

E. Via Virginia College of Osteopathic Medicine, Blacksburg, VA.

Abstract

Environment plays an enormous role in health. Rural America's environment is different from urban America's, thus the healthcare needs of individuals living in rural America differ from urban dwellers' healthcare needs. A general trend in medical schools is to move from dissecting cadavers to prosected cadavers, in order to "save" medical students more time for "learning". This trend is alarming, considering the invaluable experiences we had during our first year as medical students.

Dissecting cadavers from Southwest Virginia, a largely rural area, helps interested medical students explore the needs they will face as rural healthcare providers. The abnormalities identified by first and second year medical students correlated strongly with those that have been linked to poverty and rural life. One recent study found that: The top 10 health problems in Appalachia were hypertension (47%), arthritis (41%), obesity (41%), back problems (37%), tooth cavities (34%), depression (33%), significant tooth loss (29%), diabetes (21%), heart disease (19%), and asthma (16%) ([9]). Issues related to these conditions were clearly identified during our anatomical dissection sessions. These lesions, along with congenital abnormalities, have been documented, photographed, and classified in this poster. As members of the medical society within rural Appalachia, we must be more diligent in diagnosing and treating the underlying and preventable causes of these diseases.

Objective

To examine through gross anatomical dissection underlying health issues from cadavers of South West Virginia

Educational Research

Gross anatomy with clinical relevance

Introduction

While dissecting cadavers as medical students, different pathologies such as aortic aneurisms, hepatomegaly, lung disease, and joint destruction were all found. These anomalies are all very pertinent to diseases such as hypertension, heart disease, asthma, arthritis, diabetes and depression, which are amongst the top causes of morbidity for southwest Virginia. It has been said that experiences such as these are absolutely critical to learning for medical and other health care professionals. Complications with aortic aneurisms are linked to hypertension, hepatomegaly is related to alcoholism and joint diseases/arthritis are both strongly related to obesity. Lung diseases are precipitated from several combinations of factors including: envriomental exposure, social choices and genetics.

Methods

Gross Anatomy Dissection of cadavers from Southwest Virginia

Results

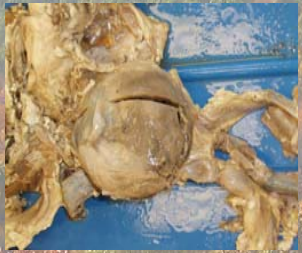

Figure 1

Cardiovascular disease is a disease affecting the heart or blood vessels. Southwest Virginia has the highest incidence of cardiovascular disease in the state and is a major concern for local primary care physicians. Figure 1 shows an Abdominal Aortic Aneurism that was taken from a cadaver in Southwest Virginia. An aortic aneurysm is a stretched and bulging section in the wall of the aorta. The aorta is the large blood vessel that carries oxygen-rich blood from the heart to the rest of the body. A bulging aorta is weakened and can burst, or rupture, resulting in life-threatening bleeding. Ruptured aortic aneurysm is the 15th leading cause of death in the United States.[11-13]

Results

Figure 2

Figure 3

Pulmonary lung disease is an umbrella term for many respiratory diseases, which include the following: 1) Obstructive 2) Restrictive 3) Infectious 4) Vascular 5) Tumors. Several of these respiratory diseases are more common in rural Virginia due to life style. Figure 2 shows probable obstructive lung disease, notice the black carbon deposits that can originate from things like smoking and coal mining. Figure 3 shows a white calcification that has formed on the rib cage due to restrictive lung disease. This is probable asbestosis that could have been obtained from an occupational hazard.[1-4]

Figure 4

Figure 5

Degenerative joint disease (DJD), figure 4, also known as Osteoarthritis (OA), is one of the most common pathological disease states, not only amongst the citizens of southwest Virginia, but also among the aging population of America. DJD has to do with the break down of the cartilage that acts both as a cushion and as articulation of a joint. There are two factors that can be looked at in DJD: pain and mobility. With the loss of cartilage both are affected. As the very smooth hyaline cartilage is worn away, the ability to use a joint decreases; this is the mobility aspect. Bone to bone surfaces do not articulate or slide as well as with cartilage, especially in high stress joints like the knee and hip. The loss of cartilage also leads to the classical "Bone on Bone" pain. This is a relative factor that can be severe or mild and is one of the debilitating factors of the disease. Figure 5 shows a common total knee replacement to correct this disease.[7-10]

Results

Figure 6

Hepatomegaly means "enlarged liver." Hepatomegaly is not a disease in of itself, rather it results from many other diseases, including, but not limited to, obesity, alcohol abuse, and heart disease, all of which were ranked in the top 10 health problems of Appalachia. Figure 6 shows three livers extracted from local cadavers. Notice the normal liver on the left compared to the two enlarged livers to the right and bottom. The inferior liver shows horned growths and the right liver displays general enlargement.[14-16]

Conclusion

Physicians of rural and medically underserved areas tend to have a unique view of medical conditions that are found more prominently amongst those of the rural and underserved population. Through this study, we where able to show four commonly found disease states. By understanding the disease processes and knowing which diseases are more endemic to our area we can better serve our patients. As future rural physicians this knowledge we gained about disease processes will allow us to better understand our future patients. This research empowers us to look for more preventive measures to stop the disease process in its early stages, helping our patients to lead healthier and longer lives.

References

1. Wikipedia available at: http://en.wikipedia.org/wiki/Respiratory_disease Last accessed 11/14/06
2. National Institute of Health available at: http://www.nhlbi.nih.gov/health/public/lung/other/copd_fact.pdf Last accessed 11/14/06
3. Images available at: http://images.google.com/imgres?imgurl=http://www.wheelessonline.com/image2/i1/nrv3.jpg&imgrefurl=http://www.wheelessonline.com/ortho/group_fasicular_nerve_repair&h=480&w=613&sz=26&hl=en&start=35&tbnid=NFVgLSEJmUjvOM:&tbnh=106&tbnw=136&prev=/images%3Fq%3Dneuroma%26start%3D18%26ndsp%3D18%26svnum%3D10%26hl%3Den%26lr%3D%26sa%3DN Last accessed 11/14/06
4. Virginia Department of Health available at: http://www.vahealth.org/cdpc/cancer/02data/20060215_major_sites_by_sex_98_02.pdf Last accessed 11/14/06
5. Emedicine available at: http://www.emedicine.com/pmr/byname/neonatal-brachial-plexus-palsies.htm Last accessed 9/11/06
6. Web Medicine available at: http://www.webmd.com/hw/raising_a_family/nord738.asp Last accessed 9/11/06
7. Mayo Clinic available at: http://www.mayoclinic.com/health/osteoarthritis/DS00019/DSECTION=3 Last accessed 11/07/06
8. Journal of Clinical Epidemiology Volume 53, Issue 3, March 2000, Pages 307-313
9. Health Care in Appalachia: A population-Based Approach, K Huttlinger, J Schaller-Ayers. T Lawson. Public Health Nursing, Volume 21, Page 103, March 2004 doi:10.1111/j.0737-1209.2004.021203.x Volume 21 issue 2
10. Wikipedia available at: http://en.wikipedia.org/wiki/Aortic_aneurysm Last accessed 11/07/06
11. Emedicine available at: http://www.emedicine.com/med/topic3443.htm Last accessed 11/07/06
12. Medicine net available at: http://www.medicinenet.com/abdominal_aortic_aneurysm/page2.htm Last accessed 11/07/06
13. Health Wise available at: http://health.yahoo.com/ency/healthwise/hw57497 Last accessed 11/07/06
14. Virginia Drug Interventions available at: http://www.druginterventions.net/virginia.htm Last accessed 11/07/06
15. Center of Disease Control available at: http://www.cdc.gov/ncidod/diseases/hepatitis/resource/PDFs/hep_surveillance_61.pdf#search=%22incidence%20of%20viral%20hepatitis%20in%20Virginia%22 Last accessed 11/07/06
16. Center of Disease Control available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/00024847.htm Last accessed 11/07/06