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GENERAL STAFF MEETING
MINNESOTA GENERAL HOSPITAL
UNIVERSITY OF MINNESOTA

CONTENTS

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I. BIOPSY IN MAMMARY CANCER

The extent and severity of the radical operation for mammary cancer calls for a positive diagnosis in every case. Since women are now coming earlier for diagnosis of mammary disease, and often before the characteristic clinical symptoms of established cancer have developed, the diagnosis of these conditions has become more difficult and biopsies are more frequently required.

The practice of removing apparently benign nodules from the breast in a doctor's office and waiting two or three days for a report from a distant pathologist often leads to serious situations, and , in the opinion of some surgeons, may imperil the patient's chances for a cure even by a radical operation. The mechanical trauma from such a biopsy may well dislodge cancer cells and cut across and loosen cancerous lymphatics, while delay of some days gives opportunity for the dislodged cells to reach the distant lymph nodes. The hyperemia of the inflammatory process may also stimulate tumor growth and facilitate the local growth and even the dislodgement of more active tumor cells. There have been some observations which indicate that these undesirable events actually occur and it is reasonable to assume that they do occur. Therefore the conservative surgeon will not remove a tumor nodule from the breast except in a surgical operating room where he is prepared to have an immediate diagnosis made and the proper operation performed at the same time.

There is a difference of opinion regarding the best method of performing the operation for a biopsy of the breast. Some surgeons prefer to cut directly into the tumor, make the diagnosis on the gross appearance which is usually specific, or cut out a piece of the tumor for frozen section. If the tumor proves to be cancer, the wound is closed over a sponge soaked in 10% formalin. They then discard the instruments and gloves used in the exploration, prepare the skin anew, and proceed with the operation indicated. This is a very direct and expeditious method. It avoids much trauma inevitable in a local excision which requires cutting on all sides of the tumor nodule. In the case of bulky tumors it may be the best method.

In the case of small tumors I think it is safer to remove the whole tumor, together with a wide area of normal breast tissue, using extreme care not to squeeze or roughly handle the cancerous mass. This procedure avoids cutting into cancerous tissue, and if it is done with extreme care not to squeeze the tumor, cancer cells should not be dislodged.

An experienced surgeon or pathologist should be able to recognize the great majority of malignant tumors of the breast by gross examination of the cut surface of the tumor. Unless he can do this it is obvious that the tissue chosen for microscopic section may not contain the malignant tumor. Therefore great importance attaches to the gross diagnosis, which should be relied upon wherever possible. The extent of the disease also can be told only by gross examination. The cicatricial character, resistance, opacity or translucency, and the chalky streaks of carcinoma are generally specific. Frozen section is therefore often unnecessary but should be made in all cases which are in any respect doubtful to the particular surgeon or pathologist concerned. This diagnosis should be made at the operation and the appropriate procedure carried out immediately.

There are some lesions in the breast in which it is difficult for any surgeon or pathologist to state positively whether the condition is malignant or benign. Hence the surgeon must not assume that by obtaining a microscopic diagnosis he has secured positive information. In such cases the clinical data, age of patient, extent and duration of the disease, condition of lymph nodes, and especially the gross characters of the lesion should be given much importance in the decision. Under these circumstances some surgeons would err on the side of caution and perform the radical operation. I believe it is unfair to the patient to perform a radical mastectomy unless the diagnosis of carcinoma is positive. There are many precancerous and suspicious lesions in the breast which are clinically benign, while a true carcinoma is nearly

ays obvious to a pathologist of adequate perience. When a substantial doubt exts about the nature of a microscopic sec-on of a breast tumor, it is generally t cancer.

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. ABSTRACTS:

BURNS; CAUSE, PATHOGENESIS AND TREATMENT.

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The ancients have endowed us with empirical therapeutics, many of which are still prevalent as household remedies in burns. Many American villages still have their old woman charlatan who continues to "blow the fire out of a burn" to the accompaniment of wierd maneuvers and even stranger incantations. Another fallacious idea still existent is that fire or intense heat will remove the pain from another burn.

The treatment of burns today is still varied. A brief review of basic principles is undertaken.

1. Causes: May occur from effects of hot air, liquid or steam, exposure to sunlight, ultra-violet radiation, acids, alkalic electricity, roentgen rays, radium, caustic substance of various kinds, and irritant gases.

Results of burns vary according to:

(1) Degree of temperature.
(2) Nature of exciting agent.
(3) Duration of contact.
(4) Susceptibility of part injured.

2. Incidence: About 45% of deaths from burns occur from 1-5 years. Among usual causes, the confusion associated with convulsions in infants or by hot bath treatment for asphyxia neonatorum, the water being overheated, can be added.

Life insurance statistics show that 3 out of 5 deaths are of women or girls.

Burns are more common in winter than in summer. They stand fourth in numeri-

al importance among the causes of accidental deaths, outranked only by automobile fatalities, falls and drowning.

Of all persons sick and unable to work in the various industries from 1/2 to 1% are incapacitated on account of burns.

Mortality of burns is difficult to estimate as many are ambulatory but from 5 to 30% of those admitted to hospitals die.

In the World War of 6148 cases of ordinary burns mortality was 115, practically 2%. This does not include chemical burns (1325 with 7 deaths).

3. Hospital Mortality (Donald).

	Admissions	Deaths	%
1889-1903	990	251	25
1904-1908	901	234	26
1909-1913	729	101	14
1914-1918	551	61	12
1919-1923	352	31	9
1924-1928	286	19	7

Comment: Change not necessarily due to better treatment as type of patient may have varied.

Bancroft and Rozen, 104 hospital cases all ages - 28% mortality.

Frazer (Edinburgh) 1926, 39% of children under 10 years admitted to hospital died.

Wilson, W. C. Total cases 117, deaths 13, 11%. Of 117 cases, 105 were under age of 10, mortality 10%.

Burns are more common and severe where tactile sensations are subnormal or absent as in tabes, alcoholism, etc. Cited is colored hotel cook with syringomyelia with extensive burns on the hands known as "The Fire Chief" by her contemporaries because of ability to carry hotter pots and pans than anyone else.

4. Classification: Pathological classification varies. In Germany and America, 3 grades according to depth of burns. 1st degree: erythema; 2nd degree: involvement of skin or underlying structures, bleb or vesicle formation; 3rd degree: partial or complete involvement of skin or underlying structure, eschar formation; 4th degree: loss of part (charring, etc.).

In France and England, it is usual to divide burns into 6 degrees of Dupuytren: 1st degree - eruthema, caused by temperature of 140° F; 2nd degree - bleb formation, temperature 160 to 210°F; 3rd degree - destruction of cuticle with exposure of nerve terminals (the most painful form of burn), temperature 210 or more; 4th degree - whole thickness of skin destroyed, temperature 210°F and more over with long exposure; 5th degree- enrcachment on muscle; 6th degree - charring of tissue (carbonization).

According to Park and McLeod, the extent of a burn is more important than depth. (1) 1st degree burns in which 2/3 of body surface is involved may be fatal (Miller). (2). 2nd degree burns in which 1/3 of body surface is involved are fatal in adults, and in children when 1/7 body surface is involved (Davidson). (3) All burns covering 1/3 of body surface are extremely serious if not immediately fatal. (4) All burns covering 1/10 of body surface should be considered serious (Pack).

Estimation of surface area involved useful in prognosis.

Berkow's method most acceptable. Concludes that (1) Lower extremity, including buttocks - 38% of body surface, (2) trunk, including neck - 38%, (3) upper extremities - 18%, (4) head - 6%. Upper extremity, (1) hand - 1/4, (2) arm - 3/4. Lower extremity, (1) foot - 1/6, (2) leg - 1/3, (3) thigh - 1/2 (fractions of areas stated above).

5. Pathology and Physiology.

Local changes: 1st degree - vascular reaction. Same as any inflammation - vasodilatation followed by congestion, edema, etc. No scars remain. 2nd degree - vesicle formation, epidermal cells undergo true coagulation necrosis, with exudate or fluid passing up from tips of papillae. No scar if corium is not involved. 3rd degree - tips of papillae with nerve endings uncovered. Formation of

w skin requires from 14 days to 4 weeks. scars. 4th degree - epithelium killed- bcutaneous tissue injured - dead epithe- um forms eschar - insensible to touch - nally sloughs - then granulation tissue rmed. Granulation tissue covered by ithelium grows in from side at rate of out 1/8 of an inch per week. Contrac- on occurs. 5th to 6th degree - essen- ally same except for greater depth.

neral changes: (Pack, Davis, McCallum, 11). No visceral lesion pathognomonic rns and scalds. Lesions listed; (1) ngestion of brain and meninges, (2) rombosis - many describe these minute pillary thrombi, but others have failed find any, (3) lungs - congestion, oc- sional thrombi, eosinophilia, (4) kidney - ten acute glomerulonephritis with cloudy elling, fatty metamorphosis, small rombi in kidney, hemoglobin pigmentation esponsible for dark brownish-red color kidneys often described), (5) liver - peremia, focal necrosis, (6) spleen - ft, large, focal necrosis in clusters of lpighian bodies. Bardeen emphasizes elling and focal necrosis in lymphoid ructures, (7) gastro-intestinal tract - odenal ulcers so often mentioned are are (McCallum). Generalized hyperemia see ouf case I), (8) suprarenal gland - extensive burns, adrenals are from 3 to times normal and epinephrin content s absent or low (Weiskotten). Type of hange is same as is found in diphtheria, ntoxication and in anaphylactic and pep- one shock.

ysiological changes:

(1) Blood - (a) erythrocytes - dis- rted, fragmented, crenated. In severe ases, immediate increase (13 hours) from to 2 million per cm. In fatal cases, here is often as much as a 2 - 4 million ncrease (Dorrance). (b) Leukocytes - mmediately following, go up to 30,000 in evere cases, to 50,000 in fatal cases, olymorphonuclears to 85%. (c) Blood con- entration - Pack believes degree of blood oncentration is index of patient's condi- ion. Feels that 40% increase of hemo- lobin if maintained over a long period s incompatible with life. Concentration ue to increased permeability of capillary alls (so force fluids). Flasma and whole lood chlorides low (give chloride). lood sugar - some investigators find a igh blood sugar during stage of shock and hypoglycemia during toxic stage that follows. Others do not.

Urinary changes: Severe burns cause oliguria because of 2 factors. (1) Kidney lesions impairing renal function. (2) Concentrated blood with insufficient plasma: (a) specific gravity increased, (b) urine cloudy and smoky because of hemoglobinuria, (c) albuminuria appears, (d) acetonu- ria frequently present.

Complications: Besides usual com- plication of contractures, infection, secondary anemia, loss of part, etc., several unusual complications found. (1) Curling's duodenal ulcer. Both Bell and McCallum admit occurrence but feel they are rarer than commonly supposed. Ericksen found 2 duodenal ulcers in 68 patients. Ronchese 1 in 248 cases. Fenwick states that in fatal burns, 6% are complicated by ul- cers. Consensus of opinion is that toxins are cause of ulcers but this is by no means established. (2) Keloid formation (percentage?). (3) Carcinoma- occurs. Johnson recently reports 4 instances in which carcinoma develop- ed in scar tissue following burns. Us- ually squamous cell carcinoma (Note: we have several).

6. Theories of Cause of Death (E.C. Davidson). (1) Interference with usual function of skin, may be contributing factor. (2) Alteration of blood may be contributing factor. (3) Toxemia theory. Certain evidence that suggests formation of toxic sub- stance at site of burn. Many sub- stances suggested histamine, etc. This theory has been most tenable but re- cently Harrison and Blalock conducted experiments to determine whether or not the cause of death was due primari- ly to toxin circulating in blood. Their conclusions were that (1) there was no evidence of toxemia following trans- plant of burned skin to unburned dog. (2) No definite evidence of presence of toxin in the experiments in which whole blood from burned dogs was trans- fused to normal dogs.

7. Prognosis: (1) Scalds are more serious than burns due to dry heat (area for area, depth for depth).

(2) Burns are more serious in children than in adults; in women than in men. (3) Negro has less visceral changes and fewer symptoms than white, brunette fewer than blonde. (4) For area involved see above. (5) Burns of abdomen have highest mortality. (6) Burns of genitalia, anterior thoracic region and face cause symptoms far out of proportion to area involved. (7) Burns of flexor surfaces are more serious than on extensor. (8) 1st week after accident most fatal period. (9) Convulsions practically always fatal. (10) Hemoglobin estimation important. When concentration of blood reaches 125% of normal value, maintenance of life becoming precarious. (Pack and Davis).

8. Clinical course: (1) Initial shock, (2) toxic shock, appears from 24 to 48 hours and late as 14th day (Christopher), (3) infection, healing.

Each patient merits individual attention. Depth of burn, age, temperament, environment, shock, toxemia, must all be considered.

9. Treatment: Minor 1st and 2nd degree burn treated in many ways, all of value. Picric acid ointments, oils, etc.

I. Prophylaxis - there are still people who light a match to see how much gasoline there is in a tank.

II. Treatment of Primary Shock - Many treatments in this stage but they all tend to treat patient generally before local care is begun. General methods are:

(1) Sedatives, usually morphine, often with atropine (Crile feels atropine should not be used as it lowers vascular time).

(2) Removal of clothing with great care; may be deferred until patient has recovered from primary shock. "Patient may be immersed in hot saline bath at temperature of 110°F." (Pack, Davis).

(3) Circulatory stimulants. (a) Fluids normal salt by hyperdomoclysis, 2000 to 3000 every 24 hours (Park, Davis), 4000 to 5000 every 24 hours (Christopher), by Murphy drip or intravenously.

(b) Sodium bicarbonate and water by mouth. Frazer prefers 20-30 gr. sodium phosphate every 4 hours. States it is not excreted as rapidly as sodium bicarbonate. (c) Glucose an efficient method of preventing and helping acidosis. Use of insulin, Thalheimer suggests 15 to 20 units to every 1000 cc. 5% glucose "supposed to facilitate utilization of glucose by its more rapid combustion and to exert peculiar neutralizing power on whatever toxins are present in blood stream and tissues." All solutions given intravenously should be at a temperature of at least 105° F. (d) Hot drinks including whisky, brandy, etc. by mouth if possible. (e) Hot black coffee enemas. Adrenalin. Greenwald feels that it is contra-indicated in primary shock but most observers use it. Caffeine-sodium-benzoate (gr. 2 to 5).

Hebra (1861) popularized water bath treatment for burns. Still used today.

Technique: Place patient in tub of either ordinary water or with sodium chloride or sodium bicarbonate added to make normal saline or 4% sodium bicarbonate. Water at about 100 to 103 F., or as comfortable. At end of 24 hours and each day thereafter, all loose tissue detached. Patient removed to bed for night, wound covered by moist dressings.

Advocates (1) splendid emergency treatment for shock. (2) Facilitates removal of clothing. (3) Benefits general circulation. (4) Relieves pain. (5) Excludes air and provides free drainage. (6) Supposed to obviate septic absorption.

Objectors: (1) Constant nursing costly. (2) Too disturbing to patient to remove in and out of bed. (3) Wet bedding at night uncomfortable. (4) Moisture may release burn toxin from imprisoned coagulated state so that absorption can conceivably occur with greater ease. Davidson shows increased toxicity with application of wet dressings. Intermittent immersion is often used, 1 to 3 hours daily, followed by drying and exposure to open air.

(4) Blood Transfusion: Riehl, first advocated them in 1925. Davidson transfuses on admission any patient with possible lethal burn. Done before onset of shock. If shock develops, transfusion is repeated in less than 24 hours. (Christopher). Robertson and Boyd (1923) advocated heroic method of exsanguination transfusion in which patient is thoroughly bled before transfusion.

(5) Tetanus antitoxin: Advocated for all severe burns. (Christopher).

III. Primary Treatment of Local Lesion. Whereas general systemic treatment of burns fairly well standardized local treatment differs greatly. A brief resume of each type of treatment is attempted.

A. Debridement and vesical formation. Investigators disagree as to this treatment: (1) Miller, Pagenstecher, MacKenzie champion extensive debridement. (2) Wilson under general anesthesia (gas and oxygen) removes all epithelium which is loose and raised by blisters, cleansing with ether; vigorous rubbing or scrubbing of area to be avoided. (3) "Soon after the burn, it may be impossible to differentiate between partial and full thickness destruction of the skin and this is one reason against debridement." May take away epithelium which will later proliferate, Blair etal. (4) "Debridement is drastic, causes greater scarring, and since advent of tannic acid it is but rarely used"---(Christopher). (5) Recently (July 1932) Harrison and Flalock showed (a) dogs upon which debridement was performed lived shorter period than dogs of same weight, area of burn, etc. in which burned skin had not been removed. (b) When burned skin is removed, probably more fluid is lost than when left intact. (6) As to care of vesicle opinion is divided equally, some open all vesicles and remove the skin, others puncture vesicles leaving skin, others leave vesicles intact. (7) "Secondary toxic wound shocks always develop in severe burns if debridement, surgical or chemical of the dead tissues is not practiced------its development is indirect relationship to efficiency of removal." Stewart & Lee.

B. Tannic acid: By far the most important contribution to treatment of burns. Davidson 1925). States that: There is convincing evidence that suggests the formation at site of a burn of toxic substance the absorption of which is responsible for constitutional reaction. How to prevent?: (1) arrest autolytic process (no practical methods available), (2) removing products of decomposition mechanically or by baths (Willis), (3) slowing process of absorption by use of vasoconstrictive drugs. (Douglas). (4) By causing local coagulation of all devitalized tissue. (Latter is most common method).

Tannic acid soluble in water, glycerine and alcohol - insoluble in ether and chloroform. Precipitates proteins, alkaloids and glucosides. Forms more or less stable compound with protein constituents of body fluids and cells. When applied to burned surface in dilute solution further penetration into deeper lying protoplasm apparently prevented by this action and true astringent effect limited exclusively to most superficial tissue. When, however, applied in concentrated solution, it may penetrate before superficial coagulation has occurred and in such event a deep caustic action may result. Precipitated proteins on surface treated provide protective coating against chemical, bacterial and mechanical action as well as against sensory and inflammatory irritation.

Technique: Many variations, Davidson's original. Followin preliminary treatment for shock: (1) Burned area covered with sterile gauze packs held in place by sterile gauze bandages. (2) Dressing soaked with 2.5% aqueous solution of tannic acid (dilute .75% concentrated 5.0%). Essential to have fresh solution as it deteriorates forming gallic acid which is far less astringent: 4 tsp. light, dry tannic acid powder dissolved in a glass of water to secure a 2.5% solution - Pack, Davis.) (3) To prevent caustic action. Small sections are left uncovered for observation. (4) As soon as part has assumed light brown color all dressings removed. (5) Wound exposed to

air, under cradle with sterile linen and electric lights. (6) 5% tannic acid ointment (made with equal parts of vaseline and lanolin as base, may be substituted particularly about eyes).

Tanned crust usually separates between 14th and 15th day. To facilitate removal oil is used. Aqueous solution (such as boric acid) tended to increase absorption.

Variations: (1) Use of soft camel's hair brush 3/4 inches wide. Exudates wiped off allowing tannic acid to act on surface of burn (Hunt, Scott). (2) Spray with 2.5% solution every 15 minutes until destroyed tissue assumes a tan brown color (Schmidt). Others spray at longer intervals.

Wilson gives interesting comparisons:

Cases previous to use of tannic acid		With tannic Acid
Deaths due to shock	3%	30%
" " " toxemia	80%	24%
" " " sepsis	15%	24%
Other causes	2%	22%

Picric acid - 40% mortality
Debridement - 57% "

114 cases treated with tannic acid 20% mortality.

Beekman:

320 cases treated by other methods:	28% mortality
114 cases treated with Tannic acid	15% "

C. Hypertonic solution. Theory of withdrawing toxins into dressing. (1) Uses sodium chloride and glycerin, later saturated boric solution, changes dressings frequently (Wilson). (2) Robertson and Boyd employ a saturated solution of soda bicarbonate. Davidson against use of wet dressings because of tissue dehydration. (3) Blair et al state that at time of accident any treatment that lessens pain and shock is good treatment and that tanning is much better than any other, if burn is not too deep may be all that is necessary. But after deep burn, production of pain is proved to be more active in plane between living and dead tissue. If burn has destroyed full thickness (3rd or 4th degree burns) he relies on protection rather than on chemical control of live tissue. Use dressings of plain water, physiological salt or mild antiseptic. By their use, most burned areas can be made sufficiently clean and granulations sufficiently firm for grafting within 3 to 5 weeks. "Caring of wounds without resorting to tanning may require painstaking extra work but it will take a shorter time and will give more worthwhile results." Uses dry heat at intervals. Stresses importance of good nursing.

Gentian violet used extensively in certain clinics. Forms crust with similar effect of tannic acid.

Technique: (1) Primary shock treatment. (2) Patient placed in tent, sprayed with 3 to 4% gentian violet. Repeated every three hours for about 12 to 24 hours. (3) Thick scab forms in 5 to 6 days. (4) Scraped off under anesthesia, usually using finger and not instrument. However is sometimes removed by tubbing. (5) Granulations are usually of good quality, stimulated by heat and certain dyes such as scarlet red, etc. (6) Treatment supposed to give a better granulating surface in a shorter period of time than tannic acid.

D. Picric Acid. One of commonest agents for treatment of small burns. 1% solution considered safe but caution must be used because of danger of poisoning.

E. Paraffin. Enjoyed considerable popularity, especially a French preparation called ambrine. Series of 3000 cases proved it to be efficient. More rapid epithelization

in surface burns and scar is thought to be less. Wound should first be denuded (Trueblood), paraffin applied with spray or brush, dressed every day.

F. Vegetable oils. Common household remedies. Practically discarded now as they tend to decompose and encourage suppuration.

G. Ointments. All kinds used. Tend to macerate tissues and promote infection. Difficult to remove for application of tannic acid.

IV. Secondary Treatment of Local Lesion.

A. Care of granulation. "When wound shows clean granulations, adhesive, vaseline gauze strips or rubber tissue strips across tissue will facilitate epithelization (Christopher). Scarlet red, 2-8%, applied (Davis).

Hypertonic saline solution used, as well as xeroform gauze, etc.

Grease should not be used for area requiring grafting. Found detrimental to chances of "take" of skin graft. (Blair etal).

B. Contracture. Blair, Brown and Harrison prefer movements so as to actively resist secondary contracture. Extension is used by many.

C. Skin grafting. Early grafting of severe burns essential. Healing will occur from sides but granulations are converted into scar before this can be accomplished. (Blair).

Many types of grafts including Ollier-Thiersch grafts, Reverdin (pinch grafts), Davis (small deep grafts) full thickness grafts, etc. are used. Grafted area will contract some. (Blair).

Special Types of Burns Caused by Roentgen Rays and Radium (Davis).

(1) Severe burns may follow simple treatment. (2) Peculiarity of burns is that weeks, months and years may elapse before extent of injury seems apparent. Due to gradual obliterative endarteritis of arterioles which leads to gradual and fatal ischoemia and nutritional disturbances. (3) Many minor burns do not completely change full thickness of skin and will be taken care of by proper local care. (4) Extreme sensitiveness characteristic of deep burn. Pain of ulcers intense. (5) In deep ulcerated burns, problem of treatment essentially surgical. Ultra-violet rays and radium may be of value in cases in which tissues have not been completely changed? (6) For radium burns same remarks applicable.

Impressions:

1. Cause of burns varies among other things with age, sex and occupation.
2. Results vary with degree of temperature, agent, duration of contact and part injured.
3. Most deaths occur from 1 to 5 years in females (although this varies with age), 4th in order in accidental death group.
4. Mortality difficult to estimate. Varies from 7 to 30% in hospital cases (ours 10%).
5. Classification varies as to degree (4 to 6), but extent is not important.
6. A scheme for estimating area is offered.
7. Local changes are well understood but visceral lesions vary and are not definite.
8. Blood concentration and leucocytosis are observed and efforts should be made to treat former.
9. Complications are infection and contractures. Duodenal ulceration is infrequent. Urinary findings may be marked. Malignant changes are seen late as in x-ray and radium burns.
10. Death due to altered physiology or toxemia? Prognosis difficult to evaluate. Certain observations which may aid are: cause, age, race, area, location, convulsions, blood, etc.)
11. Treatment must be individualized (primary shock - sedatives, burned clothing removal, stimulants, fluids, soda, glucose, bath, heat, transfusion) (tetanus antitoxin); (local lesion -

debridement? tannic acid or wet dressings? or gentian violet?)

12. In superficial burns tannic acid is urged, in deep burns wet dressings followed by early grafts advised (Blair).

13. Not more than 5% tannic acid should be used.

14. Picric acid, paraffin and oils not recommended.

15. Special care of granulations, efforts to prevent contractures and early grafting urged.

16. X-ray and radium burns require surgical treatment.

17. Prevention of burns a problem in preventive medicine (safety). Helpless children burned through carelessness of parents, adults most often through own carelessness.

Abstr. - Wallace P. Ritchie.

III. CASE REPORT

SECOND DEGREE BURN: ONE-HALF OF BODY.

Path. Koucky.

Case is that of white, female infant, 2 years of age, admitted to University Hospitals 9-22-32 and expired 9-26-32 (4 days).

Kettle of Soup

9-22-32 - 5 P.M. - Patient pulled a kettle of hot soup from the stove and spilled it over anterior surface of body. Burn covered with lard. Physician called, who prescribed vaseline and baking soda.

3-Hours Later

Patient taken to University Hospital at 8 P.M. On admission patient was in shock, pulseless, extremities cold and clammy and pupils dilated. Would not respond. A second degree burn present over somewhat more than one-half body surface. Codeine sulphate gr. 1/2. One of veins of right leg cut down upon. 500 c.c. of 5% glucose solution administered. Vesicles over the anterior surface of the body broken and loose skin removed. Denuded surface then sprayed with 5% tannic acid every fifteen minutes. 10:30 P.M. - 225 c.c. citrated blood. Sedatives.

Shock

9-23-32 - 7:30 A.M. - Pulse almost imperceptible. 400 c.c. intravenous glucose. 9 A.M. - 275 c.c. citrated blood given. Surgical pituitrin given and repeated to left nostril every 6 hours. Taking fluids by mouth. Sedatives given. In evening, burned areas well covered by tannic acid.

Response

9-24-32 - General condition about same. Face somewhat puffy. Intravenous glucose given.

9-25-32 - General condition seems somewhat better. Pulse rapid and strong Temperature irregular, apparently due to difference in temperature of light cradle.

Exitus

9-26-32 - Patient definitely worse. In A.M., the pulse is imperceptible. Heart very rapid and irregular. Stimulants given. 9 A.M. - Expired.

Autopsy:

Burns

Body is that of small child. Extensive burns involving approximately one-half of body. Right lower extremity, right arm, anterior surface of body extending around right side, beck and part of face burned. The burned areas covered with excellent coat of tannic acid crust. There is moderate amount of edema around burned areas. Cyanosis about lips. No jaundice. Pupils are equal, measuring 4 mm. in diameter. Subcutaneous tissue quite gelatinous and edematous throughout the burned area. This most marked over abdomen.

Peritoneal Cavity is dry. Appendix shows no change.

Pleural cavities are free and contain no excess fluid.

Congestion and hemorrhage

The Heart weighs 75 grams and shows no changes. Coronaries and Root of the Aorta are normal. One, pin-point hemorrhagic spot under epicardium of the left ventricle.

The Right Lung weighs 150 grams, Left 100 grams. There are two, small areas which look like thrombosea at edge of lower lobe, there are small patches of marginal atelectasis.

The Spleen weighs 60 grams and has the normal consistency.

The Liver weighs 560 grams. There are 2 or 3 small petechial hemorrhages under the capsule.

The Gall-bladder shows no change.

The Gastro-Intestinal Tract contains a moderate amount of blood. This is intimately mixed with the intestinal contents. The mucous membrane from the esophagus to about the upper two-thirds of bowel contains numerous hemorrhagic spots on the mucosa. Not ulcerated. Apparently the blood in the bowel comes from these hemorrhagic spots by capillary oozing.

The Pancreas and Adrenals are normal.

Each of the Kidneys weigh 60 grams. There are several petechial hemorrhages within capsule of the kidney. Otherwise the kidneys appear normal. The Bladder is normal.

The Genital Organs show no change.

The Aorta is normal.

There are no enlarged Lymph Nodes.

The brain and meninges show no changes.

Diagnoses:

1. Second degree burn (1/2 of body).
2. Subcutaneous edema.
3. Petechial hemorrhages of heart, liver, kidneys and bowel.
4. Hemorrhage and possible thrombosis of lung.
5. Patchy atelectasis of lung.
6. Transfusion incision.

Microscopic Sections:

Pancreas - many acini are vacuolated.
Heart muscle - normal.
Lungs - marked congestion with hemorrhage into alveoli and into some bronchioles.
Bowel - congestion.
Adrenals - no hemorrhage.
Kidney - extreme congestion.
Liver - extreme fatty metamorphosis; slight congestion; no normal liver cells.

IV. CASE REPORT

SECOND DEGREE BURNS: TWO-THIRDS OF BODY.

Path.Koucky.

Case is white, male infant, 16 months old, admitted to Minnesota General Hospital 6-29-32, expired 6-30-32 (1 day).

Oil Stove Fire

6-29-32 - 5:00 P.M. - Older brother found patient with clothes on fire, apparently ignited from burning oil stove. Mother called, who stripped clothing off baby (wrong!) Taken to physician who applied ointment and gave antitoxin. Brought to Minnesota General Hospital.

Admitted

11:00 P.M. Physical Examination: Very quiet. Anterior portion of thorax, abdomen, over right side, right shoulder, entire right upper arm, small patch on left arm, right side of neck and face as far as orbital ridge involved in second degree burn. Patch measuring 5 x 8 cm. on right leg. Respiration normal. Pulse slightly rapid. Temperature normal. Does not cry but is listless, quiet and "peaceful." Course and Progress: Temperature 103. Codeine sulphate. Tannic acid (5%) to burned areas every 15 minutes. Skin cleansed and vesicles opened.

Shock, sudden exitus

6-30-32 - 3:30 A.M. - Temperature 100.2. Very quiet. Extremities feel cold. Codeine sulphate for restlessness. Tannic acid applied. 10:30 A.M. Takes fluid well by mouth. Very listless. Extremities cold. Some teitching of muscles about mouth. 11:40 A.M. Suddenly ceased breathing. Condition considered good up until this time.

Autopsy

Burns, edema

Body of well-developed, well-nourished white, male infant, about 16 months old, measuring 52 cm. crown-rump, 75 cm. crown-heel length, weighing about 30 lb. Hypostasis and quite marked posteriorly and purplish. Moderate edema of entire burned area. Pupils equal and regular, each 5 mm. Extensive burned area present which has been tanned with tannic acid. Involves anterior chest beyond midline and all of right side. Upper part of abdomen down to iliac region involved in same area, right shoulder, axilla, right upper arm and portions of right forearm also involved, most of neck, ex cept extreme left portion, right side of face involving eye and

far laterally as right ear. Burn about 10 x 6 cm. on outer aspect of right leg and small patch on left arm. Back, perineum, mouth, nasal orifices, eyes, ears not burned. Abundant subcutaneous fat. In burned areas, subcutaneous fat is glary, very wet and swollen with fluid. Marked difference in consistence of fat between burned areas and normal tissue. Edema involves all structures down to bones in thorax, including fat, fascia, and muscle. Intermuscular planes filled with same glarry fluid.

Negative
Peritoneal Cavity normal. Appendix normal.
Pleural Cavities and Pericardial Sac normal.
Thymus 20 grams.
Lungs together weigh 140 grams and show slight postmortem dependent discoloration.
Spleen 40 grams.
Liver 300 grams.
Gall-Bladder and Gastro-Intestinal Tract normal. Stomach and duodenum no abnormalities on mucous surfaces.

Bloody?
Pancreas and Adrenals normal. Slight pinkish discoloration in patches in adrenals which might be some extravasation of blood?
Kidneys together weigh 90 grams, normal.
Bladder normal.
Genital Organs negative.
Aorta shows no changes.
No enlarged Lymph Nodes.
Organs of Head and Neck - not examined.

Diagnoses:
1. Second degree burn (generalized), involving about 2/3 of body surface.
2. Edema of subcutaneous and muscular tissues about burns.

Note: Blood not noticeably concentrated. Internal organs only moderately dry and bleeding of organs on removal is approximately normal.

Microscopic Sections
Spleen - congestion.
Lungs - small scattered area of atelectasis.
Adrenals - slight congestion.
Heart muscle - normal.
Kidneys - slight capillary congestion.
Liver - no change.
Others - normal.

V. ABSTRACT

ANALYSIS OF MINNESOTA GENERAL HOSPITAL RECORDS, July 1, 1928 to July 1, 1932.

Abstrs. Ritchie & Koucky.

During past four years, 50 cases of burns (suitable forstudy) have been admitted to this hospital. Eight cases are not reviewed because of insufficient data. Many records do not contain a detailed statement as to cause of burn (especially true of old burns). A very important matter for data for preventive work in this type of accident.

Age 1 to 10 - 16; 11 to 20 - 5; 21 to 30 - 12; 31 to 40 - 5; 41 to 85 - 6.

Sex Males 23, females 27.
Average stay: 35 days.

Attempt made to ascertain month in which they occurred. This did not yield very much information because the month was not stated in many of old burns. Burns are supposed to be more frequent in winter-time.

Time between burn and admission to hospital:

Same day	-	16
2nd day	-	7
3rd day	-	4
4th day	-	0
5th day	-	2
6th day	-	0
1 week	-	4
2 weeks	-	4
6 weeks	-	2
3 months	-	1
6 months	-	2
1 year	-	2
3 years	-	1
7 years	-	2
10 years	-	1
not stated	-	2

ment: Nearly half were seen same or rt day. Usual treatment before coming has some form of ointment or grease, baking soda, or nothing. Tannic acid sed in only 3 instances. After admis-on to hospital, tannic acid used in 15. st of these were recent burns. Milder rns were treated with wet packs, anti-ptic ointment, Dakin's solution or raffin spray (older cases). Only 2 ceived tetanus antitoxin? (said to be dicated in burns). Many of the older rns came for skin graft and treatment contractures.

An attempt was made to estimate the rea involved but this was rather diffi-lt. Degree noted as (1, 1 - 2, or 2) nearly two-thirds, (2 - 3 or 3) in 7 ses. Age of cases dying in hospital - -2-23-26 and 29. Causes: oilstove ex-losion, hot water scale, throwing gasoline fire, cooking gasoline, throwing gaso-ine in fire. 3 of 5 patients were seen the same day, 2 died of marked infection, 7 days and 6 months.

pressions:

1. Approximately 60 cases of burns ere admitted to this hospital in the ast 4 years.
2. Many records do not contain age-uate description of cause of burns.
3. Most patients were 1 to 5, or 1 to 30 groups.
4. Carelessness with gasoline ac-ounted for one-third.
5. Burns of children are usually due o carelessness of adults.
6. Mortality of series 10%. As death ccurred as late as 6 months after accident orrected mortality on sub group of 42 ases is 12%.
7. Most of cases were treated with rease, soda, nothing before admission ith tannic acid and antiseptic solutions fterward.
8. Hemoglobin determinations were one in 28. Of these, 7 were 100 to 150, or r one-fourth.
9. Shock, infection, and contractures re commonest complications.

ause of Burns: age 1 to 5, 14 cases.
Fell in tub of hot water n floor while mother was washing clothes, (3); fell in bonfire (2); playing with atches (2); hand on hot stove (1); pulled pan of boiling water off stove (1); mother threw burning lard over porch on child playing in yard (1); oil stove explosion (1); watching parent throw gasoline in stove (1); cause not stated (2).

6 to 10, 3 cases. Kerosene stove explosion (1); gasoline soaked clothes lighted with match (1); cause not stated (1).

11 to 20, 6 cases.
Hot water scald (2); fell in fire (1); sunburn (1); gas tank in front of Ford exploded by cigarette (1), filled gasoline lamp between legs lighted near soaked pants (1).

21 to 30, 14 cases.
Threw gasoline in stove (2); gas stove explosion (1); hot water bottle (1); poured gasoline in motor near open flame (1); gasoline stove explosion (1); burning automobile (1); went to sleep with steam inhaler going (1); railroad accident (1); fainted, cause of burn (?) (1); hot water scald (1); ether explosion (chemistry lab.) (1); took lye by mistake (1); put pan containing clothes in gasoline on top of stove to cook (1).

31 to 40, 6 cases.
Gasoline explosion (2); filled gas tank while motor was running (1); gas stove explosion (1); spilt pot of hot coffee down leg (1); cleaning spark plugs, blew gasoline into cylinder (1).

41 to 85, 6 cases.
Burning house (2); gasoline explosion (1); hot water bottle (1); kerosene stove explosion (1); hot coals dropped on paper on floor (1).

Age not stated.
Burning automobile (1).

Comment: Largest group 1 to 5, 21 to 30. Gasoline cause of one-third of cases; gas stove only 2 (probably due to large number from country); kerosene stove 3. Note burns due to falls in childhood and 1 to pulling handle of pan on stove.

ost unusual cause - cooking gasoline.

I. ANNOUNCEMENTS

1. MEETING:

Date: January 26, 1933.

Place: Interne's Lounge, 6th Floor, West Building.

Time: 12:25 to 1:35.

Program: Diagnosis and Treatment of Syphilis.

Present: 104.

Discussion: Leo G. Rigler
Henry E. Michelson
B. J. Olson
Henry L. Ulrich

Theme: L.G.R.: Demonstrated films showing various manifestations of syphilis. Most information obtained from studies of bones, joints, heart, aorta, and stomach. Illustrations: Syphilitic osteitis, large gumma of metacarpal bone, periostitis, saber shins, and Charcot joint. One case in hospital at present time shows flat feet with marked disintegration of bones of ankles.

X-ray of great value in diagnosis of congenital syphilis. Gummatous lesions of skull show ragged, irregular areas of destruction. At times gummatous changes in children may resemble osteitis fibrosa cystica. Rickets and syphilis may be combined. Aneurysms are striking manifestations, appearance familiar to all. Involvement of adjacent structures shows erosion of spine, displacement of esophagus, compression of trachea, etc. Time does not permit demonstration of gastric lesions.

H.E.M.: When we treat diphtheria, we give treatment to point where disease is abated, and then give no further treatment. In syphilis, we start with chancre, give treatment over a period of time but do not stop even then.

Just as soon as specific treatments are found we get marked professional interest; e.g., diabetes, pernicious anemia, etc. As soon as they can handle a case, even in a haphazard way, they attempt to treat it. This is true of syphilis. Syphilis is a chronic infection which probably never heals spontaneously. Old syphilologists discovered that if they treated syphilis at stated intervals over a certain period of time they did not have relapses. Long before they knew why they continued treatment for a period of three years, and in most cases late symptoms did not occur.

Recent expedition of Russians and Germans to a country where syphilis is endemic and not treated revealed many interesting findings. It was undertaken primarily to answer the question, "Does treatment cause neurosyphilis?" The result of the survey was negative. On the other hand, many of these patients resembled those under treatment in our own country. Question: Is the comparison fair because many of our cases are not well treated. On the other hand, treatment does definitely lessen contagion or infectiousness. If one thousand people in this type of community GET syphilis and wander around, soon 10,000 will be infected and the disease become endemic.

We formerly thought in terms of specific signs in diagnosis of syphilis. At one time we were told that a scar on the knee meant syphilis (but it may result from injury). There are no absolutely specific signs for syphilis. Question: The large number of cases of syphilis reported by Stokes with negative Wassermanns (nearly half) may be due to exaggeration of so-called syphilitic signs. Note also that Stokes believes that syphilis is a disease of signs, although at the present time there is much evidence which points toward the fact that it is primarily a serological manifestation as we see most of them (excluding late manifestations.

Problem of treatment varies with age. In the first ten years the child does not realize the nature of his condition, and his chief interest is in trying to get out of coming to

clinic or the doctor's offices because usually happens on Saturday when he ld rather play. From ten to twenty, tients begin to wonder why? From twenty forty it is a serious problem as life es ahead. From sixty to seventy it is rfectly ridiculous to treat syphilis proding the lesion is not giving trouble.

If every graduate leaves our school spicious of certain lesions, we will be tisfied. Syphilis is a question of curate diagnosis and time. Speed sually is responsible for inaccurate iagnoses. Time should be taken for careal examination of all suspicious lesions. ith sore on external genitalia, inguinal egions should be carefully studied, etc. o many physicians feel that if they do ct make a definite diagnosis on the irst visit, the patient will leave them nd go to another. Generally, they like o convey "good news", so they give a opeful prognosis on the basis of incomlete study, and much harm results.

Dark field examinations are necessary or the diagnosis of early lesions. Phyicians practicing in urban centers have o difficulty getting this service. State oard of Healthssupplies it. Private hysicians specialize in syphilis, and lso examination can be done at the niversity Out-Patient Department. Phyicians unable to make a diagnosis on he lesion should put a saline pack on it nd have the patient come back. Practicaly no case of secondary syphilis should e missed as the chancre (or residue) is sually present. Tertiary lesions sually present clinical manifestations. n addition we have the aid of the x-ray, assermann, and biopsy.

At any stage of the disease, treatment rom the standpoint of rendering the patient ess infectious and preventing involvement f the central nervous system is most imortant. Properly administered treatment ver a sufficient length of time in adequate doses does protect the nervous system. Physicians should recognize the contraindication for continuation of treatment. The chancre, followed by severe arsenical rash, does not mean that syphilis is "coming out on the patient". Further treatment may cause severe damage.

At the end of the first year of treatment, a neurological examination and spinal fluid study are indicated. It is difficult to repeat spinal fluid examinations, so it is probably better, if there is any doubt, to do the neurological first, followed by the spinal fluid. In treating syphilis the patient must be taken into account. If he is not tolerating therapy well, stop. This, however, usually means that the outlook is not good. Never at any time make the treatment worse than the disease.

Some tabetics respond very well. Symptoms recur. More treatment is started. The results are not the same. The dosage is increased, and then trouble starts. Never go above .6 neoarsphenamine because of possible danger. If you have any reason to suspect that the liver is involved, be sure to get consultation. Treatment of syphilis is a highly individual matter. Our objective must be kept clearly in mind, lowering infectiousness and trying to prevent involvement of the central nervous system. Do not give syphilitic treatment when it is not indicated. The Wassermann, when repeatedly positive, is evidence enough of the presence of latent syphilis. So-called Wassermann fast cases require special consideration. In any event, treatment should not be continued if it is doing the patient harm even in this group. Syphilis is a very important problem as one can judge by the number of cases of syphilis we have in this institution.

B.J.O.: League of Nations studying Wassermann question concluded that clinicians should work with one laboratory repeating positive reports, sending back for re-check blood reports which do not agree with clinical impression. Agreement between State Board and Larson compares favorably with work done within one laboratory.

H.L.U.: Many spinal fluids are anti-complementary. This may account for large number of disagreements.

ment: Both Drs. Rigler and Michelson demonstrated excellent "audience ase". We started 25 minutes late due failure to deliver bulletins. Both scussants shortened their comments ac-rdingly - thank you. Universal praise r splendid presentation by Dr. Michelson.

Gertrude Gunn
Record Librarian

2. PERSONAL

Frances Ralston Vanzant joined taff January 1, 1933 as Admission and anitary Physician. Home - Houston, exas. Premedical and medical training - ary Baldwin Seminary (Va.), '18, niversity of Texas, '19 - '20, Rice Insti-ute, B.A. '21, Southwestern University graduate) '22, University of Texas, M.D. 26, Internship - John Sealy Hospital, alveston, '27, Fellow in Medicine, Mayo oundation, Rochester, '27 to '30, Fellow osiah Macy Jr. Foundation at Rochester, xperimental Gastro-enterology, '31 - '32, .S., '31, Graduate School, University of innesota. Interests: Motor and secretory unction of stomach of normal individuals, all-bladder disease, carcinoma of tomach, peptic ulcer, non-specific pro-ein injections, studies in gastric epsin, medical biometrics. Dr. Vanzant's leasing personality, scientific attitude nd enthusiasm have already won for her-elf a place in our organization. Best ishes for a successful career from all.

Internes get a break. An open etter addressed to the Staff of Fairview lospital states in part: "Your patients ill be received by an intern upon dmission. Histories will be promptly aken and a physical examination made. he intern will also make a tentative iagnosis. Will you read these records arefully, and, if possible, discuss hem with the intern who did the work? This procedure will always be of benefit o the intern, and may also help you." t St. Mary's Hospital, according to the Bulletin of the Hennepin County Medical Society, two internes who had done a Caesarian section on a dead woman getting a living child received a rising vote of appreciation from the staff who praised their work as well as that of their associates on other occasions. It is interesting to note that Caesar was not born by Caesarian section, Caesarian section, as we know it, was not practiced in Caesar's time but there was an edict in his day which directed that the operation done by the internes, at St. Mary's Hospital was to be performed in every case. Most hospital staffs fail to praise or notice internes' work probably because of the possibility of acute cardiac failure of the internes. (A preliminary physical examination could be done if this is the trouble ?).

Distinguished Visitor

Professor Syvert Syvertsen, Oslo, Norway, Dean of the College of Pharmacy, said to be the world's leading botanical scientist, is expected in Minneapolis next week. Efforts are being made to have him attend the next Staff Meeting if possible. We should all honor him by attending next week's meeting.