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...Self-evaluation quiz on impetigo
...Canada's food guide
...Managing diabetes mellitus
...Sclerotherapy
...Mini-Mental State Examination

Dossier

Advanced but Expensive Technology

Balancing affordability with access in rural areas

KONRAD A. ERICKSON, MHA
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Increasing access and reducing costs: *Mobile MRI and CT units can serve more patients equitably in rural areas.*

Since the 1970s, diagnostic medical imaging technology has undergone profound change with the introduction of both computed tomography (CT) and magnetic resonance imaging (MRI) scanners into Canada's health service system. These imaging modalities were expensive when introduced (both in terms of capital and operating costs) and remain the most expensive of all imaging systems in general use today.

Provincial governments have, in the past, reluctantly agreed to finance the purchase or operation of CT and MRI scanners. Today, the situation is much different; provincial ministries of health are convinced they are financially drained by existing program and service commitments. High-profile, high-cost (one-time and annual) expenses without clearly defined cost-savings measures are rigorously avoided. Computed tomography and MRI scanners have been targeted for review by many health ministries and thus are unlikely to expand in numbers or service capacity.[1]

Canada's generally depressed economic situation and the policy responses of health ministries suggest that the status quo is likely to be maintained for several years to come. Unfortunately, this "hold the line" policy on CT and MRI fits poorly with governmental desires to enhance accessibility to care, to deliver care close to the consumer's home, to minimize personal and social costs of using the health services system, or to enhance equitability in health services between urban and rural areas.

Analysis

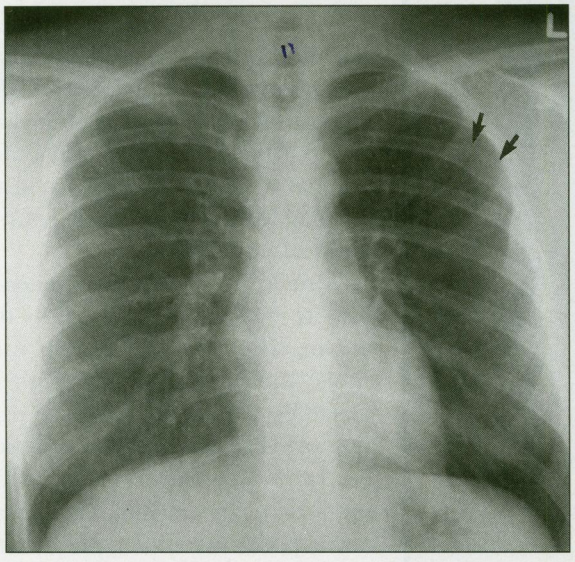
In Canada, advanced medical imaging equipment (including CT scanners) is located almost exclusively in moderate to large metropolitan urban centres. Few, if any, CT units are placed in regions that are either primarily rural or geographically remote from the population centres of the province. Manitoba, for example, has six CT scanners, which are located in southern urban centres (five in Winnipeg, one in Brandon). Rural Manitobans requiring the services of a CT unit must travel 1 to 15 hours to reach either of these two centres. Residents of British Columbia, Saskatchewan, and northern and northwestern Ontario face similar access problems.

Long-distance travel is both inconvenient and expensive for the consumer. Those who must leave their community to access remote technology face disruptions in their work and family life, incur travel costs (airfare, automobile, or ambulance), incur accommodation and meal expenses, and have the general inconvenience

Radiology Rounds

MICHAEL K. MCLENNAN, MD, FRCPC, AND MYLES MARGOLIS, MD, FRCPC

Figure 1. **Posteroanterior chest x-ray films of a young man:** *A) A subtle, mildly expansile lesion by the posterolateral side of the left fourth rib (arrows) is visible; B) A chest x-ray film obtained 7 years later demonstrates marked interval growth of the lesion (arrows).*



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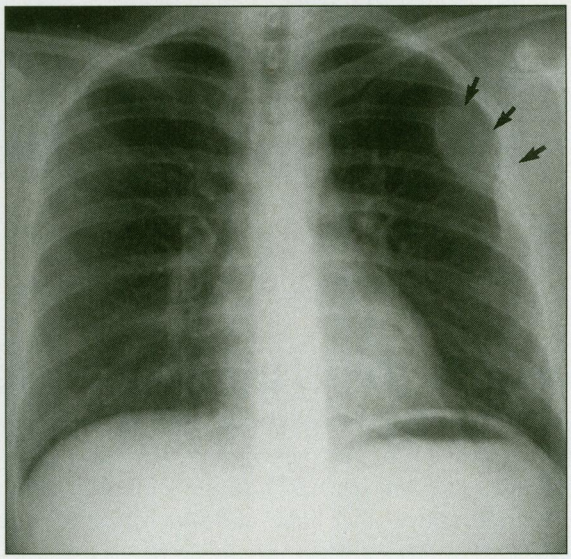

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CLINICAL HISTORY

A 33-year-old man had a routine chest x-ray film taken for employment purposes (*Figure 1A*). He was asymptomatic. A subtle, mildly expansile lesion was evident involving the posterolateral aspect of the left fourth rib. The lesion had grown considerably 7 years later (*Figure 1B*). The lesion matrix now had a "ground glass" appearance. Apart from the rib lesion, both films were otherwise normal. The patient remained asymptomatic.

The most likely diagnosis is:

1. Multiple myeloma
2. Fibrous dysplasia
3. Eosinophilic granuloma
4. Metastatic lesion

Answer on page 217

Dr McLennan *is a Staff Radiologist at the Markham Stouffville Hospital in Ontario.* **Dr Margolis** *is a Clinical Fellow in the Department of Ultrasound at the Toronto Hospital – General Division.*

Dermacase

TOM ENTA, MD, FRCPC

CAN YOU IDENTIFY THIS CONDITION?

This 65-year-old man slowly developed a hardening of the skin of his flexures and shin during the past 5 years. He had troublesome eczema as a child and youth and received a variety of topical creams, ointments, oral medications, ultraviolet light, and superficial x-ray therapy during his youth.

The most likely diagnosis is:

1. Scars from past infections
2. Chemical burns
3. Chronic radiation dermatitis
4. Scleroderma

Answer on page 218

Dr Enta *is a Professor of Medicine at the University of Calgary and is a Consultant at the Skin Clinic at the Tom Baker Cancer Centre in Calgary.*

of a day (or two) consumed in the process of obtaining the CT scan.

How, then, can individual expenses and the inconvenience of travel be minimized for those living in rural and remote regions of Canada? One option that has emerged in the northern states of the United States (albeit for somewhat different reasons) is the use of mobile CT scanners. Several imaging technology companies have been providing both CT and MRI services on a scheduled, rotating basis to a variety of communities in a manner that could be easily replicated and adapted for use in the rural sectors of our health system.

Mobile CT scanners are generally low- to moderate-power units that are installed in large semitrailers (vans) and are transported from site to site by a truck tractor. Each truck tractor–CT semitrailer unit is self-contained to the extent that all required technical staff, equipment, and supplies accompany the scanner as it travels its route. The unit requires only a level parking spot and access to a "filtered" power source in order to use the CT scanner. Films are developed using a built-in processing system and are sent (by courier) to a central pool of radiologists for interpretation.

The mobile CT unit travels from community to community on a regular route, generally stopping in areas that are economically unserviceable by fixed-site units because of low overall demand (poor opportunity to generate revenue in excess of expenses). At each stop, patients who have been booked will be scanned during one of the available times. Between eight and 10 procedures can be completed daily, depending on the mix of examinations.

This arrangement meets several health service features that American patients and providers value, including rapid access to care, minimal personal inconvenience, accuracy of diagnosis, timely treatment, and the

Self-evaluation

We offer a sample question from *Self Evaluation*,[1] an educational program run by the College of Family Physicians of Canada and approved for 24 hours of Category 1 CME study credits, to test your skills.

Which of the following antibiotics is appropriate for the treatment of nonbullous impetigo?

1. Systemic penicillin
2. Systemic erythromycin
3. Topical mupirocin
4. Systemic cephalexin

Answer on page 36

opportunity to generate significant profits. Mobile CT and MRI scanners are in widespread use throughout the northern United States and in other areas, including California.

How well would this mobile CT scanner model fit within the Canadian health service network? In terms of service delivery, Canada's climate, dispersed population, and expansive geography are similar to that of the northern United States. Scheduling and servicing a CT scanner "circuit" or route would, therefore, be equally reasonable on the northern side of the border. The clinical need for CT would also be somewhat similar, as most physicians consider a CT scan to be a normal diagnostic tool and one to be used whenever indicated. In the United States, more scans might be performed either because of the perceived need to practise defensive medicine or because physicians have a financial interest in the service. The need for CT in Canada can be imprecisely estimated by examining the referral service of patients using urban CT scanners.

In Manitoba, the urban CT units located in Winnipeg easily provide between 10% and 30% of their service to residents of rural and remote regions. If even half of rural patients could be served by a regional mobile CT service, more than 3000 Manitobans would be spared the personal inconvenience and costs of traveling to Winnipeg or Brandon. (Manitoba performed 33 550 CT examinations recently).

Logistics questions, such as equipment needs, staff training, and scheduling, can be determined from a more detailed review of US experiences. However, it is likely that the delivery model could be significantly improved by upgrading the training of radiology technologists at all hospitals where the CT will stop (thus, no professional staff will accompany the unit on its route). Also, images could be stored on an optical disk, which could then be sent to the central radiologist pool for interpretation on a weekly basis (thus eliminating the need for film or a developing system).

Technically, therefore, a mobile CT program is feasible, but is it affordable? Canada's health services are funded through general tax revenues, which provide universal "insurance" to all residents. This differs from the US model, where multiple corporate individuals or government contributors are often more concerned with individual well-being than with the social good.

Manitoba's Health Ministry recently announced a moratorium on new CT scanners until a better understanding of the operating practices of existing CT scanners is reached. It was also decided that future capital and operating funds for CT are to be established within the context of patient access and benefits while honouring the principle that new technology should replace existing technology and costs.[2]

Within this new philosophy, the development of a mobile scanner service would clearly support provincial program goals. A mobile CT unit will emphasize patient access, and benefits will include reductions in personal costs to access the unit (travel, time, and accommodations). This service would also directly replace that portion of existing CT services in Winnipeg and Brandon now allocated for rural patients. In this fashion, some portion of the operating costs could be shifted from urban CT scanners and used to offset some of the costs of the traveling unit. Similarly, residents of northwestern Ontario regularly travel to Winnipeg for a CT scan. A mobile CT unit would become even more economical if it were used to service two or more provincial regions (ie, southern Saskatchewan, northern and central Manitoba, and northwestern Ontario).

Conclusion

Canada's health system continues to emphasize good quality patient care with regular accessibility, made possible through a service network that has no direct user fees. Patients in rural and remote areas do, however, bear greater personal expenses to access the health system than their urban counterparts. Mobile scanners support current government desires to improve quality of care (timeliness, accessibility, etc), while minimizing the indirect personal costs of obtaining service. Spending money on a dedicated remote traveling CT unit would also help to offset the existing inequity in services between rural and urban areas where expertise and technology are often centralized. Ministries of health, including Manitoba's, are encouraged to consider the use of

mobile CT scanners in future plans for expanded high-end diagnostic services.

References

1. Manitoba Health. *Quality health for Manitobans: the action plan.* Winnipeg: Manitoba Health, 1992 May.
2. Orchard D. *Ministerial statement on the report of the CT scanning committee and our radiology consultant's report.* Winnipeg: Manitoba Health, 1992 April 16.

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Guide to Healthy Eating

PRIMROSE KETCHUM

Canada's Food Guide to Healthy Eating has just been released. This new food guide, based on Health and Welfare Canada's 1990 revised nutrition recommendations, will help consumers to make food choices that lead to healthy eating and to follow the guidelines for variety; energy balance; fat content; proportion of complex carbohydrates; and consumption of salt, alcohol, and caffeine.

"This new guide addresses a broader range of nutrition issues relevant to today's health concerns by offering guidance on all foods, not just those chosen to meet minimum energy and nutrient needs," says Sandra Matheson, President of The Canadian Dietetic Association. Dietitians across Canada will be incorporating the recommendations into food and nutrition policies for hospitals, schools, nutrition and assessment counseling programs, and educational projects.

"Eating is one of the best things life has to offer. Food helps you celebrate with your family and friends," says the guide. "It nourishes your body. It gives you energy to get through each day. The right balance of food and activity helps you stay at a healthy body weight."

For the first time, the food guide includes an "other foods" category:

ham, pineapple, and cheese pizza; beer and wine; and chili con carne. "You don't have to give up foods you love for the sake of your health," reads the introduction. The key to health is not any one food, menu, or even a day's meals, but the overall pattern of foods eaten over the long term.

The Food Guide has two strong messages:

- Enjoy a variety of foods from each of Canada's four food groups (grain products, vegetables and fruit, milk products, and meat and alternatives) every day.
- Choose low-fat foods more often and reduce fat intake by eating less butter, salad dressing, and rich sauces and cutting down on fried food.

Copies of the *Food Guide* in English or French (*Pour mieux se servir du guide alimentaire*) can be obtained from Publications, Health and Welfare Canada, Ottawa, ON K1A 0K9.

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Capsules

The family medicine literature is varied and voluminous and cannot all be found in Index Medicus. *In the following summaries, our librarian, Lynn Dunikowski, provides synopses of articles from the current literature, full texts of which can be obtained from the Canadian Library of Family Medicine, Natural Sciences Centre, University of Western Ontario, London, ON N6A 5B7. Alternatively, local medical libraries or hospital libraries might be able to help.*

Electric and magnetic fields

Electric and magnetic fields (EMF) surround all electrical conductors, including power lines, household wiring, and appliances. The two components of EMF, electrical and magnetic, under usual circumstances occur together, but the magnitude of each varies independently. Because the magnitude of the

electric field component is determined by voltage, electric fields are generally most intense around high-voltage transmission lines. The magnitude of magnetic fields is determined by current and is most intense very close to such appliances as hair dryers and power tools.

Some, but not all, epidemiologic studies of health among populations exposed to low-power frequency EMF show associations between exposure to EMF and health effects. However, because of the poor and inconsistent exposure assessment in these studies, the absence of an appropriate dose-response relationship, and the absence of supporting laboratory evidence, any conclusion of health risks to humans at this time is premature.

Reference
Sagan LA. Epidemiological and laboratory studies of power frequency electric and magnetic fields. *JAMA* 1992;268:625-9.

Rural physicians

This study examined the hypothesis that medical schools vary systematically and predictably in the proportion of their graduates who enter rural practice. Although it is widely believed that medical schools can influence both the specialty and the practice location choice of their graduates, the extent to which the mission and structure of medical schools actually shape student behaviour is not obvious.

Some argue that the greatest influences on student choice lie in the marketplace for physician services, and that without a significant change in reimbursement patterns, educational reform will be to little avail. Others argue that the academic medical center, through its admission procedures, curricular structure, and inherent values, has both the responsibility and the capability of increasing the flow of rural physicians.

Of the practising graduates in this US study, 12.6% were located in rural counties; family physicians were much more likely than members of other specialties to select rural practice, particularly in the smallest and most isolated rural counties. Women were much less likely than men to enter rural practice. Medical schools varied greatly in the percentage of their graduates who entered rural practice, ranging from 41.2% to 2.3% of the graduating classes studied. Twelve medical schools accounted for more than one quarter of the physicians entering rural practice during this period.

Four variables were strongly associated with a tendency to produce graduates who take up rural practices: location in a rural state, public ownership, production of family physicians, and smaller amounts of funding from the National Institutes of Health. The authors conclude that the organization, location, and mission of medical schools is closely related to the propensity of their graduates to select rural practice.

Reference
Rosenblatt RA, Whitcomb ME, Cullen TJ, Lishner DM, Hart LG. Which medical schools produce rural physicians? *JAMA* 1992;268:1559-65.

Managing diabetes mellitus

Diabetes mellitus affects the health of 4% to 6% of Canadians and has a significant socioeconomic impact. Diabetologists in the United States and Europe have established separate guidelines for the management of diabetes in adults, not all of which apply in Canada. Neither group included guidelines for care of children and adolescents or special groups, such as elderly and Native people. Although primary care physicians provide most health care to patients with diabetes, their roles were not addressed. Finally, neither group addressed the rights and responsibilities of patients.

The Canadian Diabetes Advisory Board appointed an expert committee to develop clinical practice guidelines for treatment of diabetes mellitus. The goals of the committee were to identify problem areas, develop guidelines, define the roles of primary care physicians, and clarify the rights and responsibilities of patients. The final version of the guidelines, which are directed to primary care physicians and other members of diabetes health care teams, is presented in this article.

Reference
Expert Committee of the Canadian Diabetes Advisory Board. Clinical practice guidelines for treatment of diabetes mellitus. *Can Med Assoc J* 1992;147:697-712.

Sclerotherapy

Recently, interest has arisen in the treatment of varicose and telangiectatic veins of the lower extremities. Patients commonly seek treatment for cosmetic reasons. However, varicosities are not always simply a cosmetic concern. Approximately 20% of adults have varicose veins of the lower extremities. Varicose veins are often symptomatic and can contribute to the development of cutaneous changes of venous insufficiency.

Sclerotherapy, a nonsurgical procedure to eradicate varicosities, can be performed in the office and is more cost-effective than traditional vein stripping, which requires hospitalization and a recuperation period. Sclerotherapy is relatively safe and effective and can be used to treat both varicose veins and telangiectatic "spider" veins of the lower extremities.

Reference
Green D. Sclerotherapy for varicose and telangiectatic veins. *Am Fam Physician* 1992;46:827-37.

Information needs

Busy physicians must find ways to obtain the clinical information they need quickly. Despite the importance of finding answers to case-specific questions, this process has rarely been investigated. As an initial step toward improving access to information, the authors observed the current practices of 30 family physicians in their offices. Based on 172 hours of observation and 602 patient visits, family physicians sought answers to µan average of one clinical question for every 15 patients seen. The frequency of seeking information was not related to the physician's age. Physicians seeing more patients per hour tended to ask fewer questions. Drug-prescribing questions were the most common type; second most common were orthopedic questions. Colleagues and the *Physicians' Desk Reference* were the most often used resources. Eight percent of questions were not answered.

Reference

Ely JW, Burch RJ, Vinson DC. The information needs of family physicians: case-specific clinical questions. *J Fam Pract* 1992;35:265-9.

Mini-Mental State Examination

The use of screening tests to provide brief, objective measures of cognitive functioning has increased dramatically over the last 10 years. Although a substantial number of screening tests exist, the Mini-Mental State Examination (MMSE) is the most widely used. It is a popular clinical measure that is available in many languages.

The authors review information accumulated over the past 26 years regarding the psychometric properties and utility of the English version of the MMSE. Its validity was compared against a variety of gold standards, including DSM 3-R and NINCDS-ADRDA criteria, clinical diagnoses, activities of daily living measures, and other tests that putatively identify and measure cognitive impairment.

Reliability and construct validity were judged to be satisfactory. Measures of criterion validity showed high levels of sensitivity for moderate to severe cognitive impairment and lower levels for mild degrees of impairment. Content analyses revealed the MMSE to be highly verbal, and not all items were equally sensitive to cognitive impairment. Items measuring language were judged to be relatively easy and lacked utility for identifying mild language deficits.

Overall, MMSE scores were affected by age, education, and cultural background, but not sex. In general, the MMSE fulfilled its original goal of providing a brief screening test that quantitatively assesses the severity of cognitive impairment and documents cognitive changes occurring over time. The MMSE should not be used by itself as a diagnostic tool to identify dementia.

Reference

Tombaugh TN, McIntyre NJ. The Mini-Mental State Examination: a comprehensive review. *J Am Geriatr Soc* 1992;40:922-35.

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ANSWER TO SELF-EVALUATION

continued from page 32

2. Systemic erythromycin
3. Topical mupirocin
4. Systemic cephalexin[2]

Until the 1980s it was believed that nonbullous impetigo, the most common childhood skin infection, was caused by group A β-hemolytic streptococcus. In the past decade several studies have revealed that *Staphylococcus aureus* is the most common causative agent; it is now isolated in most cases of nonbullous impetigo. Antibiotics with action against both *S aureus* and group A streptococci, such as dicloxacillin, erythromycin, cephalexin, and amoxicillin–clavulanic acid, have produced better responses than penicillin and amoxicillin, which are good antistreptococcal but poor antistaphylococcal drugs.

Mupirocin, or pseudomonic acid A, an antibacterial substance produced by *Pseudomonas fluorescens*, is highly active against all species of staphylococci and most species of streptococci, but it is ineffective against Gram-positive bacilli, anaerobes, and aerobic Gram-negative bacilli.

Controlled studies have found topical mupirocin to be at least as effective as systemic erythromycin for treating impetigo and more successful in eradicating *S aureus*, including strains resistant to antibiotics. After 8 to 14 days of treatment, the rates of clearing were similar with the two drugs: 90% to 100% with erythromycin and 95% to 100% with mupirocin. Despite the slightly higher cost of mupirocin, the absence of substantial side effects and the high rate of success have made it an attractive alternative to oral therapy and the best topical treatment for impetigo. Twice daily intranasal mupirocin for 5 days is also effective in eradicating the nasal carriage of *S aureus* for at least 3 months. ■

This self-evaluation question is reprinted with permission from Self Evaluation.[1] *Information about the program can be obtained from the College of Family Physicians of Canada, 2630 Skymark Ave, Mississauga, ON L4W5A4.*

References

1. College of Family Physicians of Canada. *Self Evaluation*. Mississauga, Ont: College of Family Physicians of Canada, 1992;7(4):9,38-9.
2. Phillips TJ, Dover JS. Recent advances in dermatology. *N Engl J Med* 1992;326:167-78.

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ANSWER TO RADIOLOGY ROUNDS

continued from page 29

2. Fibrous dysplasia

Radiographic findings

The radiolucent rib lesion in *Figure 1A* is focal ("geographic"), mildly expansile, and well defined. There are no associated aggressive characteristics, such as cortical breakthrough, periosteal reaction, or soft tissue mass. There was a subtle "ground glass" appearance to the matrix on the original chest x-ray. *Figure 1B*, taken 7 years later, demonstrates significant interval growth of the lesion, and the ground glass matrix can be better appreciated. There remain no associated aggressive characteristics. No other lesions are present on either film.

Differential diagnosis

Fibrous dysplasia is the most common cause of a focal, expansile rib lesion.[1,2] Apart from fractures, metastases are the most common rib lesions. However, metastases generally exhibit very aggressive characteristics; the lesions (usually multiple) are poorly defined with cortical destruction. Patients are usually older than 40, and typically have a known primary malignancy.

Multiple myeloma is the second most common malignant rib lesion, and can be solitary (plasmacytoma). It generally exhibits, however, more aggressive characteristics on x-ray films. Eosinophilic granuloma is characterized by an intense proliferation of reticulohistiocytic elements, and falls under the triad of diseases known as histiocytosis X. (The other two conditions in the triad are Hand-Schüller-Christian disease and Letterer-Siwe disease.) Eosinophilic granuloma can have a variety of radiographic appearances, including focal and expansile, and the ribs are sometimes involved. However, eosinophilic granuloma is rare among patients older than 30.[3]

Discussion

Fibrous dysplasia is a congenital disease characterized by failure of normal osteoblast differentiation, and resulting in excess proliferation and maturation of fibroblasts. Immature bone and rests of cartilage are interspersed in a sea of collagen. The disease can affect one bone or many. When it is polyostotic, it is often unilateral.

The condition is usually found in adolescents, and is equally common in men and women. The polyostotic form is associated with a number of systemic abnormalities. These include "cafe-au-lait" skin pigmentation spots (irregular "coast of Maine" margins versus the smooth marginated "coast of California" cafe-au-lait spots seen in conjunction with neurofibromatosis), sexual precocity (seen almost exclusively in women), hyperthyroidism, acromegaly, Cushing's syndrome, accelerated skeletal maturation, and gynecomastia.[4] Up to 30% of female patients with polyostotic disease exhibit sexual precocity, a combination known as McCune-Albright syndrome.[4]

Patients with monostotic or polyostotic disease sometimes have associated bone pain, remodeling deformities (especially in the weight-bearing long bones), and pathologic fractures. Malignant degeneration is uncommon. The reported frequency of malignancy is less than 1%.[5] The associated malignant tumours are osteosarcoma, fibrosarcoma, and chondrosarcoma, in that order.[1,5] Biochemically, the alkaline phosphatase level can be elevated, but the serum calcium and phosphorus levels are normal.

The monostotic form primarily affects the long bones, typically the femur and tibia. The ribs and facial bones are also common sites. The lesion usually involves the metaphysis, although any site along the bone can be affected.

Radiographically, fibrous dysplasia typically appears as a geographic, mildly expansile lytic lesion, which scallops and bows the cortex fairly symmetrically, without associated cortical destruction. The matrix often demonstrates a ground glass appearance, due to the mixture of bony and cartilaginous elements. Internal trabeculae are sometimes seen. The lesion usually has at least a partially sclerotic margin, indicating slow growth. Periosteal reaction is uncommon, unless perhaps it is associated with a healing pathologic fracture.

Although the most common lytic rib lesions are metastatic neoplasms followed by primary malignant bone tumours (multiple myeloma and chondrosarcoma), fibrous dysplasia is the most common benign condition encountered.[1,2] In fact, as mentioned earlier, fibrous dysplasia is the most common cause of an expansile focal rib lesion.[1,2] Other benign conditions to consider include enchondroma, osteochondroma, eosinophilic granuloma (in younger patients), chondromyxoid fibroma, aneurysmal bone cyst, and brown tumours of hyperparathyroidism. Occasionally, normal healing fractures appear as focal enlarged lesions, due to excess callus formation or malunion. ■

References

1. Greenfield GB. *Radiology of bone diseases.* Philadelphia: JB Lippincott Co, 1980:chap 6, 124-36.
2. Rosenthal DI. Radiology of the rib cage and chest wall. In: Taveras JM, Ferrucci JT, editors. *Radiology: diagnosis – imaging – intervention.* Vol 1. Philadelphia: JB Lippincott Co, 1988:chap 82.
3. Helms CA. *Fundamentals of skeletal radiology.* Philadelphia: WB Saunders Co, 1989:chap 2, 9-40.
4. Warrick CK. Some aspects of polyostotic fibrous dysplasia. Possible hypotheses to account for the associated endocrinological changes. *Clin Radiol* 1973;24:125-38.
5. Taconis WK. Osteosarcoma in fibrous dysplasia. *Skeletal Radiol* 1988;17:163-70.

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CALENDAR

Calendar

FEBRUARY

2 Computer Based Records Supporting Patient Care Management. Halifax, NS [7.5 study credits] Contact: Heather Pastorchik, Clinicare (403) 291-3949

4-7 Psychiatric Update for Family Physicians. Whistler, BC [17.0] Contact: Dr Anthony Sehon, Sehon Buchanan Medical Media Inc (604) 922-3570

5-6 Better Breathing '93. Toronto, ON [8.0] Contact: Sheila Gordon-Dillane, Ontario Respiratory Care Society (416) 864-1112

5-6 The High Risk Foot. Calgary, AB [12.0] Contact: Heather Trowell, Geriatric Foot Clinic (SARGC Program) CDHG (403) 264-8225

7-10 1993 Asia-Pacific WONCA Regional Conference. Manila, Philippines [16.5] Contact: Dr Zorayda E. Leopando, Philippine Academy of Family Physicians Inc 011-632-87-21-35 Fax 011-632-521-7225

8-9 Genetic Issues in Insurance Medicine. Crystal City, VA [10.45] Contact: Dr Sharylee Barnes (416) 925-2261 or 960-6584

9-12 1993 People and Progress Annual Conference - Continuing Care in Transition. Edmonton, AB [12.0] Contact: Rose LaFrance, The Capital Care Group (403) 448-2418

11 Computer Based Records Supporting Patient Care Management. Vancouver, BC [7.5] Contact: Dr William Haver, Clinicare (403) 291-3949

21-26 38th Annual Scientific Assembly. Banff Springs Hotel, AB [24.25] Contact: Elaine Taschuk, Alberta Chapter College of Family Physicians of Canada (403) 488-2395 Fax (403) 488-2396

22-26 Medicine Update for Doctors & Dentists (McMaster University). Lake Louise, AB [14.0] Contact: Dr S. Lamb, Chair Planning Committee, McMaster University – CME (416) 521-7966 Fax (416) 389-4224

25-26 Respiratory Care Conference for Health Professionals. Winnipeg, MB [6.0 per day] Contact: Patricia Miles, Manitoba Lung Association (204) 774-5501

MARCH

5-7,17,24,31 April 7,14,21 (evening & weekend sessions)**Realize Your Dreams**. Toronto, ON [15.0] Contact: Ms Betty McVey, Saugeen Institute (416) 485-8028

11-12 Faculty Development Workshops - McGill University 'Small Group Teaching.' Montreal, PQ [12.0 per session] Contact: Mrs Jean McNab, McGill University (514) 398-8253

11-13 14th Annual Winter Symposium - Grand Rounds in Medicine (McMaster University). Deerfield, FL [14.0] Contact: Ms. P. Carter, Planning Committee (416) 521-7996 Fax: (416) 389-4224

12 Psychiatric Update for Family Physicians. Edmonton, AB [6.5] Contact: Dr Buchanan, Sehon Buchanan Medical Media Inc (604) 922-3570

ANSWER TO DERMACASE

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3. Chronic radiation dermatitis

Superficial x-ray therapy was originally used widely to treat troublesome dermatitis, such as chronic lichen simplex, atopic dermatitis, acne vulgaris, plantar warts, tinea capitis, and axillary hyperhidrosis.[1] The use of x-ray therapy for cutaneous lesions has declined since the 1950s; now its primary use is the treatment of skin cancers, such as basal cell carcinoma, squamous cell carcinoma, and some forms of lymphoma and sarcoma.

In dermatology, x-ray therapy was given in small doses, which led to very little cutaneous response. After many treatments and with passage of time (as long as 20 years), the changes of chronic radiation dermatitis slowly appear.[1,2] The involved area will show dry, hairless skin. The texture of the skin will be firm or hard. It will usually be pale or hypopigmented. The surface will show fine telangiectasias. If a joint is involved, the hardened, fibrosed skin will limit mobility of the joint.

In some cases, ulceration with crusting and scaling will occur. The scaly areas resemble actinic keratosis. Frank cutaneous malignancy sometimes develops. Any area of ulceration that fails to heal must be excised. Treatment of chronic dermatitis consists of using emollients to lubricate and protect the atrophic skin. ■

References

1. Potten CS. *Radiation and skin.* 1st ed. London: Taylor & Frances, 1985.
2. MalKinson FP, Wiskemann A. Some principles of radiology and effects of ionizing radiation on skin. In: Fitzpatrick TB, Eisen A, Wolff K, Freedberg IM, Austen KF, editors. *Dermatology in general medicine.* 3rd ed. New York: McGraw-Hill, 1986:1431-40.

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