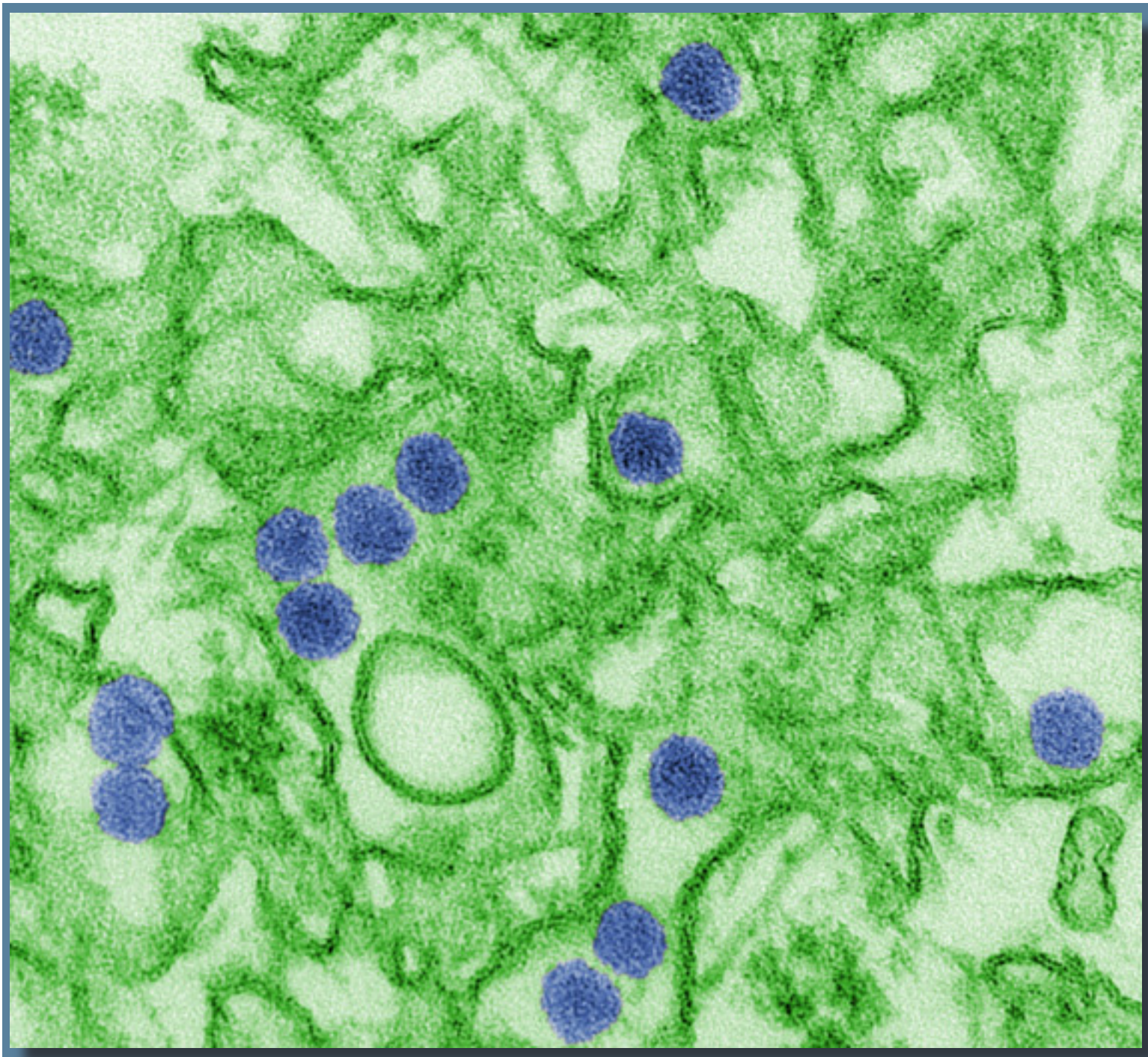
World Family Medicine Journal
incorporating the Middle East Journal of Family Medicine

ISSN 1839-0188

June 2016 - Volume 14, Issue 5



This is a digitally-colorized transmission electron micrograph (TEM) of Zika virus, which is a member of the family Flaviviridae. Virus particles, here colored blue, are 40 nm in diameter, with an outer envelope, and an inner dense core.

From the Editor

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İIn this issue of the journal we have various rich topics including an update and the evolution of the Zika virüs and an opinion paper on mental evolution.

A paper from Turkey investigated the seasonal variability of AHI values among patients with sleep apnea. A total of 304 patients were studied. They reviewed the records of patients, including their PSGs, and found that their AHI values were comparable across seasons. The average AHI value for males was 34.95± 29.95 and 21.88±2.76 for females; they observed no significant statistical difference among the four groups (both males and females) in terms of AHI. Although patient complaints increased due to exacerbation of diseases such as asthma and allergic rhinitis in the winter, this study did not reflect a significant change in AHI values. Therefore, PSG examinations do not need to be repeated in different seasons.

A second paper from Turkey looked at Red blood cell supports in severe clinical conditions in sickle cell diseases. Sickle cell diseases (SCDs) are accelerated atherosclerotic processes. As one of the significant endpoints of the SCDs, cases with chronic obstructive pulmonary disease (COPD) and without were collected into the two groups. The study included 428 patients (221 males). There were 71 patients (16.5%) with COPD. Mean age was significantly higher in the COPD group (32.8 versus 29.8 years, P=0.005). Male ratio was significantly higher in the COPD group, too (78.8% versus 46.2%, P<0.001). Beside these, priapism (14.0% versus 3.0%, P<0.001), HCV RNA positivity (2.7% versus 0.5%, P<0.05), cirrhosis (8.4% versus 3.3%, P<0.05), leg ulcers (23.9% versus 12.0%, P<0.01), digital clubbing (25.3% versus 6.7%, P<0.001), coronary heart disease (23.9% versus 13.7%, P<0.05), chronic renal disease (15.4% versus 7.0%, P<0.01), stroke (16.9% versus 8.1%, P<0.01), and mean transfused RBC units in their lives (63.8 versus 33.0, P=0.003) were all higher among the COPD cases. Probably due to the higher number of transfused RBC units, the mean age of mortality was also higher in the COPD group, significantly (38.3 versus 30.4 years, P=0.04). The authors concluded that SCDs are chronic catastrophic processes on vascular endothelium terminating with accelerated atherosclerosis induced end-organ failures in early years of life. RBC supports in severe clinical conditions probably prolong survival of the patients.

In the office surgery section there is a review of haemorrhoids surgery in the office, from Mr Maurice Brygel, Royal Australian College of Surgeons (RACS). This edition of the series looks at common and thrombosed haemorrhoids and their surgical treatment, including rubber band ligation. Education covers physical examination, operative procedure, risk management and patient care and patient education.

Cover photo:
www.wikipedia.com

Evolution

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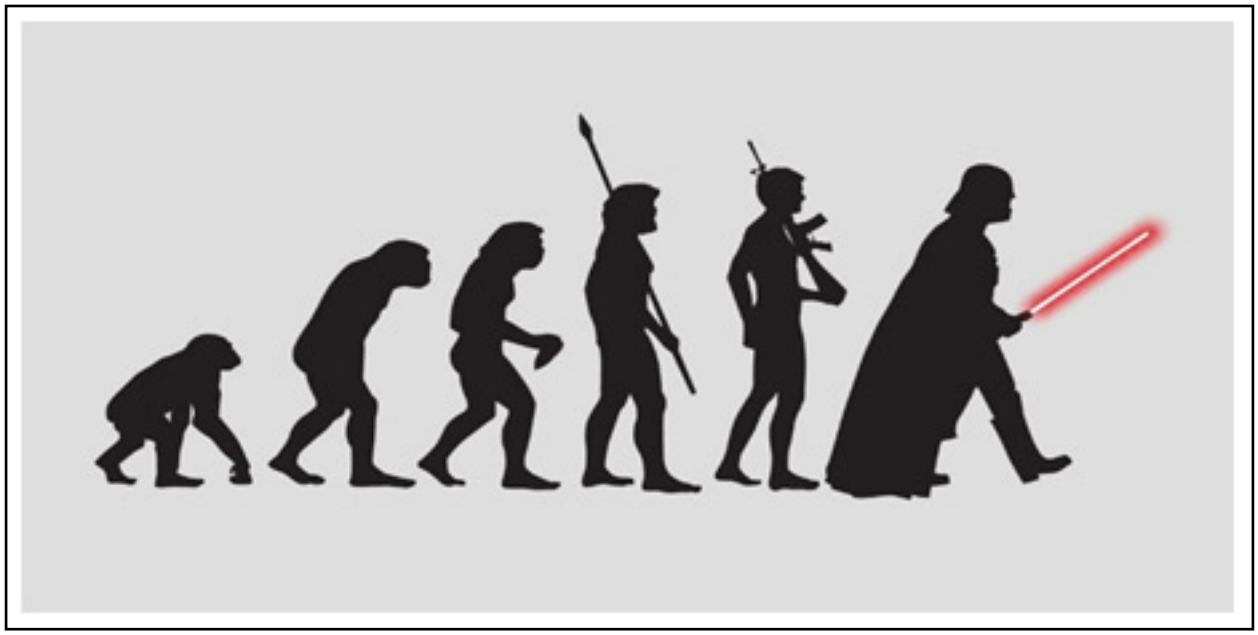

Usually things have a clear cycle. The process starts, goes on, it ends, it begins again, etc. But with evolution the "Normal" thinking process doesn't seem to apply. By evolution I don't refer to Charles Darwin or his theories. According to him, species ADAPT to environments, in other words they alter certain details in their genetic blueprints to enhance their capacity for life. Evolution is defined as altering the meaning and essence of one's existence. Therefore, organisms are subjected to adaptation not evolution.

My concern is a thing of great importance to us humans. It is physical in that it has a predefined shape and size, we understand its structure and function and yet it creates what we cannot comprehend. It derives inspiration from its surroundings and yet it is able to create the unobservable. It is limited by its accessories and yet sees what an eye cannot, hears what an ear cannot, and feels what fingers cannot.

Many would say I speak of the human brain, but they are mistaken. The brain, by definition controls the physical aspects of our bodies and therefore can be thought of as a mere organ. I speak of something far more intricate in its workings. I speak of the mind. No one knows of the true workings of the mind, where it resides, whether it dies etc. But one thing is certain: it has driven man to greatness (and madness). As all things in nature the mind evolves to empower its host. For example, take Legos. These most ingenious toys output physical representations of mental development within children who have only just begun to learn of the world and its workings. At first the child would build a small simple house with a door and a window. With time, he adds rooms, and gives the house dimensions quite similar to those in his own home. Then he will tear down the house to build a castle. Your creation now acts as a mind outlet, in which your mind will test the limits that physics applies on your blocks. And so, you will learn of your surroundings and alter your designs to accommodate them. At a young age, the world has already begun to impose its limitations upon your ability to wonder.

As is natural, before we delve into any subject we must specify the premises upon which we will base our assumptions. In his writings Henry Kissinger provides a brilliant definition of evolution applied to the masses as a whole:

Evolution proceeds not in a straight line but through a series of complicated variations. At every step of the road there are turns and forks, which have to be taken for better or for worse. The conditions governing the decision may be of the most delicate shading. The choice may appear

in retrospect nearly random or else to be the only option possible under the prevailing circumstances. In either case, it is the result of the interaction of the whole sum of previous turnings--reflecting history or traditional values--plus the immediate pressures of the need for survival.

To understand how we have evolved during the past few millennia, first we must understand the Principle that governs man's behaviour. Secondly, we must look at the timeline. We must look to our past and understand why we exist as we do, and why the times have led us to the state we reside in.

Mankind sees itself as the force that governs nature. We believe that science and knowledge have made us kings over the very land that feeds and nurtures us, but the fact that man could even consider himself above nature is proof of his inferiority.

Nature is kind to us, for it supports us and asks for nothing in return, and yet man belittles this great service and refuses to offer decency and kindness to that which has kept us warm and fed for many millennia. Nature is not embodied by trees, by meadows, or by organisms. Nature is the equilibrium. It is the sum of fire and water. It is the force that breeds life from death. It is the Immortal beauty men will never see, for the age of men will pass and it will endure with or without men. And yet man assumes himself king over a force he will not even outlive. The teachings of the Native Americans speak of harmony with nature, and of returning the kindness presented to us with our own. Those are the men and women we now consider to be illiterates and naïve, and yet we find that the knowledge they possess far eclipses that of the "learned". For the minds of these people are not limited by text books or by the laws of physics, and the other fancy laws we have fabricated. They are limited only by nature, and nature extends even beyond the universe.

The extent of man's evolution/degradation, becomes quite evident when we observe the process by which we now handle crises. Take Global Warming, and observe how men have dealt with the problem. We have spent the last 20 years trying to stop what can only be reversed. When an army invades your territory, you cannot hide behind your walls, and simply spread word of imminent doom. You must rally your men and hold your ground and strike back where it is necessary. This was how the men of old dealt with problems: they fought back. Now we need to refer to the law, and to governments to tell us what to do and when to do it. Well by the time these men decide to save the planet, there will not be one left to save. Global Warming can be solved in weeks, but governments and businesses will not commit their resources simply because this does not generate revenue. This is how we have evolved. From men and women of iron, steel, and conviction, are born the cowards that we call our leaders.

Men are weak, and strength will only come from our acceptance of this inevitable reality.

All around the world in Paris, Rome, London, Athens, Damascus, Jerusalem, Madrid, you will find the remnants of our Golden Age. Many would assume the 21st century is the golden age, but I say to those people, look around you. No one is happy, no one lives with purpose, no one holds true power, justice is now a foreign concept, and the masses simply do not care anymore. The average American, citizen of the "greatest county in the world", spends his entire life sealing his debts, and so instead of being a productive entity, the man is now a simple number to be added to the yearly statistics. Every man, woman, and child is owned by some distant power, slaves to that power's bidding. In a few words George Orwell describes the "Golden Age".

War is Peace
Freedom is Slavery
Ignorance is Strength

This is how man has evolved. From civilizations that could build the pyramids, to generations that struggle with thought. Instead of increasing his capacity for wonder all man has done is drive himself to a time in which nothing matters. As we acquired more and more knowledge our minds became subject to more and more restrictions. Many historians point out the fact that the pyramids could not have been built by such a primitive capacity for tools. Here, Ignorance of limits turned to strength. Evolution and knowledge lead to greatness when we as a race take right decisions, and when we are prepared to accept the consequences of our decisions. Our actions must be directed toward certain objectives, for the greatest strategic blunder is to move simply for the sake of moving. Life was bestowed upon the human race not so that it may squander it, but so that it may use it to unleash the power bestowed upon the human mind.

"If at first the idea is not absurd, then there will be no hope for it." A. Einstein.

Image source: https://worldviewofjesus.files.wordpress.com/2015/02/evolution.jpg

Is Sleep Apnea Worse in the Winter?

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Abstract

Objectives: The present study aimed to investigate the seasonal variability of AHI values among patients with sleep apnea.

Patients and Methods: In order to conduct the retrospective study, we accepted 304 patients (223 male and 81 female) between May 2014 to May 2015 into our study at Mugla Sitki Koçman University Medical faculty of sleep disorders clinic. Patients were divided into four groups according to the timing of the PSG: winter, spring, summer, and autumn.

Results: We reviewed the records of patients, including their PSGs, and found that their AHI values were comparable across seasons. The average AHI value for males was 34.95± 29.95 and 21.88±2.76 for females; we observed no significant statistical difference among the four groups (both males and females) in terms of AHI.

Conclusion: Although patient complaints increased due to exacerbation of diseases such as asthma and allergic rhinitis in the winter, this study did not reflect a significant change in AHI values. Therefore, PSG examinations do not need to be repeated in different seasons.

Keywords: sleep apnea, seasonal variation

Introduction

Obstructive sleep apnea syndrome (OSAS) is the most widely suffered sleep disorder after insomnia and is increasingly common due to the prevalence of obesity. It describes a situation in which breathing is briefly and repeatedly interrupted for at least ten seconds, resulting in a reduction of blood oxygen levels [1,2]. This occurs when the muscles in the back of the throat fail to keep the airway open, despite efforts to breathe [3]. Obstructive sleep apnea can be caused by many factors, such as adenotonsillar hypertrophy, allergies and viral respiratory infections [4]. Furthermore, the prevalence of sleep apnea increases due to allergic rhinitis and asthma [5]. As the seasons change, sleep patterns change, and allergic rhinitis and asthma are more common in the spring [6].

Polysomnography (PSG), a type of sleep study, is a multi-parametric test used to examine eye movements, muscle-brain-heart activity, oxygen saturation, position and nasal flow during sleep [7]. The apnea-hypopnea index (AHI) is the most common means to measure sleep apnea, recording the number of apneas or hypopneas per hour of sleep. A person's AHI is classified as mild-moderate or severe [8]. In this study, we aimed to determine and compare patients' AHI values, based on PSG tests, over four seasons, independent of age, sex, body mass index (BMI) and chronic obstructive pulmonary disease (COPD) status.

Materials and Methods

Study Population

In order to conduct the retrospective examination, we accepted 304 (223 male and 81 female) patients between May 2014 to May 2015 into our study at Mugla Sitki Kocman University Medical faculty of sleep disorders clinic. We reviewed these patients' records, including PSG results, and participants were divided into four groups according to the timing of the PSG: winter, spring, summer, and autumn. We ensured that the groups were similar in regards to age, sex and body mass index (BMI). In our study, the exclusion criteria included patients with chronic obstructive pulmonary disease (COPD). The patients' AHI values were compared across seasons. The study protocol has been approved by the Ethics Committee of the University.

Polysomnography

All patients underwent technician-attended whole-night polysomnography with EMBLA S4500 equipment in the sleep laboratory of our hospital. Polysomnography recordings were obtained between 10:00 pm and 06:00 am (8 hours). Six-channel electroencephalography (two each: occipital, central, and frontal), right and left electrooculography, electrocardiography, chin and right and left tibialis muscle electromyography, oronasal pressure, thoracal and abdominal respiratory efforts, pulse oximetry, position, and snoring sound were recorded. The polysomnographic data were scored manually by a certified and experienced physician in accordance with the American Academy of Sleep Medicine Manual for Scoring Sleep and Associated Events, Version 2 [9]. Apnea was scored when there was a drop in the peak signal excursion by > 90% of pre-event baseline and the duration of the > 90% drop in sensor signal was > 10 s. Hypopnea was scored when the peak signal excursions dropped by > 30% of pre-event baseline for > 10 s in association with either > 3% arterial oxygen desaturation or an arousal. The AHI was calculated by dividing the number of apnea/hypopnea events by the number of hours of sleep. Oxygen desaturation index 3 (ODI3) was calculated by dividing the number of 3% drops in oxygen saturation by the number of hours of sleep. The minimum oxygen saturation was noted.

Statistical Analysis

The data were processed and analyzed using SPSS-18 for Windows, Fisher's Exact Test, Pearson Correlations, and Pearson's Chi-Square test; logistic regression was used for the comparison of categorical and scale variables, where $p<0.05$ was considered to be statistically significant. Among the groups, variables that were found to be statistically significant and variables that are not conceptually compatible were added to the logistic regression model.

Materials and Methods

A total population of 304 patients (223 male and 81 female) with mean ages of 47.72 ± 12.68 in males and 49.70±12.15 in females was studied. Mean BMI was 30.26 ± 5.16 in males and 30.88±6.17 in females (Table 1). Mean age, sex and BMI did not differ among the four groups Total sleep duration was 380.16 ± 67.37 in males and 397,28 ± 58.0 in females (p=0.0501). We found that one season did not differ from the others, although patient AHIs were lowest in the spring and highest in the winter (Table 2, Figure 1). AHIs were highest in male patients with sleep apnea than female patients with sleep apnea (Figure 2).

Table 1

Patients with OSAS		
	Male (n=223)	Female (n=81)
Age	47.72±12.68	49.70±12.15
BMI	30.26 ± 5.16	30.88±6.17
Sleep Duration	380.16 ±67.37	397,28 ± 58.0

Table 2

Gender	Seasons	AHI Scores (Mean)	Std. Deviation
male	winter	43,9289	30,92175
	spring	30,5435	29,29490
	summer	32,1681	27,14016
	autumn	36,5386	30,84256
	Totally	34,9520	29,49444
female	winter	17,5045	21,73024
	spring	17,3957	19,66176
	summer	29,9417	29,43520
	autumn	22,3917	28,05441
	Totally	21,8827	24,86293
Totally	winter	35,2522	30,72469
	spring	26,9859	27,54966
	summer	31,6115	27,59003
	autumn	33,5071	30,58487
	Totally	31,4697	28,88036

Figure 1

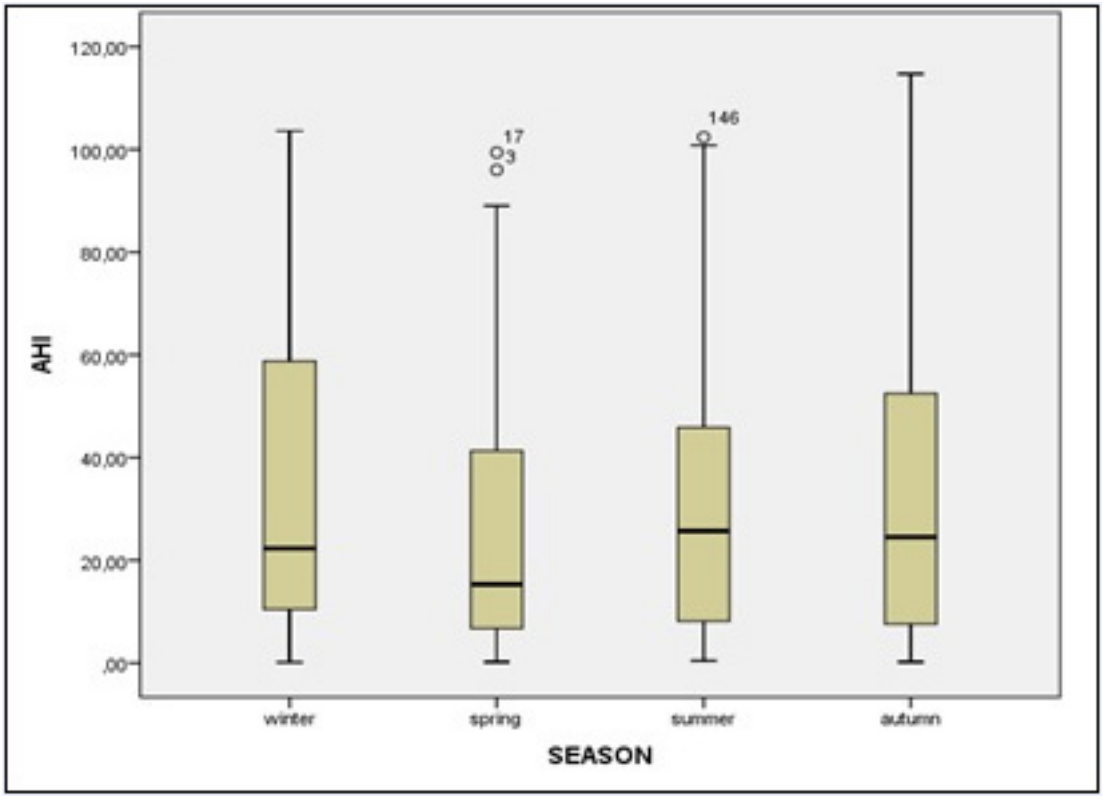
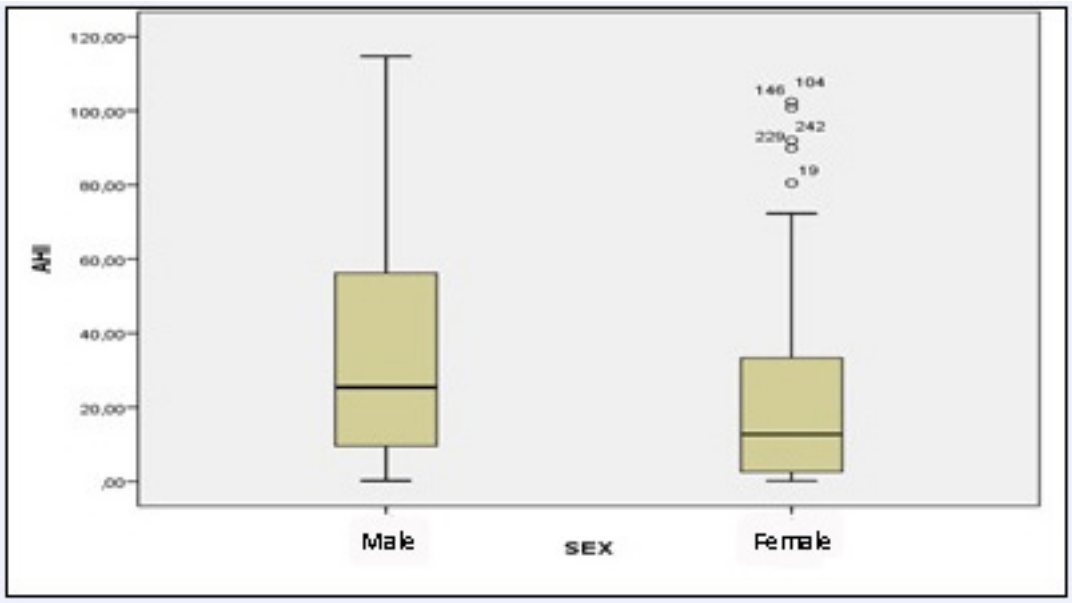


Figure 2



Discussion

In the present study, we have shown that patients with OSAS are not affected by the seasons. Although not statistically significant, we found that AHIs were lowest in the spring and highest in the winter. This runs contrary to some evidence in the literature indicating that patients with OSAS are affected by the seasons [10-12], although other sources have shown that patients with OSAS are not affected by the seasons. For instance, Dempsey demonstrated that airway infections and weather could have an effect on sleep apnea, but that the changes across the seasons had little effect on AHI values [13], while Cassol reported that more sleep disorder breathing events occurred in winter than in other seasons. They observed that people stopped breathing more than 30 times an hour in the colder months [14]. However, these differences may be associated with geographic location. The fact that many of these researchers are from Brazil and the USA could have affected their results. Our studies were conducted in Mu?la, but the same study may yield different results in another province.

Although inflammation and oxidative stress are important in the pathophysiology of OSAS, the relationship between inflammation remains poorly understood. Many factors affect the airway of a person with obstructive sleep apnea syndrome. For example, atmosphere and sun cycles can play a significant role in sleep quality [15]. Changes in seasons also affect the issue in different ways. Additionally, Kalra et al. found a high prevalence of snoring in young women with atopy and a significant association with asthma [11]. Similar studies have also shown that asthma is a frequent comorbidity in patients with OSAS (12). Similarly, Kalpaklioglu et al. reported that allergic rhinitis is a risk factor for a high apnea-hypopnea index, and after rhinitis treatment, a patient's AHI and Epworth Sleepiness Scale (ESS) scores will be reduced. They observed the most significant difference in a group treated with nasal steroid + antihistamine compared to the control group [16]. Several types of patients were included in this study, although ensuring similarity of age, sex and BMI may be considered one of its weaknesses. Here, using the same patients' PSG evaluation in different seasons would have been better. However, this was not attempted, as it was not covered by the study approval. In addition, patients who do not suffer from asthma and allergic rhinitis may be enrolled as a not statistical difference. At that time it could not be a generalization. Allergic rhinitis is a common disease in childhood [17], so if the study had been done in this age group, the AHI index would have been higher in the winter. Furthermore, we did not evaluate the complaints of the patients in this study. If we had evaluated their complaints by the subjective ESS test, results may have been more meaningful or useful.

In the light of the data obtained from this study, we found that seasons did not contribute to significant changes in AHI values. Therefore, examination of PSG does not need to be repeated in different seasons, especially among the elderly and those without asthma and allergic rhinitis.

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Red blood cell supports in severe clinical conditions in sickle cell diseases

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Abstract

Background: Sickle cell diseases (SCDs) are accelerated atherosclerotic processes. We tried to understand whether or not there is a prolonged survival with the increased number of red blood cells (RBC) transfusion in the SCDs.

Methods: As one of the significant endpoints of the SCDs, cases with chronic obstructive pulmonary disease (COPD) and without, were collected into the two groups.

Results: The study included 428 patients (221 males). There were 71 patients (16.5%) with COPD. Mean age was significantly higher in the COPD group (32.8 versus 29.8 years, P=0.005). Male ratio was significantly higher in the COPD group, too (78.8% versus 46.2%, P<0.001). Smoking (35.2% versus 11.4%, P<0.001) and alcohol (7.0% versus 1.9%, P<0.01) were also higher among the COPD cases. Beside these, priapism (14.0% versus 3.0%, P<0.001), HCV RNA positivity (2.7% versus 0.5%, P<0.05), cirrhosis (8.4% versus 3.3%, P<0.05), leg ulcers (23.9% versus 12.0%, P<0.01), digital clubbing (25.3% versus 6.7%, P<0.001), coronary heart disease (23.9% versus 13.7%, P<0.05), chronic renal disease (15.4% versus 7.0%, P<0.01), stroke (16.9% versus 8.1%, P<0.01), and mean transfused RBC units in their lives (63.8 versus 33.0, P=0.003) were all higher among the COPD cases. This was probably due to the higher number of transfused RBC units; the mean age of mortality was also higher in the COPD group, significantly (38.3 versus 30.4 years, P=0.04).

Conclusion: SCDs are chronic catastrophic processes on vascular endothelium terminating with accelerated atherosclerosis induced end-organ failures in early years of life. RBC supports in severe clinical conditions probably prolong survival of the patients.

Key words: Sickle cell diseases, chronic endothelial damage, red blood cell support

Introduction

Chronic endothelial damage may be the major cause of aging and mortality by inducing disseminated cellular hypoxia all over the body. Much higher blood pressure (BP) of the afferent vasculature may be the major underlying cause, and probably whole afferent vasculature including capillaries are mainly involved in the process. Some of the well-known accelerators of the inflammatory process are physical inactivity, weight gain, smoking, and alcohol for the development of irreversible endpoints including obesity, hypertension, diabetes mellitus, cirrhosis, peripheric artery disease (PAD), chronic obstructive pulmonary disease (COPD), chronic renal disease (CRD), coronary heart disease (CHD), mesenteric ischemia, osteoporosis, teeth loss, and stroke, all of which terminate with early aging and mortality. They were researched under the title of metabolic syndrome in the literature, extensively (1, 2). Similarly, sickle cell diseases (SCDs) are chronic catastrophic processes on vascular endothelium particularly at the capillary level, and terminate with accelerated atherosclerosis induced end-organ failures in early years of life. Hemoglobin S (HbS) causes loss of elastic and biconcave disc shaped structures of red blood cells (RBCs). Probably loss of elasticity instead of shape is the main problem because sickling is rare in peripheric blood samples of patients with associated thalassemia minors, and human survival is not so affected in hereditary spherocytosis or elliptocytosis. Loss of elasticity is present in whole lifespan, but exaggerated with increased metabolic rate of the body. The hard RBCs induced prolonged endothelial inflammation, edema, and fibrosis mainly at the capillary level terminate with cellular hypoxia all over the body (3-5). Capillary vessels are mainly involved in the process due to their distribution function for the hard RBCs. We tried to understand whether or not there is a prolonged survival with the increased number of RBC supports in the SCDs in the present study.

Materials and Methods

The study was performed in Medical Faculty of the Mustafa Kemal University between March 2007 and February 2016. All patients with the SCDs were studied. The SCDs are diagnosed with the hemoglobin electrophoresis performed via high performance liquid chromatography (HPLC). Medical histories including smoking habit, regular alcohol consumption, painful crises per year, transfused RBC units in their lives, surgical operations, priapism, leg ulcers, and stroke were learnt. Patients with a history of one pack-year were accepted as smokers, and one drink-year were accepted as drinkers. A complete physical examination was performed by the same internist. Cases with prominent teeth loss (8 or more) were detected. Cases with acute painful crisis or another inflammatory event were treated at first, and the laboratory tests and clinical measurements were performed on the silent phase. A check up procedure including serum iron, iron binding capacity, ferritin, creatinine, liver function tests, markers of hepatitis viruses A, B, and C and human immunodeficiency virus, a posterior-anterior chest x-ray film, an electrocardiogram, a Doppler echocardiogram both to evaluate cardiac walls and valves and to measure systolic BP of pulmonary artery, an abdominal ultrasonography, a venous Doppler ultrasonography of the lower limbs, a computed tomography of brain, and a magnetic resonance imaging (MRI) of hips were performed. Other bones for avascular necrosis were scanned according to the patients' complaints. Associated thalassemia minors were detected with serum iron, iron binding capacity, ferritin, and hemoglobin electrophoresis performed via HPLC. The criterion for diagnosis of COPD is post-bronchodilator forced expiratory volume in one second/forced vital capacity of less than 70% (6). Acute chest syndrome (ACS) is diagnosed clinically with the presence of new infiltrates on chest x-ray film, fever, cough, sputum production, dyspnea, or hypoxia (7). An x-ray film of abdomen in upright position was taken just in patients with abdominal distention or discomfort, vomiting, obstipation, or lack of bowel movement, and ileus was diagnosed with gaseous distention of isolated segments of bowel, vomiting, obstipation, cramps, and with the absence of peristaltic activity on the abdomen. Systolic BP of the pulmonary artery of 40 mmHg or higher is accepted as pulmonary hypertension (8). CRD is diagnosed with a persistent serum creatinine level of 1.3 mg/dL in males and 1.2 mg/dL in females. Cirrhosis is diagnosed with physical examination, hepatic function tests, ultrasonographic results, and tissue sample in case of indication. Digital clubbing is diagnosed with the ratio of distal phalangeal diameter to interphalangeal diameter which is greater than 1.0, and with the presence of Schamroth's sign (9, 10). An exercise electrocardiogram is just performed in cases with an abnormal electrocardiogram and/or angina pectoris. Coronary angiography is taken just for the exercise electrocardiogram positive cases. So CHD was diagnosed either angiographically or with the Doppler echocardiographic findings as the movement disorders in the cardiac walls. Rheumatic heart disease is diagnosed with the echocardiographic findings, too. Avascular necrosis of bones is diagnosed by means of MRI (11). Stroke is diagnosed by the computed tomography of brain. Ophthalmologic examination was performed according to the patients' complaints. Eventually as one of the significant endpoints of the SCDs, cases with COPD and without were collected into the two groups, and they were compared in between. Mann-Whitney U test, Independent-Samples t test, and comparison of proportions were used as the methods of statistical analyses.

Results

The study included 428 patients with the SCDs (207 females and 221 males) during the nine-year follow-up period. There were 71 patients (16.5%) with COPD. Mean age of the patients was significantly higher in the COPD group (32.8 versus 29.8 years, P=0.005). The male ratio was significantly higher in the COPD group, too (78.8% versus 46.2%, P<0.001). Smoking (35.2% versus 11.4%, P<0.001) and alcohol consumption (7.0% versus 1.9%, P<0.01) were also higher among the COPD cases. Prevalences of associated thalassemia minors were similar in both groups (76.0% versus 68.6% in the COPD group

and other, respectively, P>0.05) (Table 1). Beside these, priapism (14.0% versus 3.0%, P<0.001), cirrhosis (8.4% versus 3.3%, P<0.05), leg ulcers (23.9% versus 12.0%, P<0.01), digital clubbing (25.3% versus 6.7%, P<0.001), CHD (23.9% versus 13.7%, P<0.05), CRD (15.4% versus 7.0%, P<0.01), and stroke (16.9% versus 8.1%, P<0.01) were all higher in the COPD group. Additionally, painful crises per year (5.3 versus 4.9), ileus (4.2% versus 3.9%), prominent teeth loss (4.2% versus 3.0%), pulmonary hypertension (12.6% versus 12.0%), varices (11.2% versus 5.3%), rheumatic heart disease (7.0% versus 6.1%), sinus arrhythmia (4.2% versus 3.0%), and mortality (8.4% versus 6.4%) were all higher among the COPD cases, too but the differences were nonsignificant probably due to the small sample size of the COPD group. Parallel to the above consequences, mean transfused RBC units in their lives were significantly higher among the COPD cases (63.8 versus 33.0, P=0.003). Probably due to the higher number of transfused RBC units in their lives, the mean age of mortality was significantly higher in the COPD group (38.3 versus 30.4 years, P=0.04) (Table 2). On the other hand, there was one patient (1.4%) with HBsAg positivity in the COPD group and 4 patients (1.1%) among the others (P>0.05), but HBV DNA was positive in none of them by polymerase chain reaction (PCR) method. Although antiHCV positivity was similar in both groups (4.2% versus 6.1% of the COPD patients and others, respectively, P>0.05), HCV RNA positivity was significantly higher in the COPD group (2.7% versus 0.5% of the COPD group and other, respectively, P<0.05) by PCR. On the other hand, there were three patients with the sickle cell retinopathy in the group without COPD.

Table 1: Characteristic features of the study cases

Variables	Cases with COPD*	*P*-value	Cases without COPD
Prevalence	16.5% (71)		83.4% (357)
Male ratio	*78.8% (56)*	*<0.001*	*46.2% (165)*
Mean age (year)	*32.8 ± 10.0 (5-58)*	*0.005*	*29.8 ± 9.9 (6-59)*
Thalassemia minors	76.0% (54)	Ns†	68.6% (245)
Smoking	*35.2% (25)*	*<0.001*	*11.4% (41)*
Alcoholism	*7.0% (5)*	*<0.01*	*1.9% (7)*

*Chronic obstructive pulmonary disease †Nonsignificant (P>0.05)

Table 2: Associated pathologies of the study cases

Variables	Cases with COPD*	P-value	Cases without COPD
Painful crises per year	5.3 ± 7.9 (0-36)	Ns†	4.9 ± 7.9 (0-52)
Transfused RBC‡ units	***63.8 ± 85.1 (0-434)***	***0.003***	***33.0 ± 39.7 (0-250)***
Priapism	***14.0% (10)***	***<0.001***	***3.0% (11)***
Ileus	4.2% (3)	Ns	3.9% (14)
Prominent teeth loss	4.2% (3)	Ns	3.0% (11)
HCV RNA positivity	***2.7% (2)***	***<0.05***	***0.5% (2)***
Cirrhosis	***8.4% (6)***	***<0.05***	***3.3% (12)***
Leg ulcers	***23.9% (17)***	***<0.01***	***12.0% (43)***
Pulmonary hypertension	12.6% (9)	Ns	12.0% (43)
Varices	11.2% (8)	Ns	5.3% (19)
Digital clubbing	***25.3% (18)***	***<0.001***	***6.7% (24)***
CHD§	***23.9% (17)***	***<0.05***	***13.7% (49)***
CRD¶	***15.4% (11)***	***<0.01***	***7.0% (25)***
Rheumatic heart disease	7.0% (5)	Ns	6.1% (22)
Avascular necrosis of bones	21.1% (15)	Ns	25.2% (90)
Sinus arrhythmia	4.2% (3)	Ns	3.0% (11)
ACS**	1.4% (1)	Ns	3.6% (13)
Stroke	***16.9% (12)***	***<0.01***	***8.1% (29)***
Mortality	8.4% (6)	Ns	6.4% (23)
Mean age of mortality	***38.3 ± 6.9 (31-47)***	***0.04***	***30.4 ± 8.6 (19-50)***

*Chronic obstructive pulmonary disease †Nonsignificant (P>0.05) ‡Red blood cell
§Coronary heart disease Chronic renal disease **Acute chest syndrome

Discussion

Chronic endothelial damage may be the most common type of vasculitis, and the leading cause of aging and mortality in human beings. Physical inactivity, weight gain, smoking, alcohol, prolonged infections, and chronic inflammatory processes including SCDs, rheumatologic disorders, and cancers may accelerate the process. Probably whole afferent vasculature including capillaries are mainly involved in the process. Much higher BP of the afferent vasculature may be the major underlying cause by inducing recurrent micro-injuries on endothelium. Thus the term of venosclerosis is not as famous as arteriosclerosis or atherosclerosis in the literature. Secondary to the chronic endothelial inflammation, edema, and fibrosis, vascular walls become thickened, their lumens are narrowed, and they lose their elastic nature that reduces blood flow and increases BP further. Although early withdrawal of causative factors may delay final consequences, after development of cirrhosis, COPD, CRD, CHD, PAD, or stroke, endothelial changes cannot be reversed completely due to the fibrotic nature of them (12).

SCDs are life-threatening hereditary disorders nearly affecting 100,000 individuals in the United States (13). As a difference from other causes of chronic endothelial damage, they probably keep vascular endothelium particularly at the capillary level (14), since the capillary system is the main distributor of the hard RBCs to the tissues. The hard cells induced chronic endothelial damage, inflammation, edema, and fibrosis build up an advanced atherosclerosis in younger ages of the patients. As a result, mean lifespans of the patients were 48 years in females and 42 years in males in the literature (15), whereas they were 33.6 and 30.8 years in the present study, respectively. The great differences may be due to delayed diagnosis of the diseases, delayed initiation of hydroxyurea therapy, and inadequate RBC supports in severe clinical conditions in our country. Actually, RBC supports must be given whenever there is evidence of clinical deterioration in the patients (16, 17). RBC supports decrease sickle cell concentration in circulation and suppress bone marrow about the production of abnormal RBCs. So they decrease sickling induced endothelial damage of organs in crises. According to our nine-year experience, simple and repeated transfusions are superior to RBC exchange. First of all, preparation of one or two units of RBC suspensions each time rather than preparation of six units or higher provides time for clinicians to prepare more units by preventing sudden death of such patients. Secondly, transfusions of one or two units of RBC suspensions each time decreases the severity of pain and relaxes anxiety of the patients and surroundings in a short period of time. Thirdly, transfusions of lesser units of RBC suspensions each time by means of simple transfusions will decrease transfusion-related complications in the future. Fourthly, transfusion of RBC suspensions in secondary health centers may prevent some deaths developed during transport to tertiary centers for the exchange. On the other hand, longer lifespan of females in the SCDs (15) and longer overall survival of females in the world (18) cannot be explained by the atherosclerotic effects of smoking and alcohol alone, instead it may be explained by physical power requiring role of males that may terminate with an exaggerated sickling and atherosclerosis all over the body (19).

COPD is the third leading cause of mortality with different underlying etiologies in the world (20). It is an inflammatory disorder mainly affecting the pulmonary vasculature, and smoking, excess weight, and aging may be the major causes. Regular alcohol consumption may also take place in the inflammatory process. For example, the prevalence of alcohol consumption was significantly higher in the COPD group (7.0% versus 1.9%, $P<0.01$), here. Similarly, COPD was one of the most frequent associated disorders in alcohol dependence in another study (21). Additionally, 30-day readmission rate was higher in COPD patients with alcoholism (22). Probably an accelerated atherosclerotic process is the main structural background of functional changes that are characteristics of COPD. The endothelial process is enhanced with release of various chemicals by inflammatory cells, and terminates with endothelial fibrosis and tissue loss in lungs. Although COPD may mainly be an accelerated atherosclerotic process of the pulmonary vasculature, there are several reports about coexistence of disseminated endothelial inflammation all over the body (23, 24). For example, close relationships were shown between COPD, CHD, PAD, and stroke (25). Similarly, two-thirds of mortality cases were caused by cardiovascular diseases and lung cancers in smokers in a multi-center study (26). When the hospitalizations were researched, the most common causes were the cardiovascular diseases again (26). In another study, 27% of all mortality was due to the cardiovascular causes in the moderate and severe COPD cases (27). Due to the strong atherosclerotic natures of the SCDs and COPD, COPD may be one of the terminal endpoints of the SCDs due to the higher prevalence of priapism, cirrhosis, leg ulcers, digital clubbing, CHD, CRD, and stroke in the COPD group, here.

Painful crises are the most disabling and nearly pathognomonic symptoms of the SCDs. For example, only 11.9% of the study cases (9.8% versus 12.3% in the COPD and other groups, respectively, $P>0.05$) have not had any painful crisis in their lives, here. Although the crises may not be life threatening directly (28), infections are the most common precipitating factors of them. The patients are immunocompromised due to a variety of reasons including a functional and anatomic asplenism, chronic endothelial damage induced end-organ failures, a permanent inflammatory process all over the body, hospitalizations, transfusions, and invasive procedures. Because of the deep immunodeficiency, simple infections may even progress to sepsis in a short period of time. Thus multiorgan failures and mortality are not rare during acute painful crises in them. Similarly, RBC supports may provide adequate tissue oxygenation and immunity, and so prevent intractable pain, dissemination of infections or inflammations, end-organ failures, and mortality during surgical operations, major depressions, and other severe clinical conditions. On the other hand, pain is the result of a yet poorly understood interaction between the hard

cells, endothelial cells, white blood cells (WBC), and platelets (PLT). The adverse effects of WBCs and PLTs on endothelium are of particular interest. For example, leukocytosis even at the silent period was an independent predictor of severity of the SCDs (29), and it was associated with an increased risk of stroke (30). On the other hand, leukocytosis and thrombocytosis are acute phase reactants that are also present during the silent periods in the SCDs. They indicate presence of a permanent inflammatory process initiating at birth. The continuous inflammatory process alone causes an additional accelerated atherosclerotic process and a relative weight loss in the SCDs (31). Occlusions of vasculature of the bone marrow, bone infarctions, releasing of inflammatory mediators, and activation of afferent nerves may take a role in the pathophysiology of the intractable pains. Because of the severity of pain, narcotic analgesics are usually required to control them (32), but according to our practice, RBC supports are highly effective during severe crises both to relieve pain and to prevent sudden deaths secondary to the multiorgan failures developed on chronic inflammatory background of the SCDs.

Probably parallel to severity of the inflammatory process, an asplenism develops with decreased antibody production, prevented opsonization, and reticuloendothelial dysfunction due to the repeated infarctions and subsequent fibrosis in early years of life. Similarly, the prevalence of autosplenectomy was 51.6% (221 cases) among the patients with an average age of 30.3 ± 10.0 years (range 5-59), here. Terminal consequence of the asplenism is an increased risk of infections, particularly due to Streptococcus pneumoniae, Haemophilus influenzae, and Neisseria meningitidis like encapsulated bacteria. Thus, infections particularly the pneumococcal infections are common in early childhood, and they are associated with a high mortality rate. The causes of mortality were infections in 56% of infants in a previous study (29). In another study, the peak incidence of mortality occured between 1 to 3 years of age in children, and the deaths were predominantly caused by pneumococcal sepsis in patients less than 20 years of age (33). According to our nine-year experiences in adults, patients even who appear relatively fit are susceptible to sepsis, multiorgan failures, and sudden death during acute painful crises due to the deep immunosuppression in them.

ACS is responsible for considerable mortality, particularly during the childhood in the SCDs (34). It occurs most often as a single episode, and a past history is associated with an early mortality (34).

Similarly, all of 14 cases with the ACS had only a single episode, and two of them in the group without COPD were fatal in spite of rigorous RBC, ventilation, and antibiotic supports in the present study. The remaining 12 patients are still alive without a recurrence at the end of the nine-year follow-up period. ACS is the most common between the ages of 2 to 4 years, and its incidence decreases with age (35). Parallel to the knowledge, its incidence was only 3.2% among the patients with an average age of 30.3 years, here. The decreased incidence with aging may be due to a high mortality during the first episode and/or an acquired immunity against various antigens with aging. On the other hand, ACS may also show inborn severity of the SCDs. For example, its incidence is higher in severe cases such as cases with sickle cell anemia (HbSS) and a higher WBC count (34, 35). Probably, ACS is a complex event, and the terminology of 'ACS' does not indicate a definite diagnosis but reflects clinical difficulty of defining a distinct etiology in the majority of such episodes. One of the major clinical problems lies in distinguishing between infection and infarction, and in establishing clinical significance of fat embolism. For example, ACS did not show an infectious etiology in 66% of episodes in the above studies (34, 35). Similarly, 12 of 27 episodes of ACS had evidence of fat embolism as the cause in another study (36). But according to our experiences, the increased metabolic rate during severe infections may terminate with the ACS. In other words, ACS may be characterized by the hard RBCs-induced disseminated endothelial damage and fat embolism at the capillary level. A preliminary result from the Multi-Institutional Study of Hydroxyurea in the SCDs (37) indicating a significant reduction of ACS episodes with hydroxyurea suggests that a substantial number of episodes are secondary to the endothelial inflammation and edema at the capillary level. Similarly, we strongly recommend hydroxyurea therapy for all patients at any age that may also be a cause of the low incidence of ACS among our follow-up cases, here. Hydroxyurea is the only drug that was approved by Food and Drug Administration for the treatment of SCDs (13). It is an oral, cheap, safe, and highly effective drug for the SCDs that blocks cell division by suppressing formation of deoxyribonucleotides which are building blocks of DNA (13). Its main action may be suppression of hyperproliferative WBCs and PLTs in the SCDs (14). Although presence of a continuous damage of hard RBCs on capillary endothelium, severity of the destructive process is probably exaggerated by the patients' own WBCs and PLTs as in the autoimmune disorders (14). Similarly, lower WBC counts were associated with lower crises rates, and if a tissue infarct occurs, lower WBC counts may decrease severity of pain and tissue damage (38). According to our experiences, hydroxyurea is an effective drug for prevention or delay of terminal consequences of the SCDs if it is initiated in early years of life, but it may be difficult due to the excessive fibrosis around the capillary walls in nearly all organs later in life.

As a conclusion, SCDs are chronic catastrophic processes on vascular endothelium particularly at the capillary level, and terminate with accelerated atherosclerosis induced end-organ failures in early years of life. RBC supports in severe clinical conditions probably prolong the survival of patients.

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Zika and Virus Evolution

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Abstract

This is our second update this year on the Zika virus. While the update is to provide family doctors with the current snapshot of its epidemiology and particularly current precautions for patients, it is a timely reminder that the 'shelf life' (obsolescence) of medical education and information can range from several weeks to years. Shelf life of medical education and information is a particular problem when dealing with emerging viruses. Not only can new strains mutate and develop within short periods of time, the clinical sequelae can often only be revealed over time. Until pregnant women infected with the Zika virus gave birth, the major deforming aspects on the foetus were not apparent, and until a large number of infected pregnant women gave birth, the rate of mutation was not apparent. Until new cases of Zika have been confirmed in new regions, the spread of the virus has not been apparent.

Most recent information on the Zika Virus

This Zika update is born from the fact that it is now certain that transmission of the virus can be made from infected partners of pregnant women, (sexual and non-sexual) not just first line infection from carrier mosquitoes, prompting a new round of warnings and precautionary measures. (1, 2, 3, 4)

Since January 2016, many have advised women who were pregnant or hoping to become so to avoid travel to Zika-affected areas or to take steps to avoid Zika infection. That medical advice expanded over time to include women's partners, especially as it became clear sexual transmission of the virus was more common than had been previously known. (3)

• Practice safe sex," said the World Health Organization (WHO) in a recently released travel and health advisory. The advisory was released to educate authorities, medical practitioners and travellers on safety measures to prevent the spread of Zika virus. (1,2)

On WHO's health and travel advisory, they specifically ordered local authorities to disseminate the following information:
• Provide up-to-date advice to travellers on how to reduce the risk of becoming infected, including preventing mosquito bites and practicing safer sex.
• Advise travellers from areas with ongoing Zika virus transmission to practice safer sex and not to donate blood for at least one month after their return to reduce the potential risk of onwards transmission. (1,2)

It is also a timely reminder that Brazil, host to the Olympic Games in August 2016 is experiencing a Zika outbreak.

With more diseases being linked to the Zika virus, such as microcephaly, Guillain-Barré syndrome and acute disseminated encephalomyelitis (ADEM), preventive measures to alleviate the spread of the Zika virus should be put in place. Pregnant women, who are considered more prone to Zika virus infection, are also advised to exercise great caution.

WHO advises pregnant women whose sexual partners live in or travel to areas with ongoing or recent Zika virus transmission to not only ensure safe sexual practices or preferably abstain from sex for the duration of their pregnancy." (1,2,3) The Center for Disease Control and Prevention (CDC) has reported that traces of Zika virus were found in saliva and urine, making the transmission through sex possible. In early 2016, CDC also issued safe-sex guidelines targeting travellers, especially men. Men who live in or travel to areas of active Zika infections and who have a pregnant sexual partner should use latex condoms correctly, or refrain from sex until the pregnancy has come to term. (3)

However, everything we know about the Zika virus is rapidly changing over time. CDC reports that although it is proven that the Zika virus can be transmitted through bodily fluids, it doesn't necessarily prove that it is 100 percent transmittable that way. (3)

Updated Guidelines

The updated guidelines for women of reproductive age who want to become pregnant include recommendations for Zika virus testing and guidance for women. The guidelines include recommendations for men and women with possible exposure to Zika virus who do not have symptoms, and men and women who have Zika virus disease (3).

There is limited information available about the risk of periconceptional Zika virus infection. Three early case reports suggest there may be adverse outcomes associated with Zika virus infection in early pregnancy, including pregnancy loss and severe microcephaly, although the timing of infection and conception in these cases was often unknown. (3) It is now clear that Zika does cause microcephaly. (3)

An analysis, published in the BMJ in April 2016, involved 23 babies born in the Brazilian state of Pernambuco between July and December 2015, all but one of whom were born to mothers who had a rash during pregnancy, consistent with a Zika virus infection. (5)

The brain damage caused by Zika virus infection in these children was extremely severe, indicating a poor prognosis for neurological function. (5) Other common findings included malformations of cortical development, decreased brain volume, and ventriculomegaly, a condition where the brain cavities are abnormally enlarged. (5)

The WHO has also linked Zika to Guillain-Barré syndrome, a rare sickness of the nervous system in which a person's own immune system damages the nerve cells, causing muscle weakness, and sometimes paralysis. (1, 2)

Zika Timeline

Zika is a perfect example of the evolution of a virus over time. Evolution has occurred in many fields: distribution/ spread of the virus, increasingly harmful sequelae, increasing public education and the chain of new information generated by its changing aspects due to discovery, ongoing transmission, evolution of the virus, a wider range of carrier mosquitoes and time itself.

Abbreviated Zika Timeline
(Sourced from: 1,3,4,5, 6,19,)

The following timeline summarizes the spread of Zika infection, country by country, from the earliest discovery in 1947 to the latest information up to April, 17, 2016.

1947: Scientists conducting routine surveillance for yellow fever in the Zika forest of Uganda isolate the Zika virus in samples taken from a captive, sentinel rhesus monkey.
1948: The virus is recovered from the mosquito Aedes (Stegomyia) africanus, caught on a tree platform in the Zika forest.
1952: The first human cases are detected in Uganda and the United Republic of Tanzania in a study demonstrating the presence of neutralizing antibodies to Zika virus in sera.
1958: Two further Zika virus strains are isolated from Aedes africanus mosquitos caught in the Zika forest area.
1964: A researcher in Uganda who fell ill while working with Zika strains isolated from mosquitoes provides the first example, by virus isolation and re-isolation, that Zika virus causes human disease.
1960s-1980s: Zika is being detected in mosquitos and sentinel rhesus monkeys used for field research studies in a narrow band of countries that stretch across equatorial Africa. Altogether, the virus is isolated from more than 20 mosquito species, but mainly in the genus Aedes. Sporadic human cases are identified, mostly by serological methods, but such cases are rare, and the disease is regarded as benign.
1969-1983: The known geographical distribution of Zika expands to equatorial Asia, including India, Indonesia, Malaysia and Pakistan, where the virus is detected in mosquitos. As in Africa, sporadic human cases occur but no outbreaks are detected and the disease in humans continues to be regarded as rare, with mild symptoms. Seroprevalence studies in Indonesia, Malaysia and Pakistan indicate widespread population exposure.
2007: Zika spreads from Africa and Asia to cause the first large outbreak in humans on the Pacific island of Yap, in Micronesia. Prior to this event, no outbreaks and only 14 cases of human Zika virus disease had been documented worldwide. No deaths, hospitalizations, or neurological complications were reported.

2008: A US scientist conducting field work in Senegal falls ill with Zika infection upon his return home to Colorado and infects his wife in what is probably the first documented case of sexual transmission of an infection usually transmitted by insects.

2012: Researchers publish findings on the characterization of Zika virus strains collected in Cambodia, Malaysia, Nigeria, Senegal, Thailand and Uganda, and construct phylogenetic trees to assess the relationships. Two geographically distinct lineages of the virus, African and Asian, are identified.

December 2013: A patient recovering from Zika infection on Tahiti Island in French Polynesia seeks treatment for bloody sperm. Zika virus is isolated from his semen, adding to the evidence that Zika can be sexually transmitted.

2013-2014: The virus causes outbreaks in four other groups of Pacific islands: French Polynesia, Easter Island, the Cook Islands, and New Caledonia. The outbreak in French Polynesia, generating thousands of suspected infections, is intensively investigated. Reports indicate a possible association between Zika virus infection and congenital malformations and severe neurological and autoimmune complications. In particular, an increase in the incidence of Zika infection towards the end of 2013 was followed by a rise in the incidence of Guillain-Barré syndrome.

20 March 2014: During the 2013-14 outbreak of Zika virus in French Polynesia, two mothers and their newborns are found to have Zika virus infection, confirmed by PCR performed on serum collected within four days of birth. The infants' infections appear to have been acquired by transplacental transmission or during delivery.

31 March 2014: During the same outbreak of Zika virus in French Polynesia, 1505 asymptomatic blood donors are reported to be positive for Zika by PCR. These findings alert authorities to the risk of post-transfusion Zika fever.

2 March 2015: Brazil notifies WHO of reports of an illness characterized by skin rash in northeastern states. From February 2015 to 29 April 2015, nearly 7000 cases of illness with skin rash are reported in these states. All cases are mild, with no reported deaths.

29 March 2015: Brazil provides further details on reports of an illness, in four northeastern states, characterized by skin rash, with and without fever.

29 April 2015: Bahia State Laboratory in Brazil informs WHO that samples have tested positive for Zika virus, but full laboratory confirmation is pending.

7 May 2015: Brazil's National Reference Laboratory confirms, by PCR, Zika virus circulation in the country. This is the first report of locally acquired Zika disease in the Americas.

7 May 2015: The Pan American Health Organization and WHO issue an epidemiological alert regarding Zika virus infection.

15 July 2015: Brazil reports laboratory-confirmed Zika cases in twelve states.

17 July 2015: Brazil reports detection of neurological disorders associated with a history of infection, primarily from the north-eastern state of Bahia. Among these reports, 49 cases were confirmed as Guillain-Barré syndrome. Of these cases, all but 2 had a prior history of infection with Zika, chikungunya or dengue.

8 October 2015: Brazil reports the results of a review of 138 clinical records of patients with a neurological syndrome, detected between March and August. Of the 138 patients, 58 (42%) had a neurological syndrome with a previous history of viral infection. Of the 58, 32 (55%) had symptoms that said to be consistent with Zika or dengue infection.

8 October 2015: Colombia reports the results of a retrospective review of clinical records which reveals the occurrence, since July, of sporadic clinical cases with symptoms consistent with Zika infection. A sudden spike is reported between 11 and 26 September. Altogether, 90 cases are identified with clinical symptoms consistent with, but not proven to be, Zika infection.

30 October 2015: Brazil reports an unusual increase in the number of cases of microcephaly among newborns since August, numbering 54 by 30 October.

11 November 2015: Brazil reports 141 suspected cases of microcephaly in Pernambuco state. Further suspected cases are being investigated in two additional states, Paraiba and Rio Grande do Norte.

11 November 2015: Brazil declares a national public health emergency as cases of suspected microcephaly continue to increase.

12 November 2015: Suriname reports 5 PCR confirmed cases of locally acquired Zika infection.

12 November 2015: Panama reports cases with symptoms compatible with Zika.

17 November 2015: The Pan American Health Organization and WHO issue an epidemiological alert asking PAHO Member States to report observed increases of congenital microcephaly and other central nervous system malformations under the International Health Regulations.

17 November 2015: Brazil reports the detection of Zika virus in amniotic fluid samples from two pregnant women from Paraiba whose foetuses were confirmed by ultrasound examinations to have microcephaly. Altogether, 399 cases of suspected microcephaly are being investigated in seven northeastern states.

21 November 2015: Brazil reports that 739 cases of microcephaly are being investigated in nine states.

24 November 2015: El Salvador reports its first 3 PCR confirmed cases of locally acquired Zika infection.

24 November 2015: French Polynesia reports the results of a retrospective investigation documenting an unusual increase in the number of central nervous system malformations in foetuses and infants from March 2014 to May 2015. At the date of reporting, at least 17 cases are identified with different severe cerebral malformations, including microcephaly, and neonatal brainstem dysfunction.

25 November 2015: Mexico reports three PCR confirmed cases of Zika infection, of which two were locally acquired.

26 November 2015: Guatemala reports its first PCR confirmed case of locally acquired Zika infection.

27 November 2015: Paraguay reports six PCR confirmed cases of locally acquired Zika infection.

27 November 2015: The Republic of Venezuela reports seven suspected cases of locally acquired Zika infection.

Four samples test positive by PCR.

28 November 2015: Brazil detects Zika virus genome in the blood and tissue samples of a baby, with microcephaly and other congenital anomalies, who died within 5 minutes of birth.

28 November 2015: Brazil reports three deaths among two adults and a newborn associated with Zika infection. As deaths from Zika infection are extremely rare, these cases are reported in detail.

1 December 2015: The Pan American Health Organization and WHO issue an alert to the association of Zika virus infection with neurological syndrome and congenital malformations in the Americas. The alert includes guidelines for laboratory detection of the virus.

2 December 2015: Panama reports its first 3 PCR confirmed cases of locally acquired Zika infection.

6 December 2015: Cabo Verde reports 4744 suspected cases of Zika. No neurological complications are reported.

14 December 2015: Panama reports four PCR confirmed cases of locally acquired Zika infection, and 95 cases with compatible symptoms.

15 December 2015: Samples taken from patients in Cabo Verde test positive, by PCR, for Zika.

16 December 2015: Honduras reports two PCR confirmed cases of locally acquired Zika infection.

21 December 2015: French Guiana and Martinique report their first two PCR confirmed cases of locally acquired Zika infection.

22 December 2015: Brazilian researchers publish evidence, drawn from case reports in several countries, that depict Zika as "a mild cousin of dengue" may not be accurate due to the possibility of more serious disease symptoms, especially in immunocompromised patients.

30 December 2015: Brazil reports 2975 suspected cases of microcephaly, with the highest number occurring in the north-east region.

31 December 2015: The United States reports the first PCR confirmed case of locally acquired Zika infection in Puerto Rico.

5 January 2016: Researchers report the first diagnoses of intrauterine transmission of the Zika virus in two pregnant women in Brazil whose foetuses were diagnosed with microcephaly, including severe brain abnormalities, by ultrasound. Although tests of blood samples from both women are negative, Zika virus is detected in amniotic fluid.

7 January 2016: Scientists in Guyana publish the results of Zika genome sequencing of viruses from four patients in Suriname whose sera were negative for dengue and chikungunya viruses but positive for Zika virus. Suriname strains belong to the Asian genotype and are almost identical to the strain that circulated in French Polynesia in 2013.

7 January 2016: Ophthalmologists in Brazil report severe ocular malformations in three infants born with microcephaly.

12 January 2016: In collaboration with health officials in Brazil, the United States Centers for Disease Control and Prevention release laboratory findings of four microcephaly cases in Brazil (two newborns who died in the first 24 hours of life and two miscarriages) which indicate the presence of Zika virus RNA (Ribonucleic acid) by PCR and by immunohistochemistry of brain tissue samples of the two newborns. In addition, placenta of the two foetuses miscarried during the first 12 weeks of pregnancy test positive by PCR. The findings are considered the strongest evidence to date of an association between Zika infection and microcephaly.

14 January 2016: Guyana reports its first PCR confirmed case of locally acquired Zika infection.

15 January 2016: Ecuador reports its first two PCR confirmed cases of locally acquired Zika infection. The next day, the country confirms an additional 6 cases.

15 January 2016: Barbados reports its first three PCR confirmed cases of locally acquired Zika infection.

16 January 2016: Bolivia reports its first PCR confirmed case of locally acquired Zika infection.

18 January 2016: Haiti reports its first five PCR confirmed cases of locally acquired Zika.

18 January 2016: France reports the first PCR confirmed case of locally acquired Zika in Saint Martin.

19 January 2016: El Salvador reports an unusual increase of Guillain-Barré syndrome. From 1 December 2015 to 6 January 2016, 46 cases of the syndrome were reported, including two deaths. Of the 22 patients with a medical history, 12 (54%) presented with fever and skin rash in the 7 to 15 days before the onset of symptoms consistent with Guillain-Barré syndrome.

21 January 2016: Brazil reports 3893 suspected cases of microcephaly, including 49 deaths. Of these, 3381 are under investigation. In six cases, Zika virus was detected in samples from newborns or stillbirths.

22 January 2016: Brazil reports that 1708 cases of Guillain-Barré syndrome have been registered by hospitals between January and November 2015. Most states reporting cases are experiencing simultaneous outbreaks of Zika, chikungunya, and dengue.

23 January 2016: The Dominican Republic reports its first 10 PCR confirmed cases of Zika infection, of which 8 were locally acquired and 2 were imported from El Salvador.

25 January 2016: France reports two confirmed cases of Guillain-Barré syndrome in Martinique. Both cases require admission to an intensive care unit. One patient tests positive for Zika virus infection.

25 January 2016: The United States reports the first PCR confirmed case of locally acquired Zika infection in St Croix, Virgin Islands.

27 January 2016: Nicaragua reports its first two PCR confirmed cases of locally acquired Zika infection.

27 January 2016: French Polynesia reports retrospective data on its Zika outbreak, which coincided with a dengue outbreak. From 7 October 2013 to 6 April 2015, 8750 suspected cases of Zika were reported, with 383 PCR confirmed cases and an estimated 32,000 clinical consultations (11.5% of the total population). Tests excluded other known causes of Guillain-Barré syndrome, including Campylobacter jejuni, cytomegalovirus, HIV, Epstein-Barr and herpes simplex viruses. The investigation concluded that successive dengue and Zika virus infections might be a predisposing factor for developing Guillain-Barré syndrome.

28 January 2016: Curacao reports its first PCR confirmed case of locally acquired Zika.
29 January 2016: Suriname reports 1,107 suspected cases of Zika, of which 308 are confirmed, by PCR, for Zika virus.
30 January 2016: Jamaica reports its first PCR confirmed case of locally acquired Zika.
1 February 2016: WHO declares that the recent association of Zika infection with clusters of microcephaly and other neurological disorders constitutes a Public Health Emergency of International Concern (PHEIC).
1 February 2016: Cabo Verde reports 7081 suspected cases of Zika between end September 2015 and 17 January 2016.
2 February 2016: Chile reports its first three PCR confirmed cases of Zika virus on the mainland in travellers returning from Colombia, the Bolivarian Republic of Venezuela, and Brazil.
2 February 2016: The United States reports a case of sexual transmission of Zika infection in Texas. One patient developed symptoms of illness after returning from the Bolivarian Republic of Venezuela. The second patient had not recently travelled outside of the United States, but subsequently developed symptoms after sexual contact with the traveller. This is the third indication that the virus can be sexually transmitted, which appeared at the time, to be a rare event.
4 February 2016: Brazilian health officials confirm a case of Zika virus infection transmitted by transfused blood from an infected donor.
7 February 2016: Suriname reports an increase in Guillain-Barré syndrome, beginning in 2015, with 10 cases of Guillain-Barré syndrome positive for Zika (PCR test on urine sample).
1 March 2016: France reports a probable case of sexual transmission of Zika virus, in the partner of a patient who had travelled to Brazil. The new case tested positive for Zika virus by PCR in saliva and urine; the partner tested positive by PCR in urine.
2 March 2016: Samoa reports 10 additional cases of PCR-confirmed Zika virus infection, none of whom reported any recent international travel.
The United States confirms an additional 5 cases of sexually transmitted Zika virus infection. All cases occurred in women with partners who recently returned from an area with ongoing Zika virus circulation. These additional cases suggest that sexual transmission of the virus may be more common than previously assumed.
3 March 2016: A case report published online in The Lancet describes a 15-year-old Zika-positive girl in Guadeloupe who developed acute myelitis (inflammation of the spinal cord), which caused severe back pain, numbness, and bladder dysfunction. This association suggests that Zika virus preferentially affects the nervous system.
4 March 2016: The New England Journal of Medicine publishes online a study of Zika virus infection in 88 pregnant women in Rio de Janeiro, Brazil. 72 of these women (82%) tested positive for Zika virus in blood and/or urine. Abnormalities of the fetus were detected by ultrasound in 12 Zika-positive women. These abnormalities included two foetal deaths, inability of the placenta to deliver adequate nutrients and oxygen to the fetus (placental insufficiency), poor foetal growth (foetal growth restriction), and injury to the central nervous system, including microcephaly. These findings add to the growing body of evidence linking Zika virus infection to foetal abnormalities.
9 March 2016: Venezuela provides an epidemiological update of the Zika outbreak in that country. A total of 16,942 suspected Zika cases have been reported. Of 801 samples tested by PCR, 352 (44%) were positive for Zika virus. Among the suspected cases are 941 pregnant women. A total of 226 samples from pregnant women were tested, and 153 (67.6%) were positive.
Venezuela also reports 578 cases of Guillain-Barré syndrome, among which 235 have presented with symptoms of Zika virus infection. In addition, 1 case of facial paralysis and 10 cases of unspecified neurological disorders are PCR-positive for Zika virus.
8 March 2016: The second meeting of the Zika Emergency Committee affirms that clusters of microcephaly cases and other neurological disorders continue to constitute a Public Health Emergency of International Concern (PHEIC), and that evidence is increasing of a causal relationship of these disorders with Zika virus. WHO updates its travel recommendations to advise pregnant women not to travel to areas with ongoing Zika virus outbreaks; those whose partners live in or travel to such areas should practice safe sex or abstain for the duration of their pregnancy.
9 March 2016: A letter published online in the New England Journal of Medicine describes a case in France of central nervous system infection with Zika virus associated with meningoencephalitis.
10 March 2016: The United States reports two Guillain-Barré Syndrome (GBS) cases with confirmed Zika virus infection.
10 March 2016: Colombia reports two cases of microcephaly; both mothers and newborns tested positive for Zika virus by PCR.
11 March 2016: Papua New Guinea reports 6 cases of Zika virus infection found through retrospective testing of samples, taken between July 2014 and March 2016, from patients with febrile illness. Cases were confirmed by PCR. These are the first laboratory-confirmed cases of Zika virus infection in Papua New Guinea.
15 March 2016: A retrospective analysis of the Zika outbreak in French Polynesia, which occurred in 2013-2014, is published online in The Lancet. Using serological and surveillance data, the authors calculated the risk of microcephaly in foetuses and babies born to mothers infected with the Zika virus to be 1 in 100, or 1%. This study supports the hypothesis that Zika infection in the first trimester of pregnancy is associated with an increased risk of microcephaly
16 March 2016: First locally acquired cases are reported from Kosrae, Federated States of Micronesia; Dominica; and Cuba.
18 March 2016: Panama notifies WHO of a newborn (31 weeks gestation) with microcephaly and occipital encephalocele who died on 17 March a few hours after birth. The mother had no history of Zika virus infection and tested negative for Zika virus. Samples of the umbilical cord were positive for Zika virus by RT-PCR. This is

the first report of Zika virus infection in a newborn with microcephaly in Panama.

24 March 2016: The United States reports the birth of a baby with microcephaly whose mother, a Cape Verde resident, sought medical care in the USA. A serum sample from the mother tested positive for Zika antibodies.

24 March 2016: Martinique reports the first case of Zika virus infection detected in a fetus with microcephaly. Samples of foetal blood and amniotic fluid, taken on 17 March, tested positive by PCR for Zika virus. Serial serological samples from the mother, taken between 7 December 2015 and 11 February 2016 were positive for Zika virus. This report adds to the evidence of the link between microcephaly and Zika virus infection and also shows that the virus can remain in the placenta/amniotic fluid months after infection occurred in the mother.

26 March 2016: Chile notifies WHO of its first confirmed case of sexual transmission of Zika virus. The case's partner had travelled to two countries where Zika virus is currently circulating. The Aedes mosquito is not present in continental Chile.

5 April 2016: Viet Nam notifies WHO of two laboratory-confirmed cases of Zika virus infection. These are the first locally acquired cases of Zika in that country

7 April 2016: Saint Lucia notifies WHO of two laboratory-confirmed cases of Zika virus infection, one in a pregnant woman. These are the first locally acquired cases of Zika in that country.

7 April 2016: Panama confirms to WHO the birth of two newborns with congenital syndrome who tested positive for Zika virus. One was born prematurely and had microcephaly, an enlarged tongue, and a short neck; testing of the mother for Zika virus is pending. The second was born at term and had microcephaly; the mother tested positive by PCR for Zika virus.

8 April 2016: Ecuador notifies WHO of a large die-off of howler monkeys in Pacoche Forest Reserve, Montecristi Canton, Manabi Province, which is close to the Solita community, where about 40 families live. Of 39 monkeys who were found dead 1-10 February 2016, two samples tested positive by RT-PCR for Zika virus.

13 April 2016: A paper published in the NEJM concludes that there is now sufficient evidence to confirm that a causal relationship exists between prenatal Zika virus infection and microcephaly and other serious brain abnormalities.

17 April 2016: Peru reports its first sexually transmitted case of Zika virus. The case's partner had recently returned from Venezuela.

Viruses and Evolution

Humans and viruses have been in a life and death struggle for millennia and scientists are not sure if viruses or cellular life developed first or if they both developed simultaneously. Like cellular life viruses are capable of reproducing themselves but never have (10). Rather they rely on host organisms to spread. One of the first and momentous records of pandemics was the Black Death (Bubonic plague) pandemic starting in 1331 and peaking in Europe in the years 1346-53 (7).

The Black Death is believed by many to be viral in and resulted in the deaths of an estimated 75 to 200 million people. For example, sociologist Susan Scott and biologist Christopher J. Duncan claim that a hemorrhagic fever, similar to the Ebola virus, caused the Black Death. Others blame anthrax or say that some now-extinct disease was the culprit. (7)

Modern times have seen some major pandemics and emergence of new globally spreading viruses such as SARS, AIDS, Avian flu, Zika, Ebola, (11, 20) and localised viruses such as L yssavirus, (8) and Hendra (9).

Viruses evolve rapidly and constantly, changing within a lineage and splitting off to form new lineages. As they evolve, they accumulate small changes in the sequences of their genomes. (10)

Influenza viruses circulating in animals pose some of the greatest threats to human health as there is no immune history in human physiology. Animal sourced viruses include avian influenza virus subtypes H5N1 and H9N2 and swine influenza virus subtypes H1N1 and H3N2. The primary risk factor for human infection appears to be direct or indirect exposure to infected live or dead animals or contaminated environments. (15)

More recent viruses such as Hendra virus have been found to be transferred from horses that have contracted it from infected fruit bats (flying foxes). This is a rare disease that can be passed from an infected horse to a human. This type of illness is called a zoonotic disease. There is no evidence of bat-to-human, human-to-human or human-to-horse spread of Hendra virus. (8,9)

All viruses have an evolutionary cycle. Most have either evolved from animal viruses that have evolved and moved into human hosts or have come from other sources and been delivered by animal carriers, such as mosquitos, bats, horses, and civets (9).

The previously unknown SARS virus generated global panic in 2002 and 2003 when the airborne germ caused 774 deaths and more than 8000 cases of illness. In May 2003, attention focused on civets, cat-like mammals. SARS-infected civets were discovered at live animal markets in southern China but were found to not be the original source of the virus, rather they were infected by another animal, which turned out to be horseshoe bats. The bats were found to be the carriers of the SARS virus, but the virus is probably only passed to humans through intermediate hosts, like civets, when bats are captured and brought to market. Figuring out the genetic lineage required reconstructing the evolutionary history of the virus. (10, 11)

Viruses seem to frequently make the jump from bats to human hosts. Bats appear to be the natural reservoirs for many human viruses, including the Ebola, Hendra, SARS, Lyssavirus and Nipah viruses. Bats also tend to have migratory habits, allowing for the wider dissemination and spread of these viruses. (3, 11, 12, 13, 20)

Avian influenza (AI), commonly called bird flu, is an infectious viral disease of birds. Most avian influenza viruses do not infect humans; however some, such as A(H5N1) and A(H7N9), have caused serious infections in people. (3,15)

In April 2009 H1N1 was first detected in the United States. The virus was a unique combination of influenza virus genes never previously identified in either animals or people. The virus genes were a combination of genes most closely related to North American swine-lineage H1N1 and Eurasian lineage swine-origin H1N1 influenza viruses. Because of this, initial reports referred to the virus as a swine flu virus. However, investigations of human cases did not identify exposures to pigs and quickly it became apparent that this new virus was circulating among humans and not among pigs. (3, 15)

Discussion

All aspects of medicine can change over time, with new therapeutics and new techniques altering education even in anatomical medicine, but emerging and evolving viruses have always caused the greatest concerns to the health of humans and animal species as they can affect human and animal populations en masse and have the risk of causing extinctions.

While there are viruses specific to humans and particular animal species, the problematic viruses have become those that have spread from animals to humans due to mutation. Some of these mutations have then gone on to human to human transmission. (11)

No part of the world is immune to either locally developing viral outbreaks or strains of viruses brought by animals, travellers, or migrant workers into the local population. (11)

Slight changes of the mutation rate can also determine whether or not some virus infections are cleared by the host immune system and can produce dramatic differences in viral fitness and virulence, clearly stressing the need to have accurate estimates. (11)

Ideally, as in the case of smallpox which was declared eradicated in 1980 following a global immunization campaign led by the World Health Organization, we can start to tackle both the initial outbreaks and the spread of the more life threatening viruses. (11, 16)

When looking at the epidemiology of viral disease, time always plays an important factor in determining the spread and reach of a disease, its health sequelae and its ongoing virulence.
Over time, viruses can evolve from what is a mild form of disease in animal hosts to virulent disease in humans.

This can make definitive articles on patterns of disease, especially new disease such as Zika, problematic with some articles being out of date by the time they are published, or soon after. Their success also depends on seasonal outbreaks, life cycles of carriers, and migration patterns of carriers.

Ultimately with the usual building up of resistance in animal and human afflicted populations viruses will diminish in threat. Thereafter it usually becomes a battle between immune systems and mutation patterns of the virus.

Mankind has fought viruses since the dawn of time in an internal physiological battle. Once it was the human immune system that combated their lethal effects until some immunity was built up. Viruses on the other hand have continued to mutate to overcome such immunities in human and animal populations. Currently medicine and science has assisted in this battle and some few diseases seem to have been eliminated altogether.

Biological control tests on the main carriers of the Zika and Dengue viruses, the Aedes aegypti mosquito have been promising. The same mosquito is responsible for carrying the Zika virus and the chikungunya virus as well as Dengue fever. (18) The biological control involves releasing populations of mosquitoes that have been infected with a commonly occurring species of bacteria, called Wolbachia.(18)

We still may not have the full picture on Zika, and other viruses, until the viruses themselves complete their evolutionary life cycles. While first line and advanced advice can forestall medical outcomes , until the full picture is seen across time, and trends established, symptoms, sequelae and therefore treatment will vary. This is why it is always prudent to stay on the side of caution and precaution, especially from the point of view of family doctors, and the route of no harm is always the wisest.

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Principles of Surgery - Ano rectal region: Haemorrhoids

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Introduction to Brygel's SURGISKILLS

This series in MEJFM reflects my experiences as a surgeon and the problems I have encountered over many years performing, photographing, videoing and teaching surgery in the office. Here I am attempting to impart some of the knowledge I have learned in a practical rather than theoretical sense. This is my approach to the issues I have confronted in my role as an educator and in designing and conducting surgical office skills workshops in skills laboratories throughout Australia and internationally. These have been on behalf of the Royal Australian College of Surgeons, Monash University, Queensland University and many private organizations including those associated with rural medicine and international medical graduates (IMG). In Australia this comprises up to 25% of the primary care workforce.

This series on anorectal conditions commences initially with the basic anatomy and physiology, leading then into the clinical conditions commonly encountered in general practice.

The topic could be called **faeces, flatus and fluid** because the anal canal controls all these aspects by a complex neuromuscular mechanism. Damage to this causes incontinence to either or faeces, flatus and fluid. Surgeons always have this in mind as disruption resulting in any of these can lead firstly to distress to the patient but also commonly litigation.

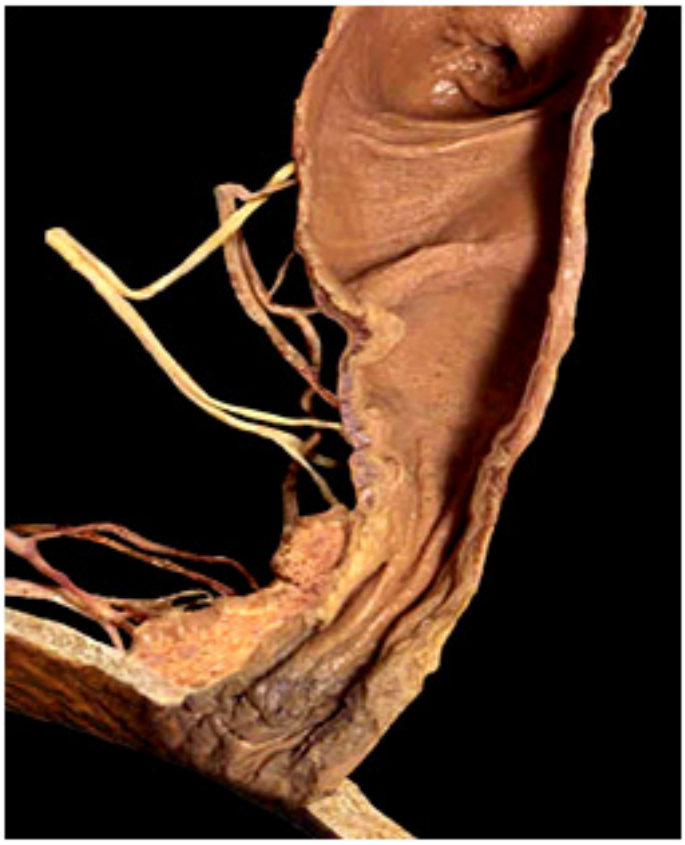
Symptoms, include pain, swelling, bleeding discharge and even change in bowel habit. With history and examination a definitive diagnoses can usually made and appropriate treatment instituted. This gives satisfaction to the proctologist despite this appearing an unpleasant field to work in. It is a sensitive area to the patient and they may complain about certain aspects .Thus it is our practice to have an explanatory sheet about the examination process.

Many interpret any symptom in this region as HAEMORRHOIDS, but the process will differentiate the conditions of:
FISSURE, ABSCESS, FISTULA, POLYP, PROLAPSE

This presentation is on haemorrhoids. Subsequently the other subjects will be dealt with.

It is important to realize that this region transitions from an autonomic nerve supply for smooth muscle above the pectinate line to a somatic nerve supply for striated muscle below this line. This has implications in treatment and why haemorrhoids can have a rubber band applied without severe pain if they are not thrombosed. The band must be applied above the dentate line.

Principles of Surgery - Ano rectal region



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Anatomy of the region
The Ano rectal region is a transitional zone from normal skin to mucosa.

Note the clinical significance of the upper & lower parts of the anal canal in terms of:

Lining
mucosa above, adenoma or adenocarcinoma, Squamous below, squamous cell carcinoma or melanoma

Nerves
Above the dentate line -
sensory and motor to parasympathetic hypogastric plexus
Below the dentate line
Sensory & motor - pudendal nerve
Lymphatic drainage
- to internal ilia above,inguinal groin below

The anal canal contains sensory nerves. Above the pectinate line visceral afferents accompany parasympathetic nerves. Below the pectinate line, somatic afferents are in the pudendal nerve.

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Anal canal - arterial supply

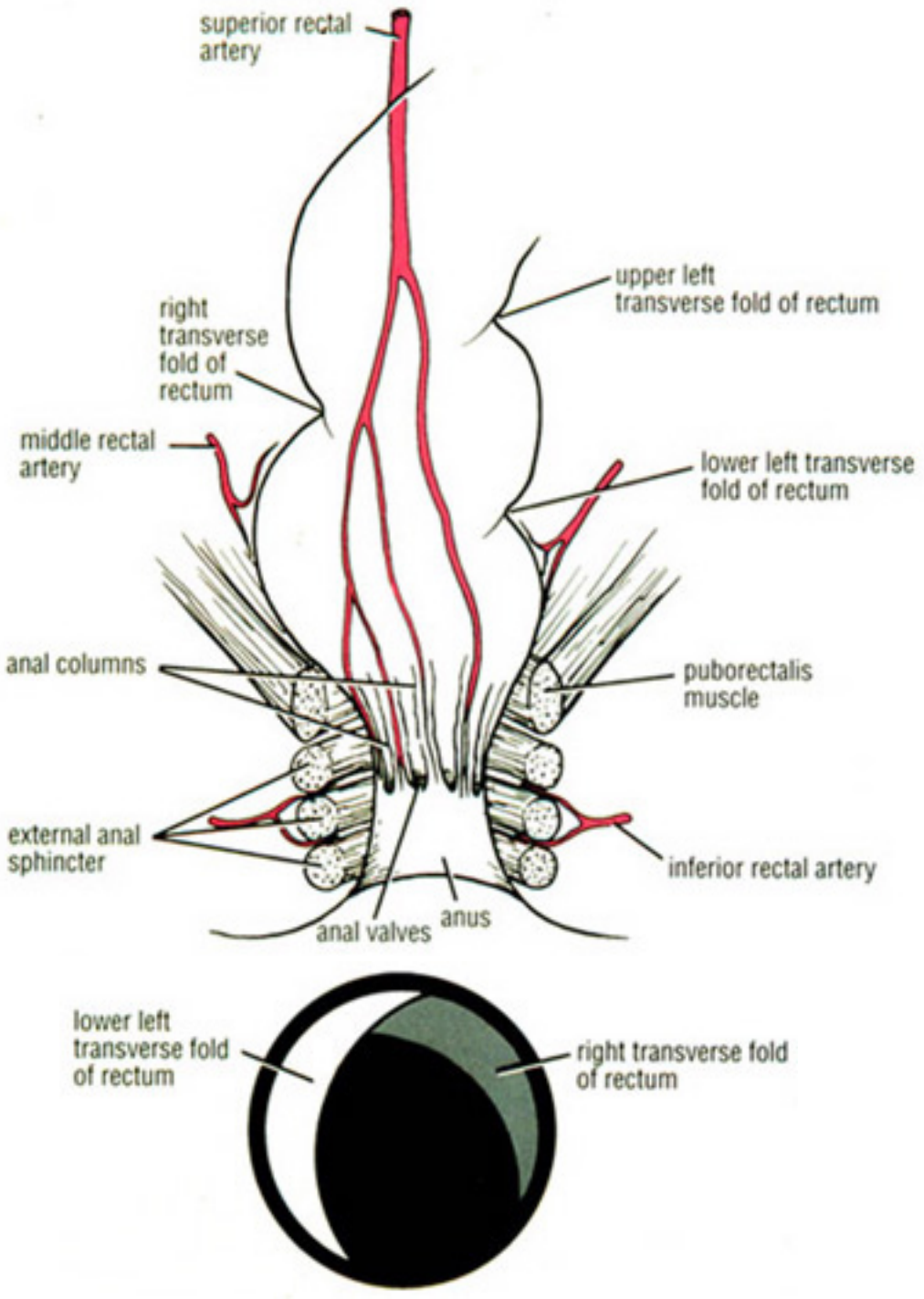


Image: Richard Snell, 'Clinical Anatomy for medical students' 5th ed. fig 7.4 Little, Brown & Co 1995 ISBN 0-316-80135-6

Arterial supply to mucosa above the pectinate line, is via the superior rectal artery (direct continuation of inferior mesenteric artery) and to mucosa below pectinate line via the inferior rectal artery (branch of internal pudendal artery).

Note: anastomosis across pectinate line and middle rectal artery (branch of internal iliac artery) supplies muscle wall only.

Venous drainage

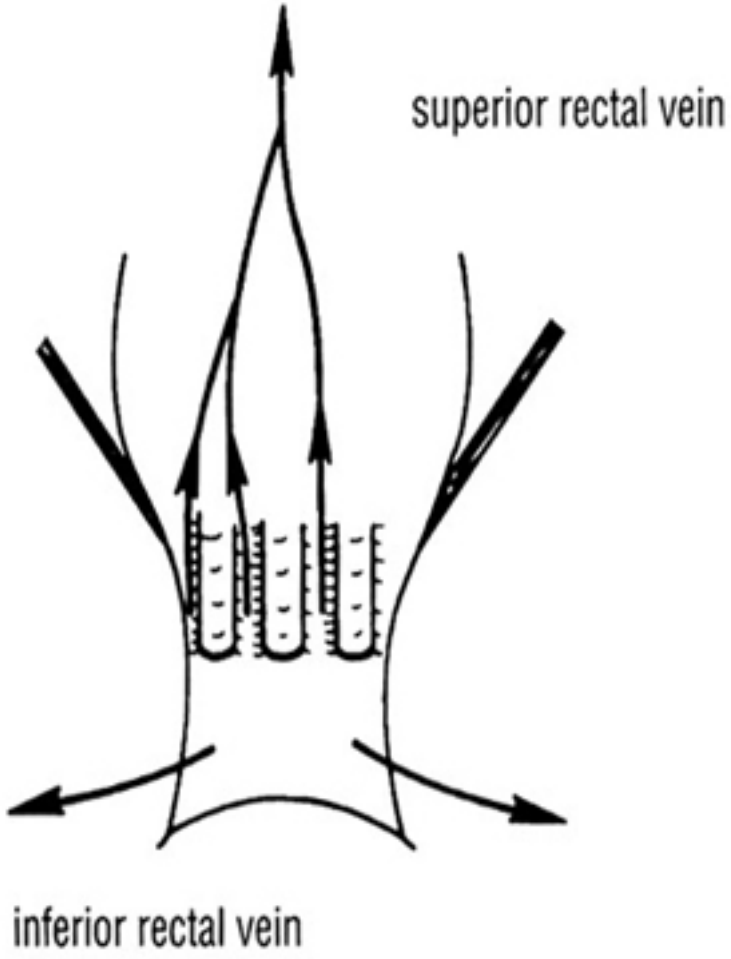


Image: Richard Snell, 'Clinical Anatomy for medical students' 5th ed. fig 8.7c Little, Brown & Co 1995 ISBN 0-316-80135-6

Venous drainage above the pectinate line is via the superior rectal vein (drains to portal system via inferior mesenteric vein) and below the pectinate line via the middle and inferior rectal veins (drains to systemic system via internal iliac vein).

Note communications between these veins form an important portal-systemic anastomosis.

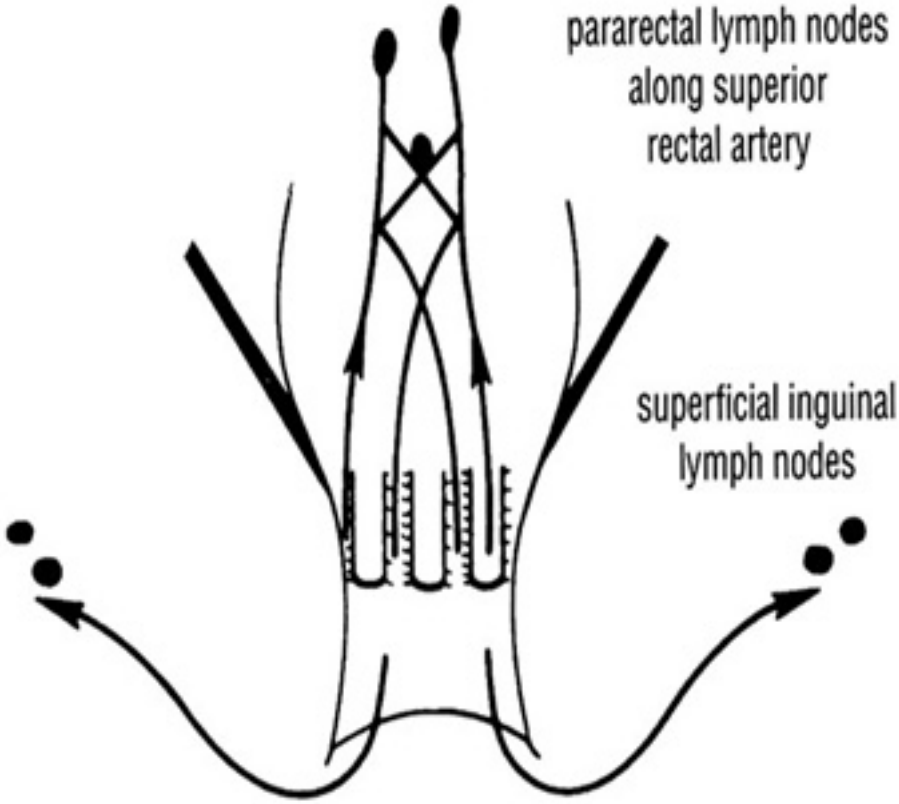


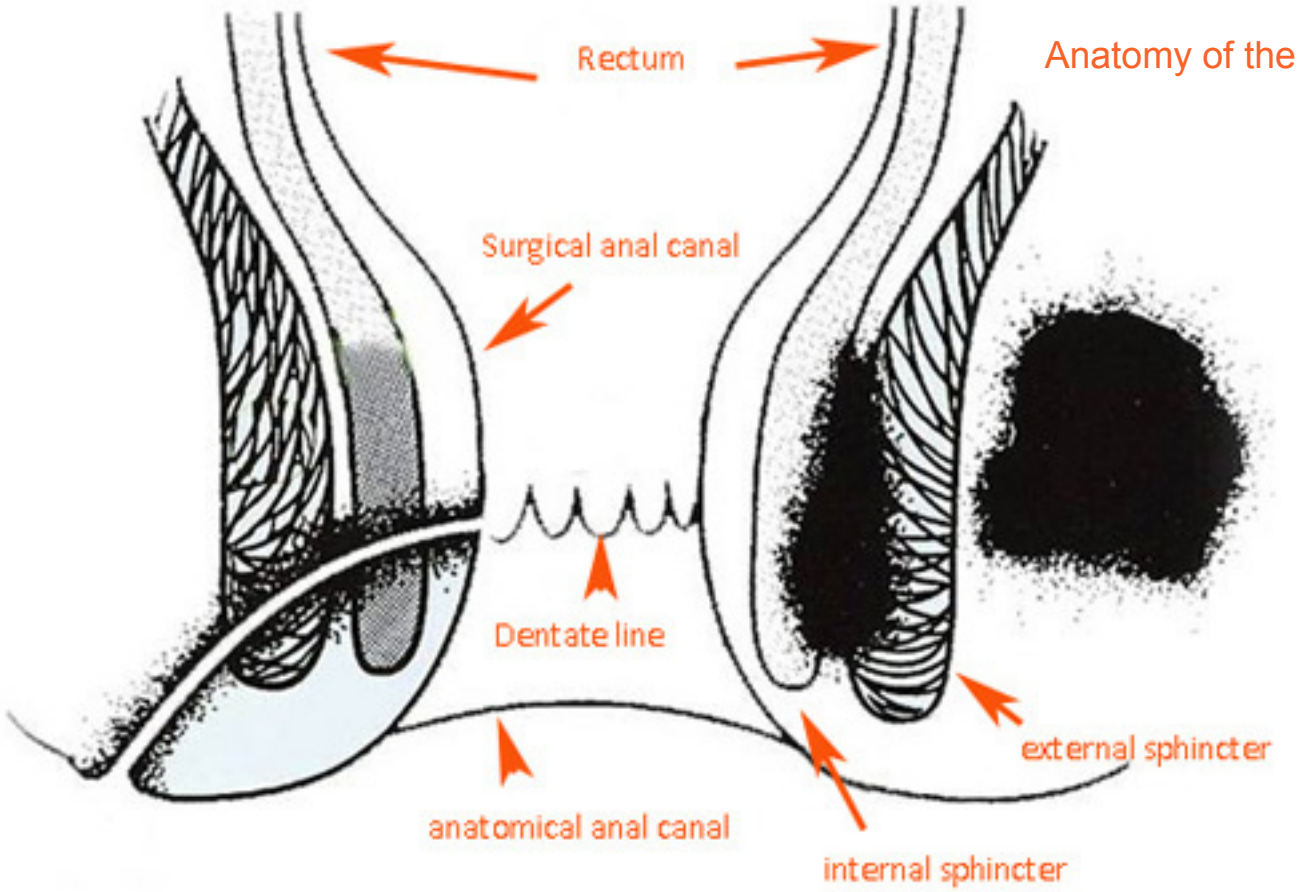
Image: Richard Snell, 'Clinical Anatomy for medical students' 5th ed. fig 8.7d Little, Brown & Co 1995 ISBN 0-316-80135-6

Mucosa above the pectinate line drains to inferior mesenteric nodes and below the pectinate line drains to superficial inguinal nodes (medial group).

Thus if there are nodes in the groin, either inflammatory or neoplastic the anal region must be examined

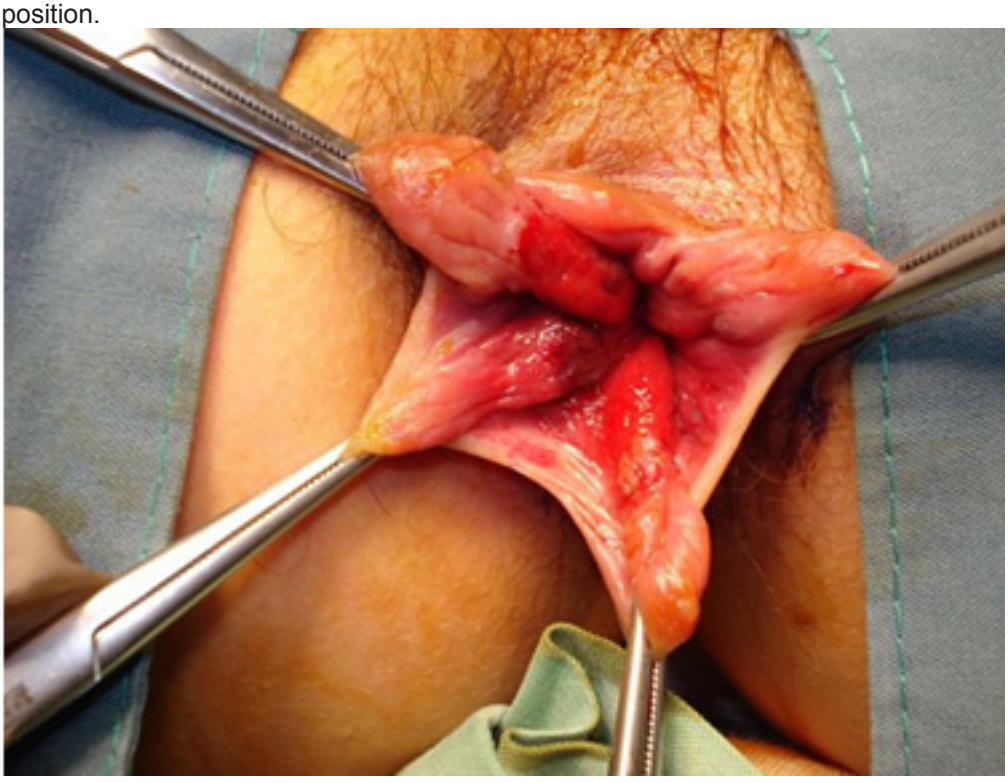
Note this area is both in the midline and a junctional zone (between endoderm and ectoderm) where lymphatics communicate. It is therefore a significant watershed area of lymph drainage.

Anatomy of the region



Haemorrhoids

Diagnosis of haemorrhoids is made from patient history of bleeding and confirmed by physical examination (type of bleeding and protrusion). Haemorrhoids are typically 3,7,11 o'clock positions with the patient viewed in the left lateral position.



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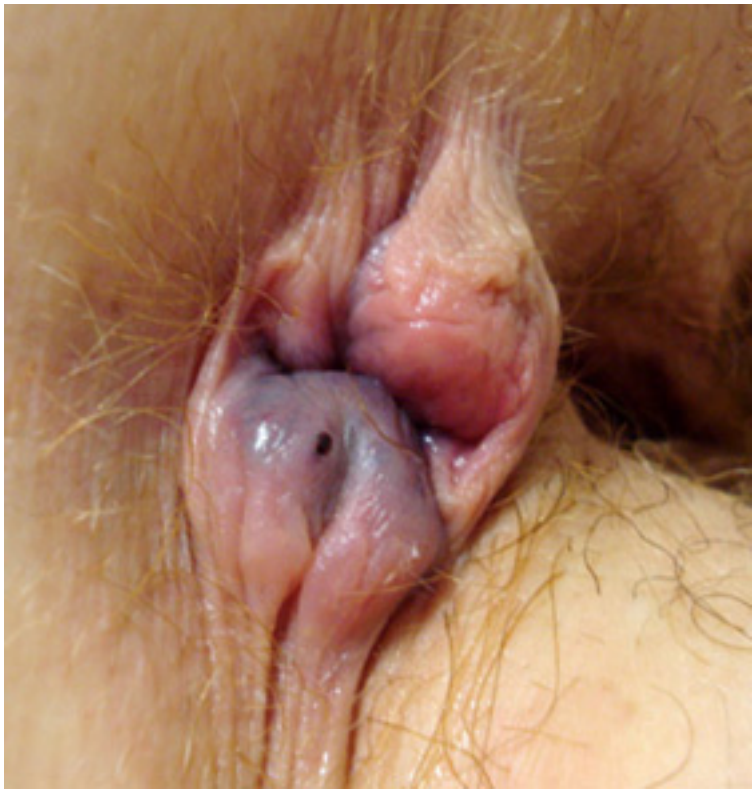
Significance of type of haemorrhoids

Different treatments are available depending on the type of haemorrhoid:
types 1 & 2 conservative treatment, injection or rubber band ligation
types 3 & 4 usually require surgery

Examination



This shows the haemorrhoids in the 3,7,11 o'clock position.They are thrombosed. The largest in the left lateral position is ulcerated.With surrounding oedema. They are not suitable for banding as below the dentate line.

Surgery in severe cases may be delayed to allow swelling to settle.This makes surgery simpler and reduces the risk of removing too much skin & mucosa causing anal stenosis.

Examination involves inspection, palpation, proctoscopy, sigmoidoscopy.

The anal margin is inspected and the patient asked to strain.This may actually cause the haemorrhoid to protrude.Other protrusions could be a prolapse or polyp.

Rectal examination may feel the haemorrhoidal cushions.You may even be able to prolapse a polyp. With proctoscopy you can assess the haemorrhoids as the patient strains.

Sigmoidoscopy will rule out higher lesions.

Image attribution : Maurice Brygel © Melbourne Hernia Clinic 2007

Haemorrhoids - staging

A guide to severity and preferred treatment

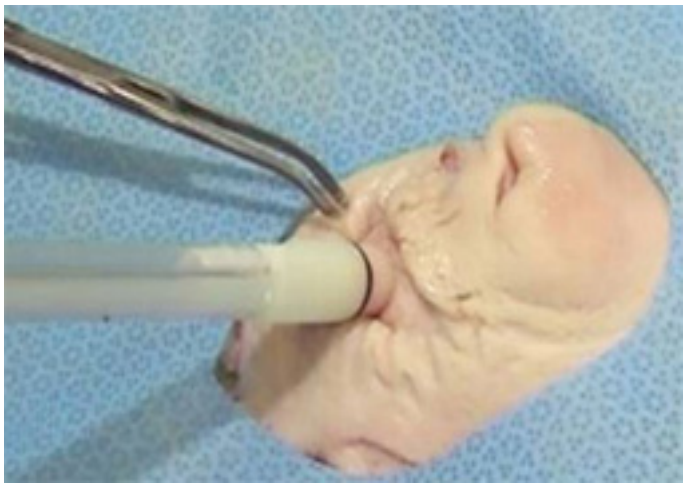
Stage 1 - Bleed, particularly at the toilet - the blood may drip or splash into the bowl or colour the toilet paper.If mixed with the stools suggest this is from a higher lesion.

Stage 2 - Prolapse - usually with straining of the bowels. They return inside spontaneously

Stage 3 - or need to be pushed back inside.

Stage 4 - Thrombose and prolapse - this is very painful and the haemorrhoid cannot be returned inside - not suitable for banding and surgery may be required.

Perianal haematoma - A different problem



Rubber Band ligation for Haemorrhoids

Banding has many advantages over the haemorrhoid operation. However not all haemorrhoids are suitable for rubber band ligation.

This is a simpler office or room's treatment for haemorrhoids as opposed to surgery. No anaesthetic is required and the patient is able to go home almost immediately. There should be minimal pain following. There is minimal time off work. More than 1 session may be required for large haemorrhoids.

The main serious but uncommon complication is secondary haemorrhage, a complication common for all anal procedures.

With surgery, Hospitalization and General anaesthesia is usually required. The post operative course is often very painful. However permanent cure is usually achieved. The use of a local anaesthetic block or infiltration helps avoid one of the side effects of acute retention of urine. This is because there is less pain.

I actually perform many anal or haemorrhoidal procedures in the office under local anaesthesia because patients cannot get into hospital.

Demonstration of rubber band application

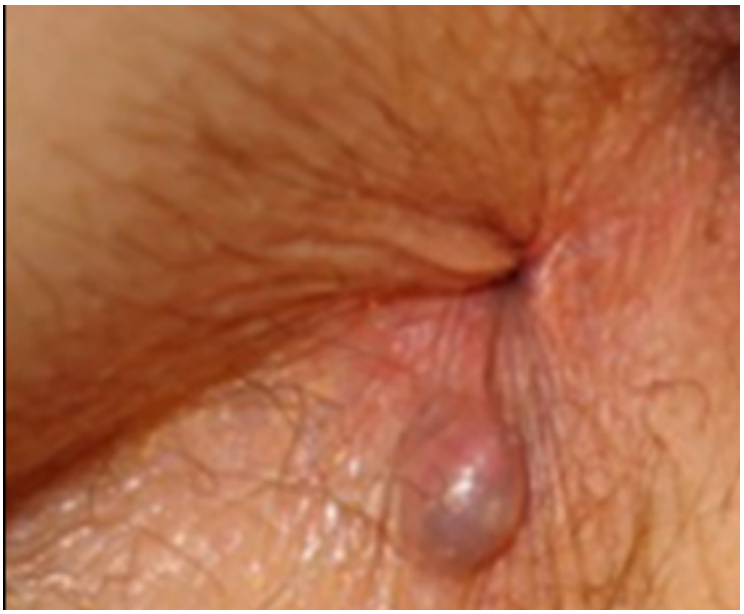
Injection with phenol

Phenol in almond oil is injected just above the haemorrhoid through a proctoscope. The inflammatory response occluded the veins. The main risks are tissue necrosis, and prostatitis if injected into prostate. Secondary haemorrhage 7-10 days later may occur. Some prefer this to banding.

Differential diagnosis - perianal haematoma

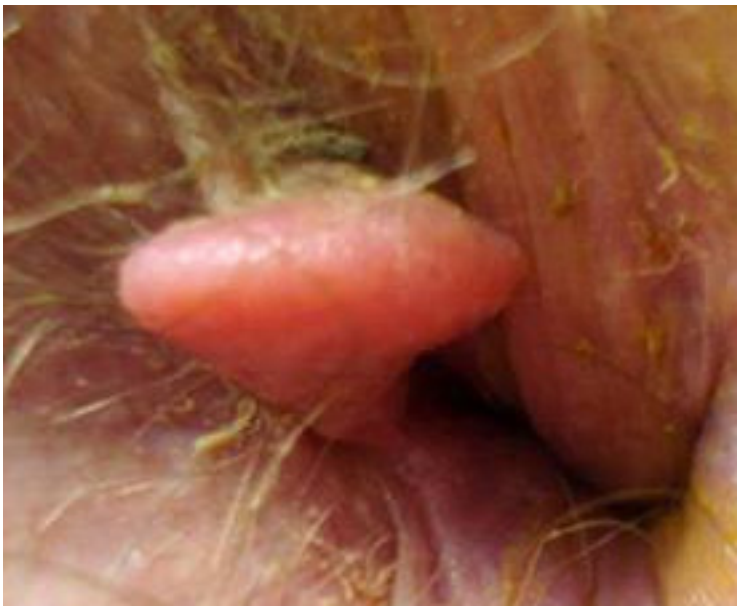
Perianal haematomas are quite a common,very painful condition. They may occur following straining at the toilet. They are called a" five day wonder" because they usually resolve within five days.
They occur because of rupture of the perianal venous plexus.

A perianal hematoma is easily recognized by its position just outside the anal verge. It is usually well circumscribed and has a bluish appearance. It is quite regular in shape just like a little marble. It is tender to touch. This perianal lump should not be confused with a thrombosed intro external hemorrhoid. They do sometimes however coexist together. Attempted drainage of a thrombosed Intero external hemorrhoid by incision will only aggravate the problem so it is important to distinguish the two.This is usually done by looking at the appearance and position.



They can be treated with analgesia and sitz baths. Creams or gels can also be applied. For example a 2% lignocaine jelly. However many do require surgery as the symptoms continue.

They are very painful. For this reason surgery is often undertaken. Another reason to operate is because they rupture and bleed and thus become messy and unhygienic.



Anal tag - sentinal pile hiding mid line posterior fissure

Procedure

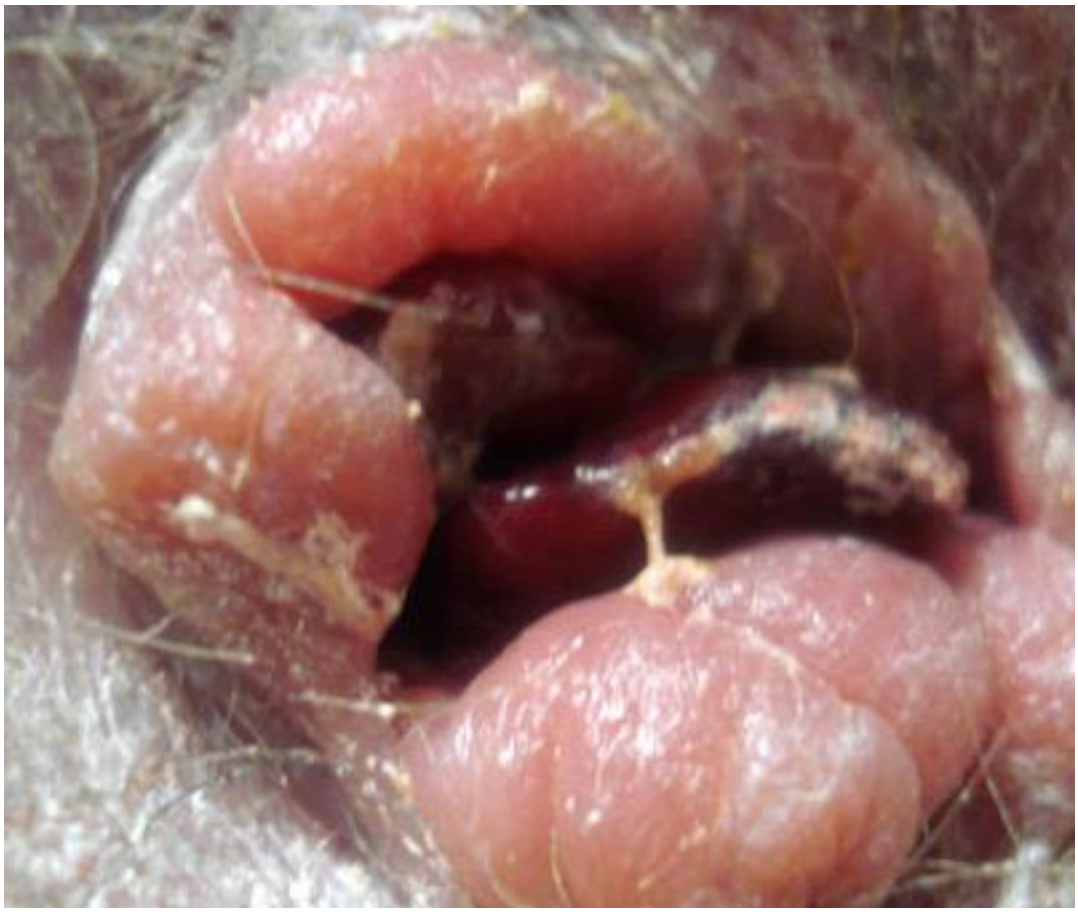
At the first visit a rectal examination with a glove is performed. Then the bowel above the haemorrhoids is examined with a sigmoidoscope to exclude other causes of bleeding from the bowel. In patients over 45 a colonoscopy may need to be arranged to ensure no other cause for the bleeding is present.

The surgery can be carried add in the office quite simply by those experienced at it. This is done under local anaesthetic using lignocaine with adrenaline. The area is infiltrated directly with just a few CC. A small incision will allow the hematoma to be evacuated. To control any bleeding and to keep the wound open a small pack is inserted. Suturing is not required. The patient actually keeps their underwear on during the procedure so that the dressing does not dislodge as they get up. . A pad is placed on the dressing to prevent any ooze and the underwear pulled up .The pain usually is relieved quickly although painkillers may be used for a day or two.. . The patient is told to have a bath or shower the following day.The pack falls out and the wound heals spontaneously by what is termed healing by second intention. are They instructed to apply pressure if there is any unusual amount of bleeding. Review is not mandatory.

Injecting the local anaesthetic.
A fine 25 gauge needle is used to reduce the pain. This is not injected directly into the haematoma as this causes further pain due to increased tension.
Injection directly into the overlying epidermis gives immediatea anesthesia.
Once the incision is made further local can be injected into the depths of the wound.

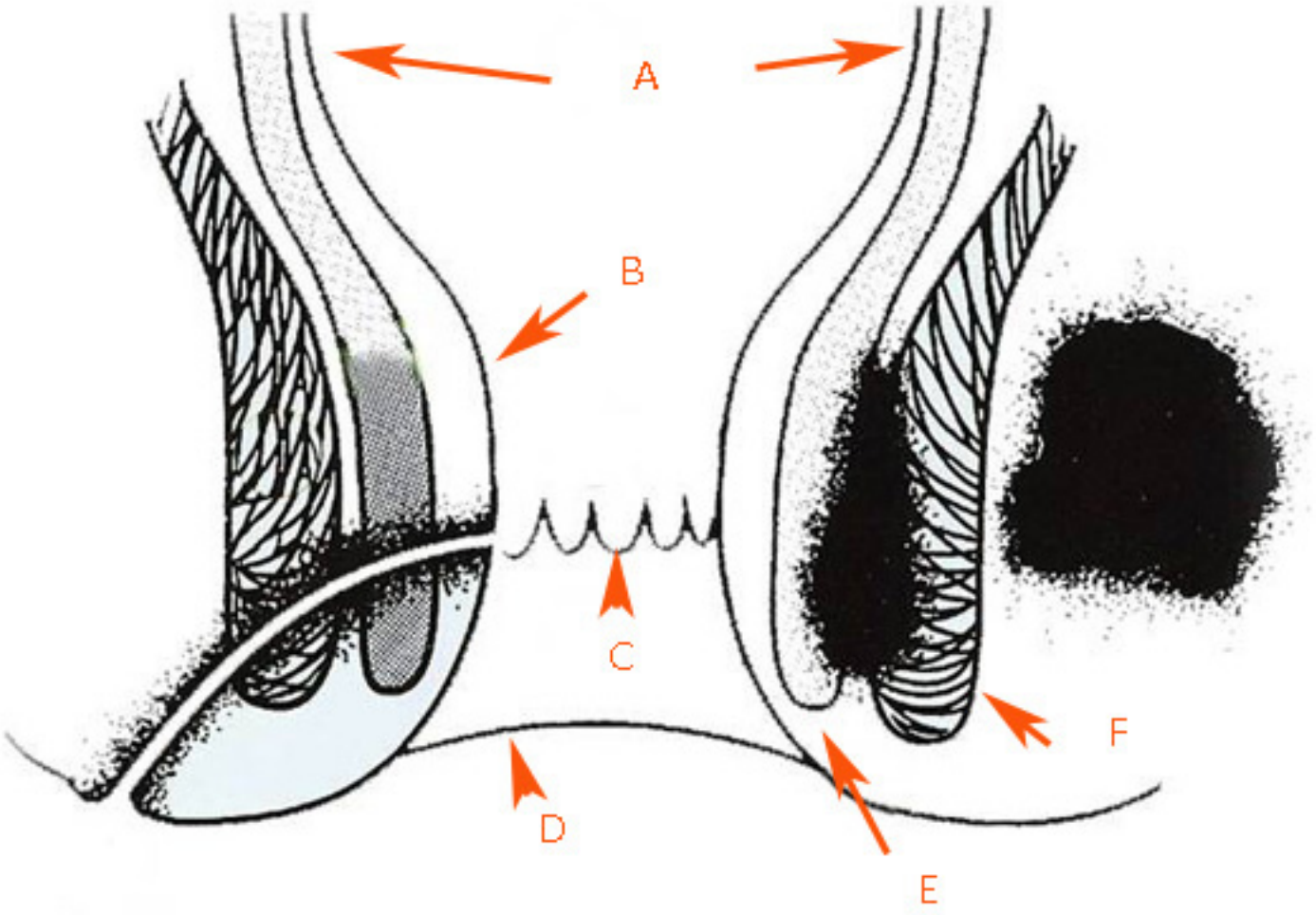
Incision
This is made in a radial direction in the skin grace. Some would use a cruciate incision as this does not close as rapidly. However I believe this gives an irregular scar which can be lumpy and sensitive.

Serious haemorhoid presentations



Thrombosed gangrenous haemorrhoid with oedema

Quiz



Name the features A-F. Answers can be found on page 30.

Risk Management

The risk management here is to:

a) Establish a diagnosis,
b) Recommend treatment.

Not all haemorrhoids require surgical intervention and alternative treatments for each problem should be offered.

It should be remembered for any anal procedure that the post-operative recovery can be very painful particularly if a complication occurs. Thus the patient needs to be adequately warned about the possibility of pain and the possibility of fainting with pain or due to psychological responses.

Conclusion

Thus for any anorectal condition a diagnoses can usually be readily established.

a) Establish a diagnosis,
b) Recommend treatment.

Not all haemorrhoids require surgical intervention and alternative treatments for each problem should be offered.

It should be remembered for any anal condition gentleness is required while establishing the diagnosis. Also for any procedure that the post-operative recovery can be very painful particularly if a complication occurs. Thus the patient needs to be adequately warned about the possibility of pain and the possibility of fainting .Many haemorrhoid problems can be treated surgically in the office. This will be demonstrated in future in Brygels SURGISKILLS.

The next issue will feature Anal Abscess and Fistula.

References

1. M. Brygel. Video Book of Surgery.
2. Eizenberg et al 'Anatomedia' © Anatomedia Publishing P/L Melbourne 2003 CD ROM. ISBN 0-734-2691-9
3. M. Brygel. Ano Rectal Condiitons. CD ROM. medi+WORLD International. 2009
4. Richard Snell, 'Clinical Anatomy for medical students' 5th ed. fig 7.4 Little, Brown & Co 1995 ISBN 0-316-80135-6