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Neonatal E. coli pericarditis

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Pericarditis in the neonatal period is an uncommon disorder. A review of the literature reveals only one case of neonatal Escherichia coli pericarditis [5]. The following is a case report of Escherichia coli pericarditis occurring in a two day old infant.

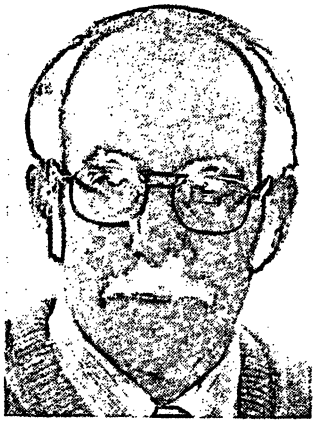
1 Case Report

The infant was the 2580 Gm. product of a full term, uncomplicated pregnancy. There was no history of maternal fever, urinary tract infection or premature rupture of the membranes. The APGAR scores were 5 and 7 at 1 and 5 minutes respectively. At 50 hours of age she was noted to have a poor suck and to be jaundiced.

At 64 hours of age the infant was moribund and hypothermic. The cardiac impulse was just left of the sternum with a rate of 160 beats/ minute. The heart sounds were distant but no murmur or rub was auscultated. Peripheral pulses were weak in the upper extremities and absent in the lower extremities. The blood pressure was 58/26 and 0/0 mm Hg in the upper and lower extremities respectively. The lungs were clear to auscultation, and the liver and spleen were enlarged.

Laboratory data on admission revealed hemoglobin 18.2 gm%, WBC 6,500/mm^3 with two segmented neutrophils, 84 lymphocytes and 14 monocytes; platelets 159,000/cu mm; pH 7.05, pCO_2 48 mm Hg. Serum bilirubin total of 12.5% with an indirect of 11.4 mg%. A chest x-ray revealed an enlarged cardiac silhouette with pulmonary congestion. The electrocardiogram was normal for age.

Curriculum vitae



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The impression was that this infant had possible sepsis as well as coarctation of the aorta and/or hypoplastic left heart. The infant was started on furosemide, digoxin, ampicillin and gentamicin. At 67 hours of age the infant had a cardiopulmonary arrest. She was successfully resuscitated initially but deteriorated despite continued medical and ventilatory support and expired at 71 hours of age. During the numerous resuscitative efforts, all medicines were given by umbilical venous catheter and none via the intracardiac route. The admission blood culture grew Escherichia coli.

At autopsy the pericardium was found to be extremely distended and globular in appearance. Opened, the pericardial sac contained approximately 30 cc of a purulent material in both a liquid and fibrinous state. The majority of the material being fibrinous attaching visceral pericardium to epi-

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cardium and almost completely encasing the heart. The heart and great vessels were morphologically within normal limits. The foramen ovale and ductus arteriosus were probe patent. The valves were normal in appearance. On microscopic examination the pericardium was found to have marked congestion, edema and prominent inflammatory infiltrates. The visceral surface showed a fibrinous exudate. The inflammatory infiltrates seen on the visceral surfaces and within the stroma of the pericardium consisted of collections of polymorphonuclear leukocytes and more diffusely distributed lymphocytes and histocytes. Marked edema of the epicardium with prominent inflammatory infiltrates consisting primarily of lymphocytes in focal and scattered accumulations. Perivascular accumulations of polymorphonuclear leukocytes and leukostasis was prominent in the epicardium. Only the superficial regions of the myocardium showed evidence of the inflammatory reaction. The lung showed areas of bronchopneumonia and widespread areas of focal atelectasis. A postmortem culture of the pericardial effusion grew Escherichia coli.

2 Discussion

Purulent pericarditis is rarely found to be an isolated infection; rather it is usually observed in association with an infectious process elsewhere. Pulmonary infection is the most commonly associated condition reported in infants [2, 3].

The causative organisms in bacterial pericarditis have changed over the years. GERSONY and MCCRACKEN report Staphylococcus aureus (48%), pneumococcus (10%), and Hemophilus influenza (16%) to be the leading organisms [2]. A review of the literature reveals five cases of Escherichia coli pericarditis in the pediatric age group [2,3,4,5,6].

The clinical diagnosis of pericarditis is often difficult because of vague, non-specific symptoms and signs. The symptoms are usually those of sepsis plus those of impaired circulation due to mechanical embarrassment by accumulating pericardial effusion [6, 8].

Physical signs can be equally non-specific in making the diagnosis. A friction rub is probably the most reliable sign; however, it is often transient and migratory and can easily be missed. It has been pointed out by NADAS and LEVY that such physical findings as the rapid development of cardiac enlargement, globular shape of the heart on x-ray, diminished pulsation on fluoroscopy and muffled heart sounds are common in both pericarditis with effusion and myocarditis [4]. Even the changes in the S-T segments and T wave abnormalities on electrocardiogram, can be found in both conditions [3]. Similarly, hypotension, narrowed pulse pressure and hepatomegaly do not differentiate the limited diastolic filling due to pericardial effusion from heart failure.

Other diagnostic techniques can add greatly to the accurate assessment of the infant with an enlarged cardiac silhouette on x-ray. Cardiac catheterization is the traditionally definitive, but highly invasive technique. Pericardiocentesis not only determines the presence and nature of an effusion but also initiates therapy by establishing drainage and decompression of the pericardial space. The echocardiogram is perhaps the greatest advance and most helpful noninvasive technique presently available. It readily distinguishes pericardial effusion from the dilatation of congestive heart failure [1, 7].

The treatment of purulent pericarditis requires both medical and surgical efforts. The proper selection of antibiotic depends on the clinical course of illness, the gram stain and culture of the pericardial fluid and familiarity with the microbial agents most commonly responsible. Surgical management consists of some form of drainage: multiple aspirations, closed catheter drainage or open pericardiotomy or pericardectomy. Because of the very high mortality associated with this disorder and the difficulty in eliciting specific signs and symptoms in the neonate, a high index of suspicion with a vigorous diagnostic and therapeutic approach to the patient is indicated.

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Ausgewählte gynäko-urologische Operationen
Selected Urologic Operations in Gynecology

Anhang:
Durchzugspyelonephrostomie mittels U-Drain
Appendix: U-tube Pyelonephrostomy

Atlas

Text: Zweisprachig Deutsch/Englisch
Bilingual German/English
1978. 22,5 cm x 31 cm. 76 Seiten/pages. 52 Abbildungen/illustrations. Gebunden/Bound ca. DM 100,–; approx. $50.00
ISBN 3 11 007418 4

Aus dem Vorwort:

Der vorliegende Atlas stellt eine notwendige Brücke zwischen urologischen und gynäkologischen Operationsatlanten dar. Dies deshalb, weil in ihm die dem Gynäkologen am häufigsten widerfahrenden Verletzungen und deren operative Korrektur lückenlos zur Darstellung kommen, so daß auch Operateure mit geringer Erfahrung diese anhand der vorliegenden eindrucksvollen Bilder ohne Schwierigkeiten selbst vornehmen können.

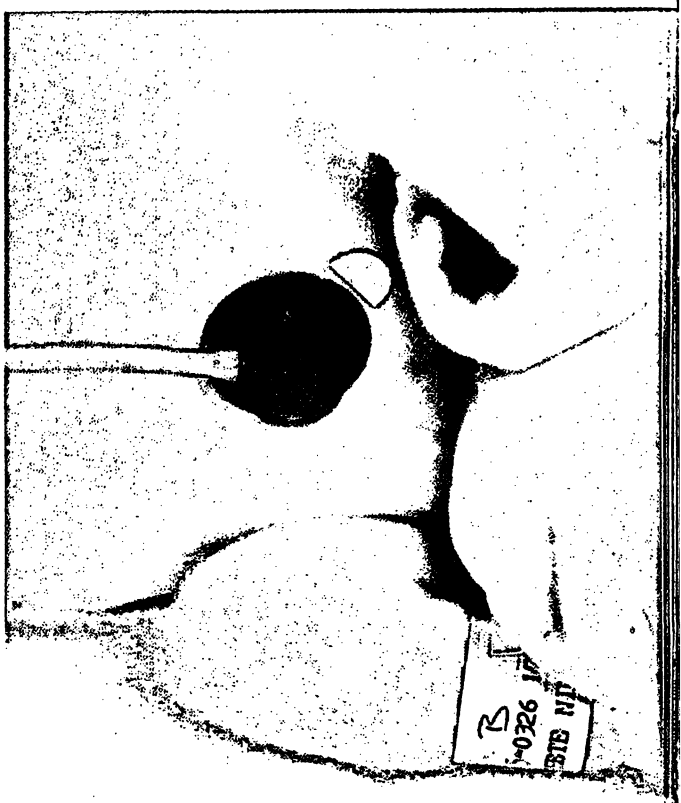
From the Foreword:

The present atlas has filled a definite need in that it combines urologic and gynecologic aspects normally dealt with in separate works. Its purpose has been to give a full account of the most common injuries confronting the gynecologist as well as their operative repair so that even the less experienced surgeon will – guided by the most instructive pictorial material – be able to master surgical problems to which he is unaccustomed.

TCM. The 24 hour baby

R12

Radiometer's non-invasive oxygen monitor is a bloodless revolution in Po_2.



Transcutaneous Oxygen Measurement

Radiometer's extensive experience in measuring blood oxygen partial pressure has led to the development of an innovative transcutaneous oxygen electrode.

This new electrode is a special design of the polarographic oxygen electrode which, applied on the skin, creates hyperaemia in the dermal capillaries and makes the skin permeable to oxygen so that Po_2 on the skin surface reflects the changes in the oxygen status in the central arteries, thus supplying a continuous measure of the patient's oxygen status, while eliminating the tedious and hazardous procedure of obtaining blood samples.

The importance of this is stressed specifically in neonatal intensive care.

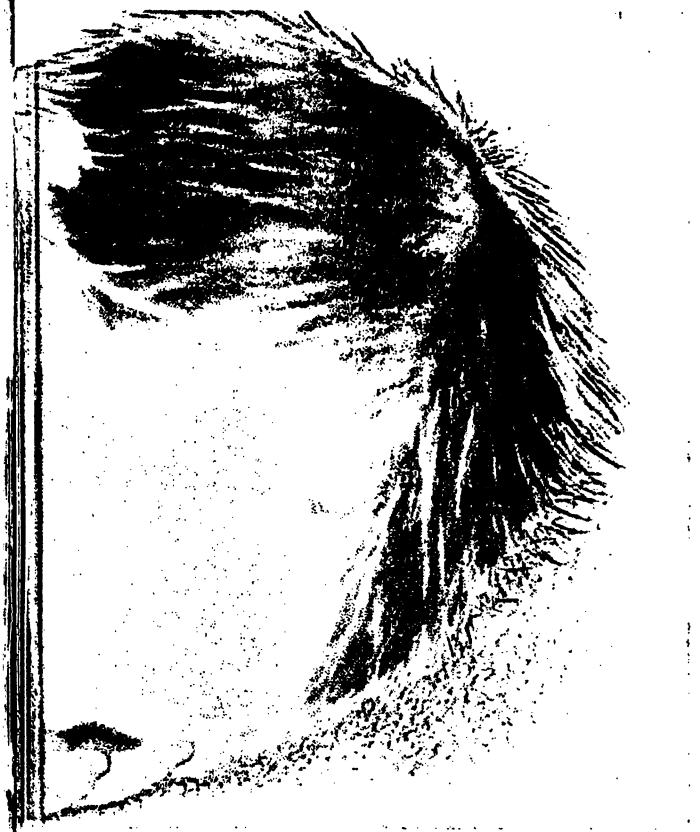
Radiometer's Transcutaneous Electrode

At slightly elevated temperatures, oxygen diffuses readily through the skin, and at the same temperatures the dermal capillaries are hyperaemized to a Po_2 value close to that of the central arteries. The transcutaneous polarographic Po_2 electrode is therefore built together with a heating circuitry controlled by a built-in thermostat which automatically kee the temperature constant within 0.1° After a few minutes of temperature st bilization, Po_2 on the skin surface will va with the central arterial Po_2 with a delay a few seconds only. The Radiometer t Po_2 electrode is a mono-micro catho electrode fitted with a polypropyle membrane. It assures an oxygen co sumption lower than the amount diffu ing through the skin.

The heat is transferred to the sk over a large area (32.4 mm^2) from t heated anode and via a sterile contact g to ensure a homogeneous heat transf without overheating.

The Radiometer tc-Po_2 electrode mounted on the skin by means of a s

nurse from Radiometer.



arate fixation ring, preventing undue ressure on the membrane. Additional xation rings can be pre-mounted on the atient so that the electrode can be moved rom site to site without delay or recali- ration.

These are all constructional details uccesfully serving the purpose of btaining high correlation to aO_2 and avoiding burning of e skin.

Radiometer's TCM1 tc-Po_2 Monitor

The monitor has three displays r tc-Po_2 (mmHg or kPa), electrode tem- erature (°C), and electrode heat con- umption (mW).

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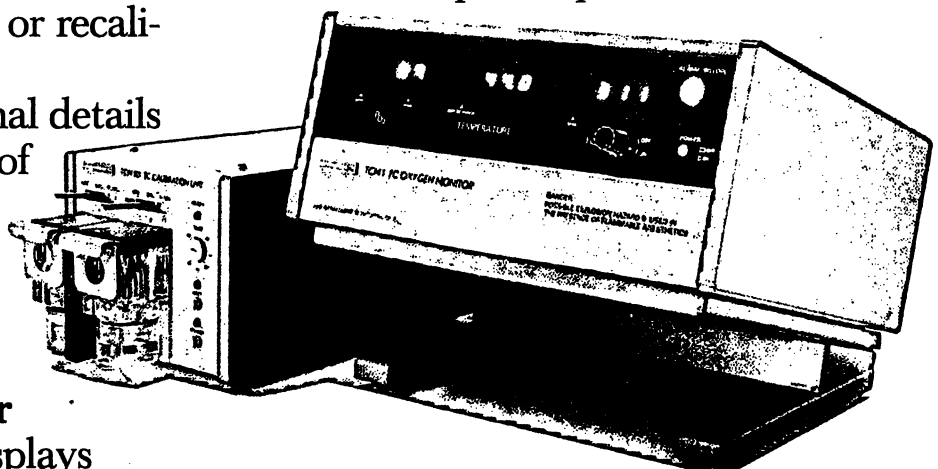
In order to truly evaluate Radiometer's transcutaneous measuring system, contact us or our local representative to obtain additional information. Reprints, literature and technical material are available upon request.



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Gynecological Operative Anatomy

The Simple and Radical Hysterectomy

Atlas

Appendix: The Radioisotope Radical Operation

1977. 22,5 cm × 31,0 cm. XVI, 172 pages. With 198 illustrations.
Bound DM 198,—; $99.00 ISBN 3 11 006691 2

During gynecological operations — in particular, vaginal operations — the topographic anatomy is changed by traction.
It is the task of this atlas to demonstrate both verbally and pictorially the several steps and changes in anatomic details which occur during gynecological operations. The authors have considerable experience in gynecological — especially vaginal — operations and did much to further develop the techniques of the Viennese gynecological school.
The appendix contains a demonstration of the radioisotope radical operation of carcinoma of the cervix.
The atlas fills the heretofore perceptible gap between anatomic text books and manuals of gynecological operations.
This new, revised edition, now in English language, is the second edition of the German book published in 1972.

E. Gitsch — A. H. Palmrich

Gynäkologisch-operative Anatomie

Einfache und erweiterte Hysterektomie. Ein Atlas

22,5 cm × 31,0 cm. XII, 162 Seiten mit 200, zum Teil mehrfarbigen Abbildungen. 1972. Gebunden DM 160,— ISBN 3 11 003480 8

Anhang: Die Radioisotopen-Radikaloperation. Mit Geleitworten von H. Husslein und I. Amreich. Bildteil von Hans Lang.

Hauptanliegen der Autoren ist es, an Hand zahlreicher Illustrationen, die durch die Operationstechnik bedingten Veränderungen der topographischen Anatomie des Genitales und der Nachbarorgane aufzuzeigen. Im Anhang wird noch die Radioisotopen-Radikaloperation des Collum-Carcinoms, die an der I. Universitäts-Frauenklinik, Wien, entwickelt wurde, kurz beschrieben und illustriert.

Summary

A review of the literature reveals only one case of neonatal Escherichia coli pericarditis. This is a case report of Escherichia coli pericarditis occurring in a two day old infant. The infant initially presented with lethargy and jaundice but this rapidly progressed into shock. Despite vigorous resuscitative efforts, the infant succumbed and at autopsy 30 cc of purulent fluid were obtained. Cultures of the admission blood and post-mortem pericardial effusion grew Escherichia coli.
The clinical diagnosis of pericarditis is often difficult because of vague, nonspecific symptoms and signs. The symptoms are usually those of sepsis plus those of impaired circulation due to mechanical embarrassment by accumulating pericardial effusion. It is difficult to differentiate pericarditis with effusion from myocarditis and pericardial effusion secondary to congestive heart failure. The use of pericardiocentesis as a diagnostic tool and echocardiography are the most helpful techniques presently available for diagnosis. Management consists of vigorous supportive efforts, antibiotics, and drainage of the pericardial effusion. Because of the very high mortality associated with this disorder, a high index of suspicion with a vigorous diagnostic and therapeutic approach to the patient is indicated.

Keywords: Cardiac tamponade, Escherichia Coli, neonatal cardiac disease, pericarditis, sepsis.

Zusammenfassung

Neugeborenen Perikarditis durch E. coli
Eine Durchsicht der Literatur zeigt nur einen Fall von Neugeborenen Perikarditis durch E. coli. Wir berichten einen weiteren Fall von einer Perikarditis durch E. coli, der bei einem zwei Tage alten Kinde vorgekommen ist. Das Kind war anfangs lethargisch und ikterisch, dann kam es schnell in einen Schock. Trotz der Wiederbelebungsversuche starb das Kind. Bei der Autopsie wurden 30 ccm einer eitrigen Flüssigkeit aus dem Herzbeutel aufgefangen. Aus den Kulturen des aufgefangenen Blutes und des Herzbeutel-Ergusses entwickelte sich Escherichia coli.
Die klinische Diagnose Perikarditis ist oft wegen der unsicheren, nichtspezifischen Symptome und Anzeichen schwierig. Die Symptome ähneln mehr einer Sepsis und einer Kreislaufinsuffizienz als den mechanischen Hindernissen durch den perikardialen Erguß. Es ist schwierig, zu unterscheiden zwischen Perikarditis mit Erguß und Myokarditis mit sekundärem perikardialen Erguß mit Herzversagen. Die Perikard-Punktion als eine diagnostische Methode und die Echokardiographie sind die hilfreichsten Techniken, die augenblicklich zur Diagnostik verfügbar sind. Die Behandlung erfordert viel Mühe, Antibiotika und Drainage des Perikardergusses. Wegen der hohen, mit dieser Krankheit verbundenen Sterblichkeit, ist eine intensive Diagnostik und Therapie angezeigt.

Schlüsselwörter: Escherichia Coli, Herz-Tamponade, Neugeborenes, Perikarditis, Sepsis.

Résumé

Pericardité de colibacille néonatale
La littérature médicale ne fait mention que d'un seul cas de péricardite de colibacille néonatale, ce cas étant celui d'un bébé de deux jours. Le nouveau-né avait manifesté initialement de la léthargie et de l'ictère qui se transformèrent rapidement en choc. Les efforts intensifs de réanimation restèrent sans succès. On obtint à l'autopsie 30 cc de liquide purulent. Des cultures du sang d'admission et de l'hydropéricardite post-mortem produisirent des colibacilles.
Il est souvent difficile d'établir le diagnostic clinique de la péricardite à cause de la nonspécificité des symptômes et signes apparents. En effet, les symptômes sont généralement ceux de la septicémie doublés de ceux d'un trouble de la circulation dû aux perturbations mécaniques causées par une hydropéricardite accumulée. Il est malaisé de différencier une péricardite avec épanchement d'une myocardite et d'une hydropéricardite secondaire à une défaillance cardiaque congestive. La péricardiocentèse et l'échocardiographie sont les méthodes techniques actuelles les plus sûres de diagnostic. Le traitement comprend trois interventions principales: efforts énergiques de soutien, antibiotiques et drainage de l'hydropéricardite. En raison de la très haute mortalité corrélative à ce trouble, il est recommandé de s'attacher avec le plus grand soin à établir un diagnostic très rigoureux et à appliquer une thérapie très circonspecte.

Mots-clés: Colibacille, maladie cardiaque néonatale, péricardite, septicémie, tamponnement cardiaque.

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